EXAMINATION OF HEALTH EDUCATION PREFERENCES OF OLDER ADULTS WITH INADEQUATE HEALTH LITERACY

A DISSERTATION

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

IN THE GRADUATE SCHOOL OF THE

TEXAS WOMAN'S UNIVERSITY

COLLEGE OF HEALTH SCIENCES

BY

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DECEMBER 2003

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November 5, 2003
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I am submitting herewith a dissertation written by Kathleen Nikkol Faye Spears entitled "Examination of Health Education Preferences of Adults With Inadequate Health Literacy." I have examined this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirement for the degree of Doctor of Philosophy with a major in Health Studies.

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DEDICATION

This Doctoral Dissertation is dedicated to the loving memory of my mother Rosetta Marie Holloway Spears, 1941-1979. May you radiate with joy from Heaven as I complete this accomplishment and continue to excel far beyond the limitations and expectations placed upon me. Your spirit has moved me, your memory has inspired me and your legacy lives through me.

ACKNOWLEDGEMENTS

I can do all things through Christ Who strengthens me, Phillipians 4:13

The highest acknowledgement goes to my Lord and Savior Jesus Christ who throughout my life has given me the strength and courage to turn adversity into opportunity. W.A. Nance once said that "no person can be a great leader unless he takes genuine joy in the successes of those under him." It is with great respect that I acknowledge the expert leadership, talent and knowledge of Drs. Susan Ward, Kristin Wiginton and William Cissell. Their input into this manuscript is invaluable, as is their advocacy of student accomplishments. I hope they have taken joy in the success of the many students they have helped to achieve their goals and aspirations. In addition, they are to be commended for rescuing a good student from a bad situation.

A significant amount of gratitude is owed to Larry W. Irvin, M.D. who, during a very challenging time in his own life, stepped forward to support this research study and lent his incredible intellectual thought to polishing this manuscript. His consistent challenging of my mind, ability and determination led me to this point. Dr. Irvin, thank you. I am indebted to Sondra Rolater, Pauline Pagel, Betsy Porter and Diana West for their unbelievably kind and propitious assistance in the data collection phase of this study. Writing the English language is more of a challenge than it may seem. I wish to thank April Foran for applying her expert editing skills to the correctness of this document.

A student is most successful when she is encouraged to excel and is surrounded by individuals who believe in her. Dr. Kelley Moseley, chair of the Department of Healthcare Administration, Texas Woman's University-Houston and his faculty have never had any doubt in their mind that I would achieve great things and continued to support my dreams long after I graduated from their department, and I choose to acknowledge that. I also wish to acknowledge others who supported my efforts and lent to my determination to complete this study including my sisters Jacqueline Vincent, Etta Newton, Tamela Grandberry and my friends Rhonda Bean and Sterling H. Ray, III, M.D. Making you all proud is what has kept me moving forward. Every smile you directed towards me put me one step closer. Thank you for *always* smiling.

ABSTRACT

KATHLEEN N. SPEARS, B.A., M.H.A.

EXAMINATION OF HEALTH EDUCATION PREFERENCES OF OLDER ADULTS WITH INADEQUATE HEALTH LITERACY

DECEMBER 2003

Inadequate health literacy is a problem. Individuals with inadequate health literacy skills have poor self-care and disease management capabilities, make multiple medications errors and have a propensity towards longer and more costly hospital stays, all of which lead to excessive healthcare expenditures of more than $70 billion spent annually due to inadequate health literacy (Gazmararian, et al., 1999; AMA, 2000). While the impact of inadequate health literacy on health outcomes has been widely investigated, there is a lack of research into methods of reducing that impact (Bresolin, 1999).

The purpose of this study was to identify the health literacy skills of older adults and the preferred type, design and delivery of health education materials for older adults with inadequate health literacy. Subsequently, it was the goal to provide a basis from which healthcare practitioners can create effective health education materials as a method of reducing the impact that poor health literacy skills has on health outcomes. A convenience sample of 25 participants was selected from a senior health care clinic affiliated with a large public healthcare system located in North Texas. To assure

sameness of sample in terms of morbidity, only patients with both diabetes mellitus and hypertension were invited to participate in this study. The Short Test of Functional Health Literacy in Adults (STOFHLA) was administered to measure the literacy skills of the sample. In addition, an 18-question interview was conducted to capture the health education preferences of the participants.

The participants were primarily African-American and Hispanic and the mean age of the sample was 76.04 years. The results of this study indicated that 48 percent of the sample demonstrated less than adequate health literacy. Forty-seven percent of the African-American and Hispanic participants had less than adequate health literacy, while only a third of the Caucasian participants had inadequate literacy skills. Older adults with inadequate health literacy preferred health education that is either verbal or in the form of videotape, while older adults with adequate health literacy preferred verbal or written materials with few pictures. In addition, older adults with adequate literacy skills preferred to be spoken to directly while their counterparts preferred to have health education delivered in the presence of or directly to a caregiver.

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CHAPTER ONE

INTRODUCTION

Health literacy, an important factor in individual health decisions, goes beyond one's ability to read. Health literacy is the degree to which individuals have the capability to obtain, process, and understand basic health information and services necessary to make appropriate health decisions (Harvard School of Public Health, 2002). Inadequate health literacy, therefore, impedes a person's ability to make appropriate health decisions. Inadequate health literacy contributes to elevated healthcare costs. Seventy-three billion dollars in additional health care expenditures is attributed to issues arising from low health literacy (American Medical Association [AMA], 2000). Individuals with lower health literacy tend to make more medication or treatment errors (Gazmararian et al., 1999). These two factors may instigate lengthy and costly, yet, avoidable hospitalizations. In a study conducted in 1994, the National Academy on an Aging Society (NAAS) found that adults with low health literacy utilized healthcare services more frequently than adults with higher health literacy (NAAS, 1999; AMA, 2000). The NAAS study showed that adults who had low health literacy skills remained hospitalized 2 days longer, on average, than did individuals with high health literacy skills and averaged 6% more hospital visits than their counterparts. In addition, adults with low health literacy averaged one more doctor visit than individuals with high health literacy (NAAS, 1999; AMA, 2000).

There are more than fiscal costs associated with inadequate health literacy; an individual's quality of life is also compromised. Approximately 75% of American adults who scored in the two lowest literacy levels[1] on the National Adult Literacy Survey, which is an indicator of health literacy, report having a physical or mental health condition (Kirsch, Jungleblut, Jenkins, & Kolstad, 1993). Individuals with low literacy tend to live in poverty, experience high unemployment rates or fall into the lowest income brackets. In 1991, 43% of individuals scoring in the lowest literacy level lived in poverty compared to 5% of those scoring in the highest literacy level. Those with the lowest literacy worked an average of 19 weeks a year compared to 44 weeks for their counterparts scoring in the highest literacy level. Employees with low literacy earned a median income of $240 a week, while those with the highest literacy had a median income of $681 (National Institute for Literacy, 2002).

An individual's knowledge and management of their disease and ability to accurately read medical instructions also could be significantly impacted by low health literacy. This inability to accurately read medical instructions negatively affects a patient's health status. Williams, Baker, Parker, and Nurss (1998) investigated the relationship between health literacy and knowledge of chronic disease state/disease management and found that health literacy levels of patients with diabetes mellitus are strongly correlated to knowledge about their illness and to their disease management skills. In this same study, conducted at an inner city hospital, the researchers identified a link between low health literacy and the ability to

[1] Levels range from 1- 5 where one indicates the lowest literacy level and 5 indicates the highest literacy level.

understand information provided through health education. This lack of understanding was demonstrated by questioning patients after exposure to health education materials about key health information such as normal and high blood pressure ranges, signs and symptoms of hyperglycemia, and the effects of salt and weight on blood pressure. The results revealed that more than half of the individuals with inadequate health literacy did not understand the information. The researchers also found that respondents with inadequate functional health literacy frequently misread simple prescription instructions, information regarding the results of blood sugar tests, and unsophisticated instructions for preparation of radiographic procedures. The Williams et al. study provides a clearer picture of how health knowledge is impacted by health literacy and offers a more accurate view of the impact that low literacy has on health education.

Health literacy has been proven to be a significant problem among senior citizens. In a study conducted at two public hospitals, 81% of patients, age 60 years or older, had inadequate or marginal functional health literacy (Williams et al., 1995). In a study done in 1994, three of four older patients read below a fourth grade level, which is the level necessary to understand prescription labels or most written material (Weiss et al., 1994).

Despite the fact that inadequate health literacy is a phenomenon that affects multiple aspects of healthcare delivery, there are few resources available for addressing it. A study conducted by the Ad Hoc Committee on Health Literacy of the American Medical Association's Council on Scientific Affairs (Bresolin, 1999)

examined the scope and effect of poor health literacy. A meta-analysis of existing literature on health literacy was completed to synthesize the results of 217 previous studies completed on the subject. The Ad Hoc Committee concluded that there is a critical need for research into the area of mitigating the impact of poor health literacy. The Committee implored researchers to investigate and develop improved methods for imparting health knowledge as a mechanism for enhancing health outcomes (Bresolin, 1999). The Ad Hoc Committee recommended examining the role that physicians play in conveying health education to individuals with low health literacy and the potential effect of patient health literacy on the provider's ability to accurately diagnose the patient. The Ad Hoc Committee also suggested training healthcare providers on effectively communicating with patients who have limited literacy skills and encouraged the adoption of policies at the federal, state, local, and organizational levels that involve enhancing awareness of the health literacy problem (Bresolin, 1999). This study serves as a guide for researchers interested in exploring the many aspects of health literacy in the United States.

Low health literacy is considered to be a significant problem among older adults. Low health literacy has been shown to affect an individual's ability to understand basic education materials about their disease thereby limiting the effectiveness of health education in enabling and/or predisposing a patient to manage his or her disease. However, there is a lack of research that investigates methods of enhancing the effectiveness of health education among individuals with inadequate health literacy (Williams, Davis, Parker, & Weiss, 2002). Utilizing patient

preferences has been successful in enhancing patient compliance with treatment regimens (Miller & Bolla, 1998), thus identifying the preferred type, design and delivery method of health education materials for older individuals with low health literacy may assist in the compliance with health education.

Statement of the Purpose

The purpose of this study was to determine the health literacy level of older adults and to identify the type, design, and method of delivery of patient education materials preferred by older adults with low health literacy.

Research Questions

The investigator answered the following research questions:

1. What is the health literacy level of older adults?
2. What are the preferences in type, design, and delivery of health education materials for older adults with low health literacy?

Delimitations

The following factors may have impacted the internal validity in this study:

1. The investigator focused on elderly patients, aged 60 and above. Characteristic of this population is the presence of co-morbidities. Having to obtain, process, and understand health information about multiple diseases, may impact the individual's literacy level. The researcher selected only those patients with similar disease states.
2. The researcher selected only those patients whose primary language is either English or Spanish, thereby precluding many minority groups from this study.

Thus, it will be difficult to generalize the health education preferences of low literacy older adults of other nationalities.

Limitations

The following factors may have limited the scope of this study:

1. Participants selected for this study are patients at a large urban public hospital. Thus, the generalizability of the health literacy levels of the older adults in this study to all older adults may be limited.
2. Participants in this study were drawn from a sample of convenience. The lack of randomization of the sample thereby limits the extrapolation of the results to older adults outside the narrowly defined population of this study.

Assumptions

The author assumed that:

1. Participants understood the questions that the interviewer asked them.
2. Participants provided honest answers when questioned.

Definition of Terms

Adequate Health Literacy – a level of health literacy that indicates that an individual scoring in this range should be able to read, understand, and interpret most health information (Nurss, Parker, Williams, & Baker, 1995).

Cognitive Impairment - for the purposes of this study cognitive impairment and/or mental deterioration was defined as any diagnosis such as dementia, Alzheimer's Disease, multi-infarct dementia, or other disorders that are indicative of cognitive decline, memory impairment and/or loss of executive function that may interfere with

the participant's ability to comprehend and/or complete the Short Test of Functional Health Literacy in Adults.

Design – for the purpose of this study, the term design refers to the layout of health education materials such as with pictures or without pictures, without words, in color or black and white, etc.

Disease Management - Systematic coordinated healthcare interventions and communications for populations with conditions in which patient self-care efforts are significant. Disease management (DM) is supported by physician or practitioner/patient relationship and plan of care. DM emphasizes prevention of exacerbations and complications utilizing evidence-based practice guidelines and patient empowerment strategies, and evaluates clinical, humanistic, and economic outcomes on an on-going basis with the goal of improving overall health (Disease Management Association of America, 2003).

Frail Elderly – older adults above the age of 60 whom have multiple functional impairments that limit their mobility.

Health Literacy - the degree to which individuals have the capability to obtain, process, and understand basic health information and services necessary to make appropriate health decisions. The three degrees/levels of health literacy are inadequate, marginal, and adequate. This term is interchangeable with functional health literacy (Harvard School of Public Health, 2002).

Inadequate Health Literacy – a level of health literacy that represents the inability or extreme difficulty to obtain, process, and understand basic health information (Nurss et al., 1995)

Marginal Health Literacy – a level of health literacy that indicates that an individual may experience difficulty with obtaining, processing, and understanding basic health information (Nurss et al., 1995).

Method of Delivery - for the purpose of this study, the term method of delivery will reference to whom the participant prefers to have the information delivered and by whom, for example by the doctor or nurse.

Numeracy – measure of an individual's comprehension of numerical information.

Type – for the purpose of this study, the term type references the kind of health education material, such as a brochure, booklet, flyer, cassette tape, videotape, or demonstration, etc.

Significance of Study

While there is a substantial amount of research on the impact health literacy has on various aspects of health, there is a lack of research that identifies methods of improving the delivery of health information to individuals with low health literacy. The study of type, design, and presentation style for health related educational materials preferred by older adults will assist health educators and practitioners create effective materials.

CHAPTER TWO

REVIEW OF LITERATURE

Inadequate health literacy is a complex issue that affects many aspects of the healthcare delivery process, from accessing and navigating a healthcare system to the actual provision of healthcare services (Foulk, Carroll, & Wood, 2001). Defining health literacy has been an evolving process. In 1974, health literacy was used to describe the education of students on the subject of health (Tones, 2002). Today, health literacy describes the set of skills necessary to understand and act upon health information from disease self-management to negotiating a healthcare system. Perhaps the most complete definition of health literacy was offered by Nutbeam in 1998. Nutbeam's paradigm presented health literacy in a tripartite: basic/functional literacy, communicative, and interactive literacy and critical literacy (Tones, 2002).

Nutbeam's basic or functional literacy resembles current definitions of health literacy describing the basic fundamental skills necessary to be able to function in society (Tones, 2002). Communicative and interactive literacy refers to the necessity of adequate social skills as well as cognitive skills to comprehend multiple forms of communication beyond the written word (Tones, 2002). Critical literacy describes the application of basic and communicative skills to the analysis of information in order to determine which steps must be taken to control various events and outcomes (Tones, 2002). The Healthy People 2010's definition of health literacy

includes a critical aspect of health literacy, the ability to *obtain* basic health information (Harvard School of Public Health, 2002).

A permutation of multiple definitions of health literacy forms the World Health Organization's (WHO) definition of health literacy. The WHO defines health literacy as the cognitive and social skills necessary to gain access to, understand, utilize, and act on health information that promotes and maintains good health (Tones, 2002). Based on this definition, the absence of the necessary cognitive and social skills would represent inadequate health literacy.

By every definition, inadequate health literacy has long been a problem that impacts an individual's healthcare and health seeking experience. However, in recent years, inadequate health literacy has gained national, state, and agency attention. The National Institute for Literacy (NIFL), a governmental agency organized to address literacy issues, maintains a database of research available on health literacy and supports health literacy awareness efforts such as Health Literacy Month (NIFL, 2002). Many states have adopted health literacy policies that advocate for increasing the quality of care for those with inadequate health literacy. For example, Ohio has an initiative with seven objectives including the development of a program model that addresses health literacy issues on a statewide basis utilizing existing governmental resources. Ohio collaborates with their local Area Health Education Centers to achieve their objectives (Ohio State University, 2003).

The Center for Healthcare Strategies (CHCS), an organization that promotes high quality healthcare services for low-income populations and reducing disparities

in health, has developed health literacy fact sheets. CHCS makes the fact sheets and other information about health literacy available to healthcare organizations across the nation (CHCS, 2003b). Agencies such as Pfizer Incorporated have partnered with such organizations as the American Medical Association to study the issue of health literacy in hopes of increasing health outcomes for individuals with inadequate health literacy and decreasing the impact that inadequate health literacy has on healthcare costs (Pfizer Inc., 2003).

Health Literacy Measurement Tools

There are a number of tools that measure an individual's reading ability. The Wide Range Achievement Test-Revised (WRAT-R), the Slosson Oral Reading Test – Revised (SORT-R), and Peabody Individual Achievement Test-Revised (PIAT-R) are three widely used reading comprehension exams (Davis et al., 1993). However, the most comprehensive measure of reading ability is the National Adult Literacy Survey (NALS), (National Center for Education Statistics [NCES], 2003). The NALS, which was designed in such a way to discover the information-processing skills and strategies that adults use to accomplish multiple literacy tasks, measures literacy utilizing three different areas prose literacy, document literacy and quantitative literacy. Prose literacy assesses an individual's ability to read newspaper articles or written instructions. Document literacy measures an individual's ability to read forms found in daily life functions such as applications, payroll forms, and maps or transportation schedules. Quantitative literacy examines the ability to understand numerical information such as decimals, fractions, and managing a checkbook

(NCES, 2003). The NALS provides significant insight into the literacy level of individuals from various age groups, socioeconomic statuses and ethnicites as its was used to test more than 14,000 individuals (Kirsch et al., 2000).

Although the WRAT-R, SORT-R, PIAT-R and the NALS offer tremendous insight into the literacy levels of adults, there are instruments available that measure the *health* literacy skills of individuals. The Test of Functional Health Literacy in Adults (TOFHLA) tests a patient's ability to read paragraphs and phrases containing numbers, using actual scenarios and information from the healthcare environment. This tool takes 22 minutes to administer and has 50 reading comprehension and 17 numerical ability testing items (Center for Medicare Education, 2000). The TOFHLA comes in a short version called the Short Test of Functional Health Literacy in Adults (STOFHLA). The STOFHLA takes seven minutes to administer and includes 36 items. Both the TOFHLA and the STOFHLA are available in Spanish (Nurss, Parker, Williams, & Baker, 1995).

The Rapid Estimate of Adult Literacy in Medicine (REALM) was developed in 1990 and assesses a patient's ability to recognize and pronounce common medical terms (CHCS, 2003d). The participants are scored based on the number of items they correctly identify and pronounce. The scores are then converted to grade reading levels from lower elementary (below third grade) to senior high school (above a ninth-grade level) (Rudd, Moeykens, & Colton, 1999). The REALM takes only three to five minutes to administer and has demonstrated instrument reliability and validity in identifying patients with poor literacy skills (Davis et al., 1993). The REALM is

also available in a shortened version that has the same validity and reliability, and takes only one to two minutes to administer (Davis et al., 1993). Both the TOFHLA and the REALM provide an opportunity for the health literacy level of adults to be measured.

Prevalence of Inadequate Health Literacy

In 1995, researchers evaluated the health literacy of 979 patients at a public hospital in Atlanta, and 1,680 English and Spanish-speaking patients at a public hospital in Los Angeles. Thirty-five percent of the patients tested in Atlanta had inadequate health literacy. Twelve and a half percent of the English speaking and 42% of the Spanish-speaking patients at the Los Angeles hospital were considered functionally illiterate (Williams et al., 1995). Nationally, 50% of Hispanic Americans and 40% of African-Americans have literacy problems (CHCS, 2003a).

Older adults are twice as likely to have impaired health literacy as the general population (Kirsch, Jungeblut, Jenkins, & Kolstad, 1993). Kirsch et al. (1993) found that the proportion of adults with the lowest reading ability increased from 16% for adults 45 to 54 years of age to 44% for adults aged 65 years or older. The older the individual, the more likely they are to have low health literacy. In 1999, a study of 3,260 Medicare enrollees aged 65 years and older was completed. The results revealed that 15.6% of those in the age group of 65 to 69 years demonstrated inadequate health literacy, while 58% of the participants 85 years of age or older had inadequate health literacy levels (Gazmararian et al., 1999).

Baker, Gazmararian, Sudano and Patterson hypothesize that cognitive impairment, which occurs more in older adults, contributes to the high rate of low health literacy among older adults (2000).

Impact of Inadequate Health Literacy on Health Outcomes

Adults with the lowest education and health literacy levels continue to suffer the highest rates of morbidity and morality from chronic diseases and conditions (Plimpton & Root, 1994). Williams, Baker, Parker, and Nurss state that 43% of patients with inadequate health literacy reported poor overall health status compared with 20% of patients with adequate health literacy (1998). Chronic illnesses such as diabetes and hypertension require a high degree of patient self-management including administering multiple medications, adhering to detailed diet and exercise plans, and keeping meticulous records of their blood pressure and blood glucose levels. These strict regimens are required in order for the patient to maintain control of their disease to avoid further healthcare complications (Hazzard, Bierman, Blass, Ettinger & Halter, 1994; Williams, Baker, Parker & Nurss, 1998). Understanding and adhering to these regimens require the ability to comprehend medication labels and nutrition information, interpreting often sophisticated blood glucose monitoring tools and following provider instructions (Williams et al., 1998). An individual's lifestyle, behavior, and environment may impact their disease management. Health education may be necessary to help individuals alter their lifestyles (diet, exercise), behaviors (blood glucose monitoring, smoking), and/or environments in order to improve their

health status. The outcomes of chronic illnesses such as diabetes and hypertension are affected by how well the disease is managed. How well a patient manages his or her disease also has been linked to their health literacy level (Williams et al., 1998).

Schillinger et al. (2002) investigated the link between health literacy and health outcomes among patients with chronic Type 2 diabetes. Four hundred and eight English and Spanish-speaking Type 2 diabetes patients, age 30 years and older, were observed at a public hospital in San Francisco. Participants were given the Test of Functional Health Literacy in Adults (TOFHLA) and their medical records were reviewed to obtain their hemoglobin A_1C[2]. The TOFHLA scores and hemoglobin A_1C data were statistically analyzed for any correlation between health literacy and blood glucose levels. The effect of health literacy on health outcomes was demonstrated in this study when Schillinger et al. (2002) found that patients with inadequate health literacy levels were less likely than patients with adequate health literacy level to maintain adequate control of their diabetes. This conclusion was based on the presence of poorer hemoglobin A_1C levels among individuals with lower literacy skills compared to their counterparts with adequate literacy skills. Schillinger's study also revealed a significant prevalence of diabetic retinopathy[3] among individuals with low health literacy compared to their counterparts with adequate health literacy (Schillinger et al., 2002).

[2] Hemoglobin A_1C measures the average amount of sugar in one's blood over the last 3 months, the score is indicative of a diabetic's ability to manage their blood sugar level.

[3] Diabetic retinopathy- disease of the retina, especially one that is noninflammatory and associated with damage to the blood vessels of the retina.

Bennett et al. (1998) examined the relationship among literacy, race, and disease- state among 212 low -income patients of two prostate cancer clinics, who had been diagnosed with prostate cancer. Results of the Bennett study indicated that men with literacy levels below sixth grade were more likely to present with advanced-stage prostate cancer. The study also showed that African-American men were more likely than Caucasian men to present to the clinic in a later disease-state. However, when the investigators adjusted for literacy and other factors they found that low literacy is a barrier to early-stage diagnosis of prostate cancer between both low-income African-American and Caucasian men (Bennett et al., 1998). Recall that health literacy involves cognitive *and* social issues. The Bennett study clarifies the role that social aspects play in negotiating a healthcare system.

In one of the first studies to show a significant relationship between health literacy and self-management abilities, Williams, Baker, Honig, Lee, and Nowlan (1998) found that individuals with poor literacy skills also had poor self-management skills. Four hundred and eighty-three asthma patients' self-management skills were assessed through the observation of their use of a metered-dose inhaler. The Rapid Estimate of Adult Literacy in Medicine (REALM) was administered to measure the participants' health literacy. Participants who fell into the lower reading levels based on the REALM also demonstrated inaccurate use of the metered-dose inhaler (Williams et al., 1998).

Limited literacy skills affect health outcomes by hindering disease management abilities, which may lead to more hospitalizations. In a retrospective

analysis of hospital data, Baker and a team of researchers discovered that patients with low health literacy were twice as likely as patients with adequate health literacy to be hospitalized during 1994 and 1995 (Baker, Parker, Williams, & Clark, 1998). After accounting for many confounding variables such as health insurance and socioeconomic status, age, gender, and race, Baker et al. still concluded that patients with inadequate health literacy had an increased risk of hospital admissions. The researchers believe that the increased hospitalizations may be a result of poor disease management. In a similar study done in 1997, Baker, Parker, Williams, Clark, and Nurss found that patients with inadequate health literacy were more likely than patients with adequate health literacy to have been hospitalized within the previous year (Baker et al., 1997).

Access to healthcare is interrupted, if not prevented, by inadequate health literacy. Patients with low literacy skills miss information provided through flyers, newspaper ads, or mailings that advertise health promotion and health screening opportunities that would be beneficial to them (Foulk, Carroll & Wood, 2001). An emergency room visit may be the only opportunity an individual with low health literacy has to enter a healthcare system. Information given at that time may be misunderstood or so overwhelming that a patient fears seeking subsequent care (Pirisi, 2000).

Health literacy may contribute to current disparities in health between ethnic minorities and Caucasians (Agency for Healthcare Research & Quality, 2003). Citing the Schillinger et al. study (2002), the Agency for Healthcare Research and Quality

(AHQR) reports that poor health literacy may contribute to excess diabetes-related complications among disadvantaged groups because inadequate health literacy occurred more in minority groups than in non-minority groups (AHRQ, 2002). Because inadequate health literacy is related to health outcomes, its disproportionate prevalence among minorities is considered to contribute to the disproportionate prevalence of illness and disease among minorities.

Impact of Inadequate Health Literacy on Health Education

Health education, which involves any organized mix of learning experiences designed to predispose, enable, and reinforce voluntary behavior conducive to health, is often used to promote health in individuals and/or groups (Green & Kreuter, 1999). There is an obvious need for the use of health education in improving health outcomes of chronic disease and promoting health among all groups, especially among older adults. However, the effectiveness of health education is greatly jeopardized by the presence of inadequate health literacy. Inadequate health literacy makes it difficult, if not impossible, for an individual to cognitively understand health education or instructions that may improve their health (Plimpton & Root, 1994).

In 1998, Williams, Baker, Parker, and Nurss studied the effectiveness of health education among low literate adults with a chronic illness by sampling 516 diabetic and/or hypertensive patients at two public hospitals. The researchers administered the Test of Functional Health Literacy in Adults (TOFHLA) and a questionnaire designed to measure the participants' knowledge of their disease and

how to manage the disease. The questionnaire was designed using information from the actual brochures and health education materials distributed at the two hospitals. Results from the two tests were analyzed to determine whether a statistically significant relationship exists between health literacy and a patient's knowledge of the disease. The results of this study indicated that patients with lower literacy skills were less likely to answer the knowledge survey questions correctly (Williams et al., 1998). These results signify the impact that low health literacy has on understanding health education and the effectiveness of health education materials. Williams et al. (1998) indicates that while patient health education is readily available, there is a lack of materials written at a level at which low-literate patients can comprehend essential points.

Although health literacy goes beyond one's ability to read, reading comprehension is a key factor in determining health literacy and may impact the effectiveness of health education materials. An individual's ability to follow important instructions about their health, such as discharge instructions, is impeded by the readability of the information. Jolly, Scott, Fried and Sanford (1993) found that a large portion of emergency services department patients were unable to correctly answer comprehension questions about their discharge instructions, which were written at a sixth to 13th grade level. In a study done in 1990, Terry Davis and colleagues found that much of the patient education materials distributed in a large hospital and ambulatory care setting were written at an 11th to14th grade level while the reading abilities of participants in the study was at the sixth grade level or below

(Davis, Crouch, Willis, Miller, & Abdehou, 1990). Davis found inconsistencies in the reading levels at which the materials used were written. Consent forms were written at a 13th to 31st grade level, provider letters to patients were written at a 16th to17th grade level, while only 9% of materials were written at below a ninth grade reading level. This study reveals the mismatch between the health information provided to a targeted population and the targeted population's reading skills.

Recent studies documented the need for the evaluation of patient education materials distributed by the Journal of the American Medical Association (JAMA). JAMA publishes the *JAMA Patient Page;* this publication is geared toward educating patients on current issues in healthcare. In 1999, JAMA subjected all of the *Pages* published from the initial publication date of April 1998 to the most current issue to an in-depth readability analysis. Employing many readability instruments including the Flesch-Kincaid grade reading level and the SMOG, JAMA found that the mean reading level was at 12th grade and that no *Patient Page* was written below the 10th grade reading level, while the average reading level of the general population is sixth grade (Kellerman et al., 1999).

Rudd, Moeykens, and Colton (1999) suggest in their literature review, that it is important to take into consideration that patients, even those with high literacy skills, may lack familiarity with and comprehension of medical terminology. In their literature review, Rudd et al. reports on an investigation into health literacy that occurred more than two decades ago (1999). The study revealed that only 60% of cancer patients signing an informed consent form that had a significant amount of

medical terminology could recall information from the form or understood the purpose of the form. It was also found that only 55% could correctly name one major risk associated with the procedure for which they signed consent to have conducted (Rudd, Moeykens, & Colton, 1999). Plimpton and Root (1994) discovered that health education materials were difficult to understand and had little impact on patient behavior change because there were excessive amounts of information being conveyed in a limited amount of space and an extreme amount of technical language and/or medical jargon.

Readability is an important factor contributing to the effectiveness of health education materials, but not the sole factor. In addition to understanding written health education documents, individuals with low health literacy may have trouble understanding the spoken word as well. A Medicare study done in 1999 with new enrollees in a national managed care organization, revealed that culture and linguistics impact a patients understanding of health information. The Medicare study showed that 33.9% of English speaking participants had low health literacy, compared with 53.9% of Spanish-speaking respondents (Gazmararian et al., 1999). Plimpton and Root also found that the health education materials were ineffective because many were either culturally or lingually inappropriate for its targeted audience (1994). Even individuals with high educational attainment do not understand much of the medical terminology used in communicating health information, thereby detracting from the usefulness of the information (Pirisi, 2000).

Educating older adults with low health literacy levels may be further complicated by other factors that make understanding complex treatments a major challenge. During aging, many sensory changes take place. Older adults may experience hearing or visual impairments and cognitive decline such as difficulty calculating insulin dosages or other complex math, reading or problem solving skills (unassociated with dementia). Older adults also experience changes in social relationships and status, independence, and health status that may contribute to anxiety and stress (Sewell, 2002). Elevated anxiety may distract patients from focusing on treatment instructions.

Understanding numerical information also presents a challenge for individuals with inadequate health literacy (Gazmararian et al., 1999). When tested on their ability to comprehend prescription information and numerical blood sugar and blood pressure information, even individuals with adequate reading comprehension abilities had difficulty understanding blood glucose range (Gazmararian et al., 1999). In a 1999 study, Estrada, Barnes, Collins, and Byrd found that poor numeracy skills existed in healthcare providers as well. Estrada and researchers used the results of their study to educate providers on the difficulty of understanding some numerical information and the importance of conveying numerical information as simple as possible. Estrada et al. assimilated the questions that tested the numeracy skills of the sample with instructions patients are given with prescription information and understanding the severity of illness when numerical information is used (1999).

Improving Health Education Designed for Individuals with Low Literacy

Health education is a key function in healthcare, in fact, Healthy People 2010, which is essentially the illness and disease prevention agenda for the nation, has an objective (1.3) to increase the proportion of persons appropriately counseled and educated about health behaviors (Healthy People 2010, 2003). Enabling a patient to comply with health education and make appropriate health decisions are contingent upon his or her understanding of the information. A patient's understanding of health education has been linked to his or her health literacy level (Williams et al., 1998b). Therefore, if a health education program is to be effective in improving a patient's knowledge of his disease or ability to manage his disease effectively, health educators must consider the possibility that low health literacy may exist in their patients. To further enhance the efficacy of health education, it is important for health educators and healthcare professionals to assess a client's health literacy prior to developing an education regimen, and consider the literacy level throughout the development of education materials and/or an individual health education plan (Perdue, Degazon, & Lunney, 1999).

Assessing a client's literacy level may be challenging and patients may not be forthcoming with reading difficulties because of feelings of shame or embarrassment. Also, providers may not have time to administer any of the health literacy measurement assessments available. Davis, Meldrum, Tippy, Weiss, and Williams (1996) suggest that health educators and providers watch for key indicators of

possible literacy problems such as patterns of incessant noncompliance and inability to complete insurance or registration forms. Davis et al. states that a quick test of literacy is to hand someone a written document upside down and observe whether or not they turn the document the right way. If an individual fails to do this they may be "pretending" to read the information but is not aware that the document is actually upside down (1996). However, it is important not to assume an individual's literacy, even the most poised and articulate patients could have literacy issues (Centers for Healthcare Strategies, 2003b).

The use of medical terminology should be limited if not replaced with easy to understand verbiage. In a study done in 1995, Jolly, Scott, and Sanford found that a patient's ability to answer comprehension questions correctly improved when emergency room discharge instructions were simplified (1995). The Centers for Healthcare Strategies (CHCS) suggest that health educators and providers substitute medical jargon with simplified terms such as replacing "prevents osteoporosis" with "keeps bones strong" and use appropriate graphics that demonstrate key points (CHCS, 2003c). CHCS reports that elderly patients given a simplified leaflet that included graphics were five times more likely to get their pneumococcal vaccination and more likely to talk to their doctor about the vaccination than a control group given a text only brochure (CHCS, 2003c). While there is research that supports limiting the use of medical jargon in patient interactions, Vass reported in the British Medical Journal, that some patients prefer medical terminology to lay language in terms of learning their diagnosis (2003). When adhering to patient's individual

preference, it is important for the provider to verify that the patient understands the terminology used (Vass, 2003).

Other suggestions for enhancing the efficacy of health education include supplementing the written word with visuals such as models and demonstrations, and verbally reviewing written information with the client (Davis, 1996). When reviewing written information with the patient, the practitioners should slow the pace of their verbal communication. To assure that the patient comprehends the information, Davis suggests that the practitioner asks open-ended questions and have the patient repeat back what was discussed or read. Engaging the patient and his or her family member or caregiver, as well providing the information in a story form are other tactics that may enhance the effectiveness of health education (Davis, 1996). The Journal of Family Practice published an article in 1998 that supports the use of multi-media in enhancing the delivery of health education. The article reports that the use of television and video programs increased short-term knowledge and decreased anxiety among patients with low literacy skills. However, long-term retention of information was not enhanced (1998).

Plimpton and Root (1994) found that there was a lack of emphasis in health education on core behaviors that are necessary to bring about improvement in health status or maintenance of current status. Plimpton suggests that health education programs and materials emphasize key points using clear headings and bulleting information as opposed to presenting it in paragraph form. Based on data collected from their study, Plimpton and Root also suggest that educational brochures include

ample white space and avoid overloading information. Although healthcare organizations may prefer to present a large amount of medical information and use health education materials as both education and marketing tools, Plimpton and Root propose otherwise. Plimpton identified a concern of producing materials that did not fit the organization's image as a leader in innovative health care, which created issues in determining what critical information should be placed in the health education materials to ensure they serve as an education tool rather than a marketing tool (Plimpton & Root, 1994). Plimpton also indicated that there was a fear of "dumbing down" materials that then may offend patients of various health literacy levels.

Plimpton also found that little attention had been directed at culture and language in the development of many health education materials. Guidry, Fagan, and Walker (1998) found that less than half of the cancer education materials targeting African-Americans available at the study site reflected the culture of African-Americans. CHCS suggest that members of the target culture be included in the development of culturally appropriate materials and the use of graphics and terms that are respectful of and reflect the target culture. CHCS also recommends the consideration of cultural beliefs and values in the development of health education materials (CHCS, 2003a).

In addition to culture, an individual's environment and support systems should be considered during the development of an individualized health education program. Wilson, Mood, Risk, and Kershaw appeal to health educators to consider factors congruent with the patient and his or her environment when developing health

education materials (2003). Wilson et al. states that elements in the health education material should match findings from cognitive and social assessments such as family support and knowledge of and attitude toward their condition.

The use of patient preferences to guide treatment has been shown to increase patient compliance and satisfaction. Healthcare providers are implored to seek patient preferences for many key aspects of healthcare delivery including preference for end-of-life care (Miller & Bolla, 1998). Patient preference also is considered in prescribing medications and selecting treatment protocols for life altering illnesses such as cancer and asthma (Llewellyn, 1997). If patient preferences are considered in many aspects of healthcare and result in high satisfaction and compliance, then perhaps identifying and utilizing patient health education preferences will enhance patient compliance with health education and health promotion efforts.

After utilizing suggested methods of improving health education materials, health educators can assess how functional the materials are, with the use of assessment tools. Pre-testing, or providing a draft document to a sample of patients and gaining their feedback, is one method to assure that the targeted population will understand the information (CHCS, 2003d). The Suitability of Assessment of Materials (SAM) is a tool that can be used during pre-testing. The SAM not only assesses how readable and understandable patient education materials are, but how well the materials motivate the readers to act on the information and cultural appropriateness (CHCS, 2003d; Doak, Doak, & Root, 1996). The SAM has six categories of assessment including content, literacy demand, graphics, layout and

typography, learning stimulation, and cultural appropriateness. Within each category are several criteria on which the document is evaluated. For example, under content, the document is assessed based on the scope (too broad or too limited) and a clear purpose. Within the literacy demand section, the use of common words, reading level and writing style is evaluated. The graphics section examines the relevance of the graphics, purpose of the graphics and appropriateness. Layout & Typography examines the subheadings and the typeface used, while learning stimulation/motivation assesses the use of modeling and specificity of behaviors and consideration of motivating factors. The cultural appropriateness category assesses the appropriateness of cultural images and examples as well as language and experiences customary to the target culture. The measurement for these criteria within each category categories is superior (2 points), adequate (1 point), or not suitable (0 points). The SAM can be used to identify specific deficiencies that reduce the suitability of materials in either the development stages or existing materials. The SAM lends to assuring that even materials written at a suitable reading level are effective for those with low literacy skills (Doak et al., 1996). In addition to the SAM, the Area Health Education Center in Biddeford, Maine offers a checklist for printed materials. The 17-point checklist addresses organization, writing style, appearance and appeal of the material. A copy of the checklist can be found in the text *Teaching Patients with Low Health Literacy* by Doak, Doak and Root, 1996.

There also are readability formulas such as the Simple Measure of Gobbledygook Index (SMOG) and Flesch-Kincaid reading level and the Flesch-

Kincaid reading ease. The SMOG Index is calculated utilizing the total number of words with three of more syllables in a 30-sentence sample, 10 from the beginning, 10 from the middle and 10 from the end of the document (CHCS, 2003d). The formula for the SMOG Index is as follows:

$$\sqrt{\text{ of the total number of polysyllabic words}} + 3 = \text{grade level}$$

An easier way to calculate the SMOG would be to count the number of polysyllabic terms in a 30-sentence sample and match the number to the reading level on the SMOG Conversion Table (Harvard School of Public Health, 2003). A sample of the SMOG Conversion Table is found in Table 1. The Flesch-Kincaid measurements count the number of words per sentence and the number of syllables in each of those words to calculate at which grade level someone would have to be in order to comprehend the information. There are software programs such as Microsoft Word that will calculate the Flesch-Kincaid assessments (CHCS, 2003d).

Health literacy researchers Mosenthal and Kirsch have created an instrument called the PMOSE/IKIRSCH document readability formula that assesses a document's complexity. This tool does not assess the language used, rather the number of rows and columns, structure and number of labels and items to evaluate a Graph or table. The focus of this tool is on Graphs and tables as those formats are widely used to present health information such as medication calculation, health status record keeping (immunizations, blood sugar levels) and eligibility for support programs such as Medicare/Medicaid. The PMOSE/IKIRSCH scores tables and

Graphs in proficiency levels that range from 1 to 5. The proficiency levels can be translated into grade levels to give the user an idea of what reading level an individual might have to be in order to comprehend the table or graph (Harvard School of Public Health, 2003).

Table 1

SMOG Index Conversion Table, Harvard School of Public Health, 2003.

SMOG Index Conversion Table	
Total # of Polysyllabic Words	**Approximate Grade Level**
0 – 2	4
3 – 6	5
7 – 12	6
13 –20	7
21 – 30	8
31 – 42	9
43 – 56	10
57 – 72	11
73 – 90	12
91 – 110	13
111 – 132	14

* Table copied from Harvard School of Public Health, 2003, with permission

In summary, inadequate health literacy, or the inability to obtain, process or understand basic health information has been shown to have multiple negative impacts on health outcomes for those with poor literacy skills, including higher morbidity and mortality rates from chronic disease and more hospitalizations. Health education, which is necessary to enhance a patient's understanding and management of their illness and subsequently health outcomes, is greatly jeopardized by inadequate health literacy. In addition, inadequate health literacy occurs disproportionately among older adults with whom the efficacy of health education may be further impacted by sensory changes that occur as a normal part of aging.

Health educators play a significant role in communicating health information and enhancing health knowledge. Because of the complexity of inadequate health literacy and its potential to hinder the effectiveness of health education, health educators will need a firm understanding of the prevalence of low health literacy and its implications on the design and delivery of learning experiences, as well as the ramifications of health literacy on an individual's health decision making and health status. In their practice, health educators must be capable of improving the delivery of health education to those affected by inadequate health literacy. Improving the health education delivery process also improves the efficacy of health education materials, which leads to a better understanding of health information by patients. Enhanced understanding of health information such as the effects of an illness and improved disease management skills can lead to improved health outcomes and subsequently an improved quality of life (Schillinger et al., 2002).

CHAPTER THREE

METHODOLOGY

Researchers in the field of health literacy believe that by improving the delivery of health education to those with inadequate health literacy a patient's understanding of and capabilities to manage their illness might also be improved (Jolly, Sanford, & Scott; 1995; Schillinger et al., 2002). This study examined the health education preferences of older adults with low health literacy so that preferences can be used to improve the practice of health education delivery.

Population and Sample

This study targeted English or Spanish-speaking adults over the age of 60. The investigator utilized a convenience sample of 25 participants. The sample consisted of patients in the Department of Geriatrics at a large urban public hospital in North Texas who met eligibility criteria to participate in the study. This hospital primarily serves the indigent and medically underserved. The demographics of the population served at this hospital are largely minority, primarily Hispanic and African-American. Within the Department of Geriatrics, there is one geriatrics primary care clinic and geriatric-specific modules located in five primary care clinics located in various communities throughout the area. In addition, the Department operates a house calls program that deploys mid-level (advanced practice nurse or physician assistant) and physician providers to the homes of older adults who are

physically incapacitated, frail elderly, and/or who are unable to attend a clinic to receive their primary health care. Participants were selected from both the primary care clinics and the house calls program.

Eighteen participants were patients in the house calls program and six participants were patients in the primary health care clinic. Seventeen participants were African-American, four were Spanish-speaking only Hispanic, three were Caucasian and there was one Native American Indian who participated in the study. There were 23 females and 2 males in this study. Eligibility to participate in this study required participants to have been age 60 years or older at the time of the study. The mean age of the participants was 76.04 years. There were five participants who were between the ages of 60 to 69 years, six between the ages of 70 to 79 years, 10 participants were between the ages of 80 to 89 years, and four age 90 years or older.

The presence of multiple illnesses may add to the difficulty an individual encounters in obtaining, processing, and managing health information. These difficulties may impact their health literacy skills. To account for the impact that the presence of co-morbidities may have on health literacy levels, patients with only diagnoses of both diabetes mellitus and hypertension were eligible to participate in the study. Cognitive impairment may hinder an individual's ability to comprehend health information (Baker et al., 2002). To limit the impact that cognitive impairment may have on health literacy test outcomes, participants with documented cognitive impairment were ineligible to participate.

Protection of Human Participants

This study required the collection of protected health information about the participants' current diagnoses to determine eligibility. Participants maintain a right to privacy of health information as patients of the Department of Geriatrics. To ensure minimal risk to the participant's right to privacy of health information under the Health Insurance Portability and Accountability Act (HIPAA) of 1996 and in accordance with Institutional Review Board (IRB) guidelines of the adjoining medical school, the investigator devised a plan to protect human subjects. The health information extracted from patient medical records to determine eligibility for study participation, as well as patient identifying information such as name and medical record number was kept in a locked cabinet in the researcher's office. The researcher created a master list of eligible participants and assigned a number to each name on the list. Health literacy testing tools were coded with a number coinciding with the number associated with a name on the master list. This coding method limited the chance the health literacy score found on the tool could be connected to a particular participant by anyone other than the principle investigator who maintained possession of the master list. Upon completion of the data collection and data analysis phase of this study, the researcher destroyed all protected health information and the completed health literacy assessment tools. In addition, the researcher was required to obtain IRB approval from the adjoined medical school, and sign a binding document. The document stated that the protected health information would not be reused or disclosed to any other person or entity, except as required by law, for authorized

oversight of the research study, or for other research for which the use or disclosure of protected health information would be permitted by HIPAA regulations. In addition, IRB approval was required by the university with which the author was affiliated. University IRB approval was sought and obtained by the investigator. Both IRB approval letters can be found in Appendix A.

Exposing an individual's ability or inability to comprehend basic health information may create a sensitive situation. In order to protect participants from feelings of inadequacy or embarrassment, the test administrator presented the health literacy measurement tool as a word puzzle that was being used to find out how well older adults complete puzzles. To further ensure privacy, the test was administered in the patient's home or in a private patient screening room at the primary care clinics.

Data Collection Procedures

The researcher obtained permission to conduct the study within the organization, the agency approval letter can be found in Appendix B. Patient medical information, within the geriatrics house calls program, is kept in an Access database. The database allows for the patients to be sorted by primary and existing diagnosis. A request was made to the office nurse for a sorting of patients in the program by diagnoses that meet study eligibility requirements of hypertension and diabetes mellitus with the absence of cognitive impairment. Once the sampling list had been generated, the investigator obtained appointment dates from the provider responsible for the patients on the list and permission to attend the home visit with the provider. Once at the home, the investigator sought patient consent to participate in the study

through written consent. Once consent was obtained, the investigator administered the Short Test of Functional Health Literacy in Adults (STOFHLA) to measure the participant's health literacy. Upon completion of the STOFHLA, the investigator asked the participant a series of 18 questions concerning their health education type, design and presentation style preference. Responses to the 18-question survey were captured via handwritten notes.

Eligible participants who were patients of the geriatrics primary care clinic or geriatric modules in the community primary care clinics were identified through a medical record review. Permission to view medical records was granted by the Institutional Review Board prior to the investigator assessing patient records to identify patients who met eligibility requirements. Once a list of potential participants was created, their medical record number was used to locate their next appointment date in the computerized appointment scheduler. When the patients entered the primary care clinic for their appointments, the patient's primary care provider questioned the patient on their interest and willingness to participate in the study. The investigator approached the patients who agreed to participate in the study while the patient was still in the clinic exam room and obtained patient consent to participate in the study prior to conducting the Short Test of Functional Health Literacy in Adults (STOFHLA). Upon completion of the STOFHLA, the investigator interviewed the participant to determine their preferences in terms of type, design, and method of delivery of health education materials. To assure that privacy standards were met the STOFHLA and interview was conducted in a vacant patient

examination room located in the clinic. The investigator, in the form of handwritten notes, documented the participant responses. There were four participants who were Spanish-speaking only. A trained language assistant was utilized to administer the Spanish version of the STOFHLA and to conduct the survey in either the clinic.

Instrumentation

As mentioned in the literature review, the Test of Functional Health Literacy in Adults (TOFHLA) was created to assess functional health literacy. The TOFHLA is a paper and pencil test that measures a patient's ability to read and comprehend health information. This tool comes in a shortened version called the Short Test of Functional Health Literacy (STOFHLA) is a 36-item paper and pencil test, which takes less time to administer. Both versions are available in Spanish (Nurss, Parker, Williams, & Baker, 1995). The researcher elected to use the STOFHLA to limit the amount of stress that the longer version may have presented on elderly participants especially those participants who are frail elderly. Permission to use the STOFHLA was obtained and can be found in Appendix C. A copy of the English version of the STOFHLA can be found in Appendix D, and the Spanish versions in Appendix E. Scores of 23 to 36 represent adequate functional health literacy. Scores of 17 to 22 and 0 to 16 represent marginal and inadequate literacy skill respectively.

The TOFHLA has proven validity as an instrument through its use as a tool to measure health literacy in numerous studies. In 1995, the TOFHLA was used to assess health literacy of 2,659 patients in a study conducted by Williams and associates. The results were consistent with the patients' demonstrated abilities in

comprehending basic medical instructions (Rudd, Moeykens, & Colton, 1999). While some research indicates that individuals with low health literacy are unlikely to self-identify as such, a study involving 131 African-American diabetic patients indicated that more than half the participants who were classified as having inadequate health literacy also confessed to having difficulty reading and comprehending (Nurss et al., 1997). Since those studies, the TOFHLA has been viewed as one of the soundest tools in measuring health literacy, as evidenced by its widespread use. The abbreviated version, Short Test of Functional Health Literacy in Adults (STOFHLA), was correlated with the complete version of the TOFHLA, which resulted in a coefficient of .91. This strong correlation with the TOFHLA indicates that the STOFHLA is an accurate measure of health literacy (Nurss, Parker, Williams, & Baker, 1995).

The TOFHLA has demonstrated its instrument reliability, as well. Studies investigating health literacy among older adults using the TOFHLA have consistently yielded similar distributions of participants among the various literacy levels (Baker, Gazamarian, Sudano, & Patterson, 2000; Baker et al., 2002; Schillinger et al., 2002). Internal consistency was tested on the STOFHLA utilizing Chronbach's Alpha, which yielded a reliability of .97. Thus, the STOFHLA has strong reliability as well (Nurss, Parker, Williams, & Baker, 1995).

This researcher designed a questionnaire as a qualitative data collection instrument to obtain health education preferences. The tool is divided into three core areas that reflect the key areas of health education material development: type,

design, and delivery. Each area includes six questions: one multiple choice and five open-ended. The questions assessed the participant's most preferred and least preferred medium, style, and delivery mode of health education materials. Components of the three categories were taken largely from the Suitability of Materials presented by Doak, Doak, and Root in their text *Teaching Patients with Low Health Literacy* (1996). The average time to complete this interview was 12 minutes. A copy of the questionnaire can be found in Appendix F.

Data Analysis

The first question that this study sought to answer is "What is the health literacy of older adults?" To answer this question, the scores from the STOFHLA were tabulated and categorized by inadequate, marginal, and adequate health literacy according to scoring guidelines within the TOFHLA Administration and Scoring Manual. To summarize and describe the results, the investigator conducted a univariate analysis to reveal how the data is distributed and any trends that may lie within the data. The univariate analysis included frequency distribution, (utilizing a histogram), measures of central tendency (mean, median, and mode), and dispersion measures (range and standard deviation).

Secondly, this study questions the health education preferences of older adults with low health literacy. To identify these preferences, the investigator devised a scoring grid to record the responses from the health education preference questionnaire (the grid can be found in Appendix G). The number of times an individual preferred a specific type, design, or method of presentation of health

education was recorded as quantitative data. To illustrate the variation in health preferences, among older adults of different health literacy levels, the author conducted a frequency distribution analysis. To summarize the qualitative responses, the data was grouped into two categories based on themes of the responses. The two categories are examples of materials that the participants received that were easy to understand and use, and common communication issues that arise during health education.

Summary

The preferred health education types, designs and methods of delivery of older adults with low literacy were investigated in this study to provide a summary of preferences for health educators to use in their practice, as utilizing health education preferences stands to increase the efficacy of health education. The researcher employed the Short Test of Functional Health Literacy in Adults (STOFHLA) to measure the health literacy of a convenience sample of 25 participants. The researcher also utilized a questionnaire designed with 18 questions to discover the health education preferences of older adults. The investigator took appropriate steps to assure the participant's right to privacy was not violated. The results from the STOFHLA and the questionnaire were analyzed utilizing a univariate analysis and qualitative assessment. Results are discussed in detail in the following chapter.

CHAPTER FOUR

RESULTS

This study examined the health literacy of older adults and their health education preferences. The health literacy level of 25 older adults was measured to determine their ability to understand health education using the Short Test of Functional Health Literacy (STOFHLA). Individuals have preferences in terms of the form in which their health education is delivered and designed, and the presentation style. The health education preferences of a sample of older adults were captured during this study and discussed later in this chapter.

Health Literacy of Older Adults

The first research question this study seeks to answer is, what is the health literacy of older adults? In this study, with N = 25, 44% of the participants had inadequate literacy skills, 4% had marginal literacy skills, while 52% of the sample demonstrated adequate literacy skills. Forty-one percent, of the African-Americans in the study, had inadequate literacy skills while 52% had adequate literacy skills and 5.8% had marginal abilities. Three of the African-American participants self disclosed that they did not know how to read. Seventy-five percent of the Hispanic participants had inadequate health literacy and 25% had adequate literacy skills. One of the Hispanic participants with inadequate health literacy was observed looking at the STOFHLA upside down until the investigator turned the document upside right. Only a third of the Caucasians in this study had poor literacy skills, the remainder of

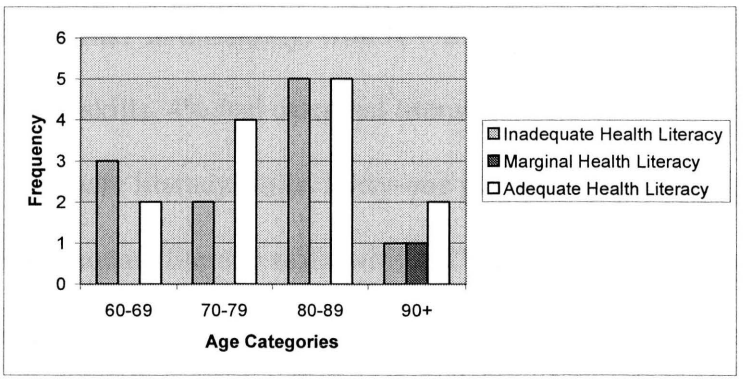
the Caucasian participants as well as the Native American Indian exhibited adequate health literacy skills. Both of the males in this study suffered from inadequate health literacy and 9 of the 23 women in this study had inadequate literacy skills.

Health Literacy and Age

Does age play a role in health literacy? The mean age of this sample was 76.04 years, however, the largest number of individuals with adequate and inadequate health literacy fell into the 80-89 years age category. Inadequate and adequate health literacy levels increased with age. The data in Figure 1 depicts the number of individuals by age groups who demonstrated adequate, marginal or inadequate literacy skills on the STOFHLA.

Figure 1

Health Literacy Skills of Older Adults by Age Category

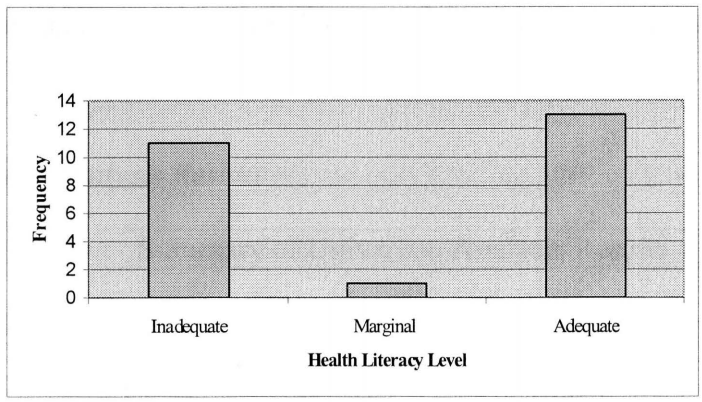


Univariate Analysis

To describe the distribution of data and to reveal any trends in health literacy among older adults in this sample, the investigator conducted an analysis of the frequency distribution, measures of central tendency, and dispersion measures. Figure 2 is a histogram that illustrates the distribution of literacy levels across the sample.

Figure 2

Distribution of Health Literacy Skills Among Older Adults



Measures of central tendency, which include the mean, median and mode, are descriptive statistics that identify the core of the data. The mean score on the STOFHLA was 18.24, according to the STOFHLA scoring guidelines; the mean score indicates marginal literacy skills. Although the trend in the data reveals a lack of older adults scoring in the marginal health literacy range, the mean score indicates otherwise. The mean does not accurately describe the sample because individuals within both the inadequate and adequate literacy levels scored extremely low or extremely high on the STOFHLA. The median score, or the score that is found at the exact middle of the set values was 27, according to scoring guidelines; this median score represents adequate literacy. The mode or most frequently occurring score in this sample was 30, which indicates an adequate literacy level. Dispersion measures, typically range and standard deviation, reveal the spread of the values around the core of the data. The STOFHLA scores ranged from 0 (lowest possible score) to 34 (36 is the highest possible score on the STOFHLA) in this sample. The standard deviation

provides a more accurate estimation of the spread of the data around the mean. The *SD* of the scores is 14.0. Table 2 summarizes the descriptive statistics of the univariate analysis of the health literacy skills of older adults.

Table 2

Univariate Analysis Results

Summary of Univariate Analysis Results	
N	25
M	18.24
Median	27.0
Mode	30.0
Range	34
SD	14.0

Comparison of Health Literacy Skills Between Homebound Older Adults and Ambulatory Care Clinic Attending Older Adults

The participants of this study were selected from a larger sample of older adults within a Geriatrics department at a large urban public hospital based on their diagnoses. The majority of the sample in this study was drawn from the house calls program, a service within the Geriatrics department designed to delivery primary healthcare services in the home of homebound elderly. One out of the 19 house calls participants had marginal literacy skills, while 42 % had inadequate literacy skills and 53% had adequate health literacy abilities.

There were six participants who were patients in the ambulatory primary care centers. Fifty percent of the clinic patients had inadequate health literacy, while the remaining half had adequate health literacy. The rate of occurrence of inadequate

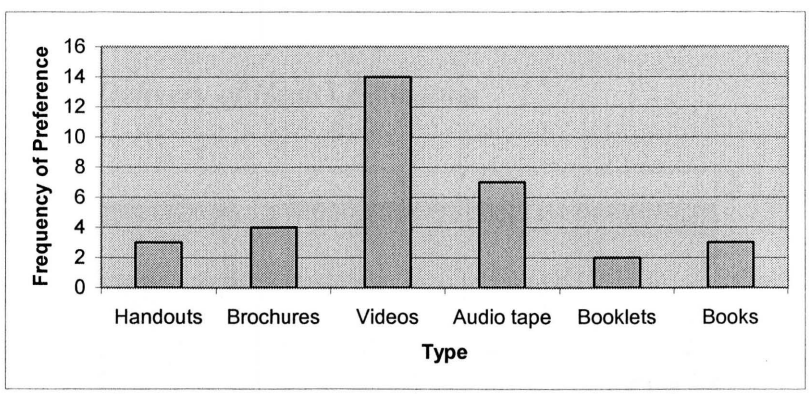
health literacy in older adults who are homebound is less than the rate of older adults who utilizing ambulatory care services. Four of the six clinic participants were Spanish-speaking Hispanic; recall that 75% of the Hispanic patients scored in the inadequate literacy level, even though a Spanish version of the instrument was provided as well as a translator.

Health Education Preferences of Older Adults

The second research question this study seeks to answer is, what are the health education preferences of older adults? In this study, the type of health education that older adults prefer is video or cassette tape. Older adults prefer to have materials designed with pictures and large type and prefer to have health information shared with them and their caregiver or escort to the clinic. Figure 3 depicts the preference in terms of type of health education of older adults.

Figure 3

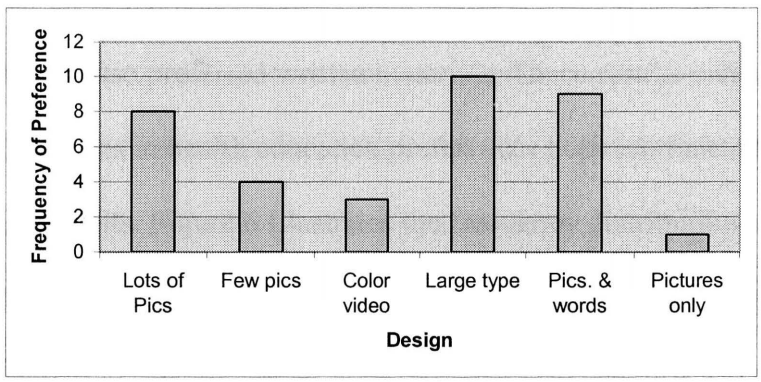
Preferred Type of Health Education Material



A frequency distribution was completed on the design and method of presentation as well. Figure 4 indicates the preference of older adults in the design of health education materials. Older adults prefer to have their health education materials designed with large typing and with pictures that illustrate key information.

Figure 4

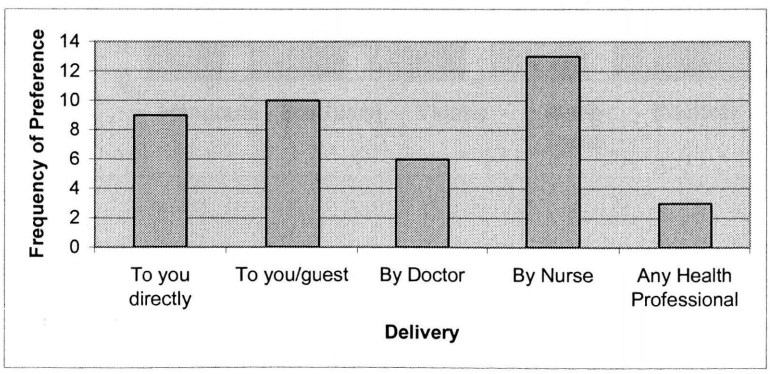
Preferred Design of Health Education Materials



In this study, older adults overwhelmingly prefer to receive their health education from the nurse. Figure 5 illustrates the preferred delivery method of health education.

Figure 5

Preferred Delivery of Health Education

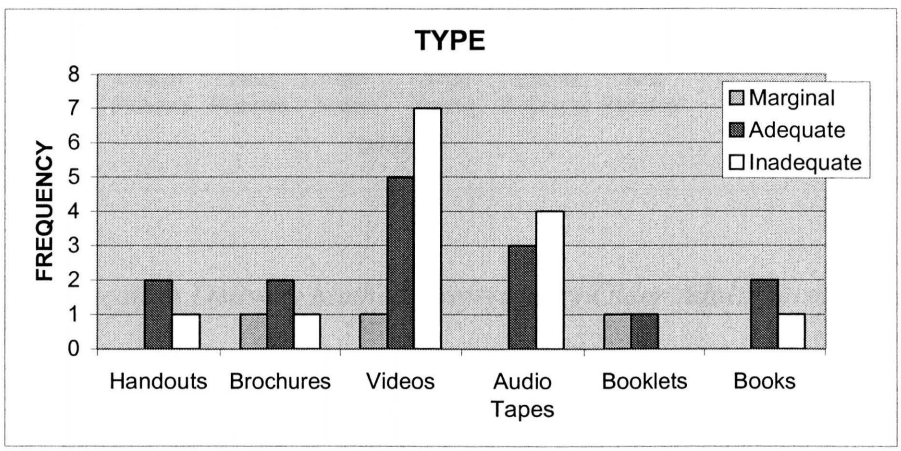


Type of Health Education Preferred by Older Adults Based on Literacy Level

Seventy-eight percent of older adults with inadequate health literacy preferred to receive health education on a video or audiotapes. This percentage is higher than the percentage of those who indicated a preference for handouts or flyers, brochures, booklets, and large books. Older adults with adequate health literacy also had a strong preference for video or audiotapes, but preferred some form of written materials more than those with inadequate health literacy. The respondent with marginal health literacy also preferred written materials. These results indicate that there are differences in health education preferences between functionally illiterate and literate older adults. Figure 6 illustrates the frequency distribution of preference in type by literacy level.

Figure 6

Preferred Type of Health Education Materials by Health Literacy Level

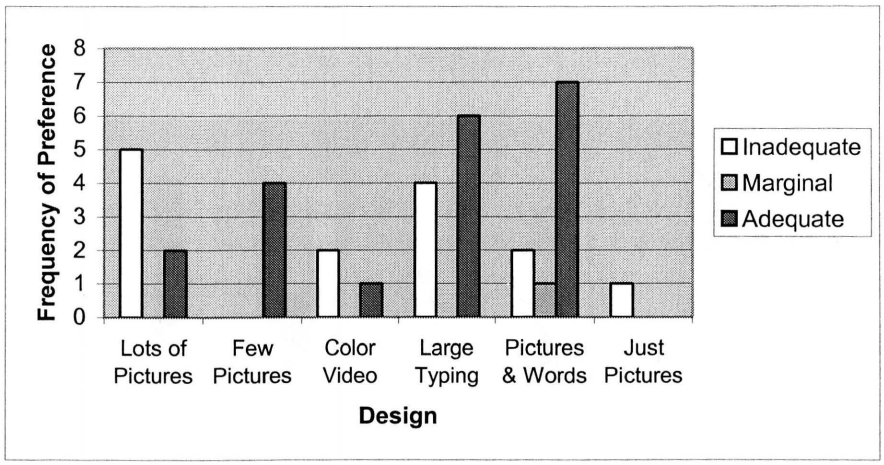


Health Education Material Design Preferred by Older Adults Based on Literacy Level

Elderly individuals with inadequate health literacy largely prefer health education materials designed with a multiple pictures, while elderly persons with adequate health literacy prefer materials with few pictures and more words. The participant with marginal literacy indicated the same preference as those with adequate health literacy. Figure 7 compares the frequency of preferred health education design among the different literacy levels.

Figure 7

Preferred Design of Health Education by Health Literacy Level



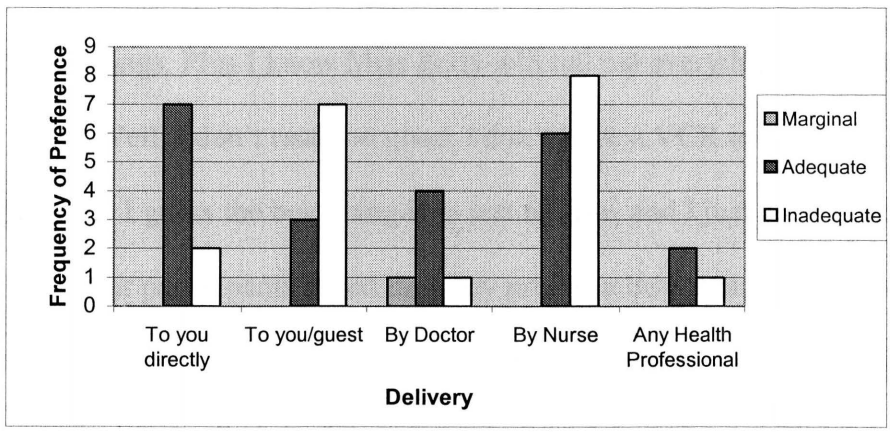
Health Education Delivery Method Preferred by Older Adults Based on Literacy Level

In this study, older adults with inadequate health literacy prefer to have someone with them when they receive health education. Older adults with adequate health literacy prefer to have health education delivered to them directly, although

one participant with adequate health literacy stated her desire to have her spouse with her. She indicated that her spouse needed to be educated on how to recognize hyper or hypoglycemia and what to do in case she experienced either condition. This response uncovers the necessity for family education as well as individual patient education. Individuals with poor literacy skills indicated a preference of receiving health education from a nurse more times than those with adequate health literacy. Figure 8 depicts the preferred delivery methods among older adults with inadequate, marginal and adequate health literacy.

Figure 8

Preferred Delivery Method by Health Literacy Level



Examples of Materials That Participants Found Easy to Use and Understand

Although the participants in this study were given six options from which to choose their preference in terms of type (handout/flyer, brochure, video, audio tape, booklet, full book), 10 across all levels of health literacy stated they prefer verbal

forms of health education. Participants were questioned on methods they employ to recall important health information that is given verbally. Four responded that they tend to remember key information to improve their health. The remaining participants questioned indicated that they make contact with their healthcare or rely on the memory of their caregiver provider when they have questions about the information conveyed. When asked why they prefer verbal health education all respondents indicated a level of trust between provider and their self. The following statements document the importance of trust in the delivery of verbal health education.

" I just listen to what she tells me to do, she['s] not going to tell me wrong. I trust her - she made me well a whole bunch of times."

"It's just better when you talk to me [baby], I can listen better than I read any of these things. Plus I know Miss Polly will tell me everything I need to know."

" Well, I don't read too good, I don't have a VCR or thing to play a cassette tape on, so I guess the best thing is to just tell me, and I just hope I can remember."

Four participants stated that they prefer to be educated through demonstration. One participant with inadequate health literacy reported that she recalls how to self-administer an insulin injection accurately from when she was first taught 30 years ago through a demonstration using a lemon. One participant who self-disclosed her inability to read indicated that she learned to take her medicine based on its shape and color. The participant stated that the healthcare provider would show her when to take which color/shape medication by drawing a picture of a clock that reflected the time that each medication was to be taken. When the patient was unable to comply with

the medication regimen due to her proclaimed inability to match the time on her wall clock with the time in the drawing, the participant stated that the provider then drew other pictures such as a sun which indicated which medicines were to be taken in the morning when she woke up and a person sleeping in bed when medications were to be taken at bedtime.

Participants where asked how they would like to receive basic health information such as Medicare coverage or health promotion information that cannot be demonstrated. The respondents indicated that information of that type be given in the form of an audiotapes of videotape. When questioned as to why audio or videotape was preferred, 11 respondents stated that they do not read well and that written materials would not be beneficial to them. Eight participants stated that they suffer from visual impairments that make it difficult to read information.

A booklet that included large pictures and large type font was mentioned seven times by participants with both low and high health literacy skills. The Diabetes Education department at the hospital where this study was conducted created this booklet. Each participant that mentioned this booklet was able to either locate it, had it with them, or was able to recall various points in the book such as foods they should eat in moderation and what blood glucose levels are too high or too low.

Common Communication Issues Identified

A recurrent theme through out the interview of the entire sample was barriers to communication. Eighteen of the participants indicated that their healthcare provider uses terminology they cannot understand. Almost all of them stated that they

ask the provider to use terms that are easier to understand and that the provider complies. Two of the Hispanic participants indicated they don't know how to get to various clinics because many of the signs are in English. All four of the Hispanic participants stated that they prefer to receive health education verbally with their caregiver present. One preferred this because the caregiver helps her understand what is being said.

A participant with poor literacy skills indicated that her hearing and vision problems were so advanced that she listens and reads the best that she can, and prays that she is doing the right thing. Other participants indicated that visual or hearing impairments makes it difficult for them to communicate effectively as well. A summary of qualitative responses can be found in Appendix G.

Summary of Results

This study reviewed the health literacy skill and health education preferences of a sample of 25 older adults. The sample was largely African-American and Hispanic, and female with a mean age of 76.04 years. While more than half of this study sample did have adequate literacy skills, 44% of the sample was functionally illiterate and 4% were marginally illiterate. The majority of the participants that had inadequate literacy skills were between the age of 80 to 89 years old. The majority of participants with adequate health literacy skills also fell within the 80 to 89 year age range, although a larger number of participants with adequate health literacy fell within the 70 to 79 year age range than participants with inadequate health literacy.

The distribution of literacy skills among homebound older adults and clinic visiting older adults was similar.

Older adults with inadequate literacy skills prefer health education that is either verbal, in the form of a video or audiotapes. However, if written materials are distributed, they prefer materials that have many pictures that illustrate important points. Comparatively, older adults with adequate literacy skills prefer the materials designed with few pictures. Older adults with adequate literacy skills preferred written materials more than those with inadequate literacy skills. Older adults with adequate literacy skills prefer to be spoken to directly more than their counterparts with inadequate literacy skills who prefer to have health education delivered to them with and/or in the presence of a caregiver.

Across literacy levels, older adults found that verbal communication and demonstration of key information made health education easier to understand and act upon. Results of participant interviews revealed that key functions of health maintenance were recalled decades after interactive demonstrations were used. A booklet with large type and pictures was recalled as a health education material that was useful and easy to understand as well. A common concern held by older adults in this study was effective communication. The use of medical terminology and ethnic language barriers were indicated by participants as were sensory changes that impede the conveyance of health information.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

Inadequate health literacy has been shown to be a major obstacle in understanding health information. In addition, individuals with low health literacy tend to experience more difficulty negotiating the health care system, and suffer higher morbidity and mortality. Inadequate health literacy has been documented to occur more in older adults. The impact of health literacy on health outcomes has been widely researched. However, there is little research available that identifies optimal methods of communicating with patients with poor literacy skills. Williams, Davis, Parker, and Weiss concluded that research must be done to discover the most effective techniques of educating patients (2002). This study examines ways of improving the efficacy of health education and health information among older adults through the evaluation of health education preferences.

Summary of Study

The purpose of this study was to determine the health literacy level of older adults and to identify the type, design and method of delivery of patient education materials preferred by older adults, especially those with poor health literacy skills. To achieve this purpose, this researcher assessed the health literacy skills and investigated the health education preferences of a convenience sample of 25 older adults who receive healthcare through the geriatrics department at a large urban public healthcare system. Characteristic of the population served at this particular

institution is minorities of African-American and Hispanic ethnicity as reflected by the make up of the sample. The Short Test of Functional Health Literacy in Adults (STOFHLA) was used to assess the health literacy skills of the sample. Health education preferences were captured through an interview conducted based a questionnaire designed by the author. Prior to the start of the study, the investigator obtained Institutional Review Board and agency approval.

Conclusion

This study sought to answer the following research questions:

1. What is the health literacy level of older adults?
2. What are the health education preferences of older adults?

The health literacy skills of older adults in this sample were analogous with results of similar studies on health literacy. Fifty-two percent of the participants had adequate health literacy, while 44% had inadequate literacy abilities. Inadequate health literacy occurred more among African-American and Hispanic participants in this study than poor literacy skills did among Caucasian participants. However, due to the disproportionate representation of race/ethnicity, it is difficult to indicate from this study if race and ethnicity played a role in literacy levels. The occurrence of inadequate literacy skills increased as age increased. However, without congruency of sample size among age categories, it is difficult to determine from this study, whether health literacy skills decrease with age. There were more women in this study than men. Based on that characteristic of this sample, it is difficult to determine if health literacy skills occur more in men or women.

The health education preferences of older adults include verbal, demonstrations, and audio and videotapes. Based on the results of this study, the author concludes that older adults with either poor or adequate literacy skills prefer verbal interactions with their healthcare provider over any other form of communication. However, older adults with inadequate literacy skills prefer materials on cassette and/or videotape and information with mainly pictures. Conversely, older adults with adequate literacy skills prefer materials with words and few pictures.

Discussion and Implications

Forty-eight percent of this study sample had less than adequate health literacy abilities. Creators of the STOFHLA indicated that the average time to complete the test was 10 minutes. Variably, in this study it took the participants between 10 to 20 minutes to complete the STOFHLA as they spent a large amount of time re-reading the information. The participants seemed more concerned with selecting the term that best fit the sentence rather than comprehending what the story told. In addition, the 14-point font had to be enlarged even further to make it easier for older adults to see. It is unclear if these factors impacted the results of the STOFHLA scores collected in this study. Regardless, the results of this study indicate that individuals with the greatest health needs who could benefit the most from health education and promotion, older adults, are unfortunately the least able to read and comprehend health information. With that, there is a critical need to produce health education that is usable for this population.

Improving the Efficacy of Health Education Materials for Older Adults with Poor Literacy Skills

This study reveals that older adults with inadequate health literacy prefer to receive their health education verbally, or in the form a video or cassette tape. Perhaps, health educators can move toward providing health information on audio or videotape. The department of geriatrics, in which the author is employed, produced an exercise video for seniors to educate them on the importance of physical activity and healthy eating. To date, the video has been widely requested and evaluation methods are in place to assess the effectiveness of the video on achieving its purpose. The National Institute on Aging distributes a similar video and reports that it has been effective in increasing physical activity among older adults (National Institute of Aging, 2003). In 1998, the Journal of Family Practice published an article that supports the use of videos as a medium of delivering health education. The results published indicate that anxiousness was decreased as short-term memory recall of information increased. While the results from the Journal Family Practice study did not support long-term memory recall, the author postulates that providing a video to the patient that can be referred as recall of information fades, may enhance long-term reference to key information (Journal of Family Practice, 1998).

In this study, older adults with inadequate health literacy preferred health education that included pictures more than older adults with adequate health literacy. The author suggests that pictures be used to demonstrate key information, like identifying foods that can and cannot be eaten by an individual who is living with

diabetes or hypertension. The use of pictures and illustrations in health education has been proven to be effective in enhancing the comprehension of health education by patients. Austin, Matlack, Dunn, Kesler, and Brown found that 65% of patients who received emergency room discharge instructions that included pictures were able to answer at least 50% of the discharge instruction comprehension questions correctly, compared to 43% of patients who received the same instructions without pictures (1995). The Johns Hopkins Pictograph Research project created more than 100 pictures that illustrate managing illnesses, understanding treatment and proper foods to eat when dealing with illnesses affected by poor nutrition (Center for Medicare Education, 2000). Health educators at the Southside Area Health Education Center in Virginia use color coding of medication bottles and other visual tools to assist patients who are functionally illiterate (Center for Medicate Education, 2000).

The Texas Commission for the Blind (TCB) works with Recordings for the Blind and Dyslexic (RFB&D) to provide information on cassette tape for individuals who are legally blind. Recordings for the Blind and Dyslexic prepares educational materials and text books on audiotapes for persons who are legally blind or have physical or perceptual disabilities which prevent them from reading regular print (Texas Commission for the Blind, 2003). Health educators may choose to utilize the services of their state's commission for the blind to provide education materials in the form of cassette. Older adults in this study overwhelmingly preferred verbal communication. The use of audiotapes as well as videotapes to provide health education was suggested as a medium to be used among low literate and non-English

speaking individuals (Tuffnell, Nuttall, Raistrick, & Jackson, 1994). Perhaps health educators can tape record their education session with the client and provide the recording for the patient rather than a handout. However, it is important to assess the availability of instruments in the patient's dwelling to operate the video or audiotapes.

Participants in this study seem to experience more difficulty in comprehending the Medicaid portion of the STOFHLA than the X-ray instructions portion. The Medicaid section included multiple polysyllabic words, which may have impacted its readability. In addition, effective communication was revealed as a concern of older adults during the interview phase of this study. The main issues with communication were use of medical terminology and language barriers. These results are supported by studies done by Plimpton and Root (1994) as well as Gazmararian et al. (1999). In the Plimpton and Root study it was found that education materials were ineffective due in large part to the use of medical jargon and overload of technical health terms. The Gazmararian study indicated that language barriers impacted literacy skills and the ability to comprehend health information. The author believes that health educators may find it beneficial to replace multi-syllabic terms with easy to understand terms when speaking with clients (1999). It may be beneficial to older adults with poor literacy skills if the health educator speaks slowly and clearly and breaks key information down into small sentence. There was little interest among the participants in this study to have information conveyed to them in the form of a song, but a story may assist in comprehension. The author proposes that having the client repeat important information back to the practitioner helps to assure that the patient

has heard what was said, but to assure they understand, have the patient dictate a story that details important instructions and information and how it used. This method is similar to the "teach-back" method discussed by Demott in 2001 as a method of identifying if a patient understands health information.

Language barriers impede the comprehension of health information available in English for individuals who do not understand the English language. Tuffnell, Nuttall, Raistrick, and Jackson reported in 1994, that it is important to consider the different dialects of ethnic languages during the translation process. Tuffnell and associates also suggest the utilization of the services of a translator. There are many variables that must be considered when developing health education materials or programs for individuals with inadequate health literacy. Table 3 summarizes key steps that health educators should take in improving the efficacy of health education.

Table 3

Summary of Considerations for Health Educators Working with Clients with Low Literacy Skills

Considerations for Health Educators Working With Low Literacy Clients
Consider poor health literacy when designing health education and health promotion materials.
Considered other factors associated with health literacy such as cultural or language barriers, family support, gender, and age.
Avoid imparting too much information in a limited space or time frame.
Assess the readability and functionality of health education materials using one of the many evaluation tools available.
Assure that key information is clearly conveyed both verbally and written.
Utilize the health education preferences of individuals with limited literacy skills.

The author strongly avers that the effectiveness of health education is not based solely on enhancing materials and improving communication, but largely on the individual's locus of control, beliefs and perceptions about health, self-efficacy, social learning styles, and accessibility. In a study done in 2002, it was found that self-management skills were impacted more by social factors and health beliefs than by literacy (Yoffee). The theoretical basis of locus of control is individual perception of events. An individual may attribute the occurrence of an event to his or her own behavior or to an external force, such as chance or luck that is out of their control (Lefcourt, 1984; Lorig, 2000). If an individual's locus of control is internal, or they believe events occur based on their own behavior, they are more likely to be aware of

environmental factors that may influence future behavior and therefore take steps to improve environmental conditions (Lorig, 2000). Individuals with internal locus of control also place greater value on skill or achievement reinforcement (Lorig, 2000). Conversely, individuals with external locus of control perceive events as occurring due to luck or chance and do not take steps to modify their behaviors (Lefcourt, 1984). Thus, health education efforts may be more effective on an individual who believes they control their own destiny, whereas an individual with external locus of control may not adhere to health education because they believe that future events and outcomes are controlled by an external force. African-Americans have a propensity towards external locus of control believing that God controls the events in their life attributing little to their behavior in health outcomes (Swinney, 2002). While health literacy and locus of control are believed to impact compliance, locus of control may supercede the ability to understand health information. An individual with external locus of control may have adequate health literacy but may perceive that there is nothing they can do to alter "fate" (Hussey & Gilliand, 1989).

An individual's decision to take actions directed toward improving their health is often indicative of their beliefs and perceptions about illness and health. The Health belief Model (HBM) attempts to predict health-related behavior in terms of certain belief patterns. The HBM speculates that a person's motivation to undertake a health behavior is based upon individual perceptions, ease of modifying behaviors, and likelihood of action (Glanz, Rimer, & Lewis, 2002). Individual perceptions address the perception of illness or disease in terms of the importance of health to the

individual, the perceived susceptibility to potential outcomes of the disease, and perceived severity of the illness or disease (Glanz et al., 2002). Factors that impact the ease of modifying behaviors include demographic variables, perceived threat of change, and environmental or social cues to action. The likelihood of action involves the probability of taking the appropriate health behavior based largely on ease of modification. The combination of these factors generally triggers action or lack of action (Glanz et al., 2002).

An individual, whose health perceptions lead them to believe that a particular illness is not of significant importance to them or that they are not susceptible to the potential outcomes, may not believe that education about the illness or how to manage it is necessary. On that same accord, if an individual thinks the likelihood and feasibility of changing their environment or behavior is low, the importance and relevance of health education, used to change their environment, may be perceived as low as well.

Self-efficacy is an individual's belief that he or she can achieve the behaviors necessary to produce a certain outcome (Glanz, Rimer, & Lewis, 2002). Essentially, it is one's self-perceived ability to impact an outcome. For example, an individual with internal locus of control might also need a high degree of self-efficacy to believe that the behaviors necessary to change their outcomes are achievable. Lower self-efficacy is related to lower motivation to address illness and disease (Ribisl, Winkeby, Fortmann, & Flora, 1998). The presence of low self-efficacy may prevent even an

individual with strong literacy skills from adhering to health information, thereby reducing its effectiveness even still.

There may be factors in an individual's environment, situation, existing habitual patterns or capability that affects the way they learn. Bandura's Social Learning Theory or Social Cognitive Theory suggests that those constructs as well as others interplay and influence behaviors (Glanz, Rimer, & Lewis, 2002). Factors in an individual's environment or situation may impact their decision to act on health information, therefore, the author suggests those factors be considered when providing on going health education. Bandura discusses the relationship of an individual's self-control and reciprocal determinism (the dynamism of the interplay of the individual, behavior and the environment during a behavior) (Glanz et al., 2002). An individual with adequate health literacy may have poor self-control and a forceful reciprocal determinism that impacts their health decisions, and therefore their health outcomes. Thus, the author implores health educators to view health literacy, while a critical factor, as just one of many factors that impact the effectiveness of health education, and apply careful consideration to the multi-dimensional aspects of locus of control, health beliefs, self-efficacy, and social learning in preparing health education.

Accessibility of health information further impacts its effectiveness. Afterall, if health education does not reach the audience, it cannot achieve its purpose. There is a wealth of health information available even that which is designed for the functionally illiterate. However, connecting the individual with the education may

present a challenge. It is important for health educators to seek alternative methods of reaching their target audience. In a study done in 1997, Gollop found that urban, older, African-American women obtain health information from the mass media, and members of their social networks, in addition to their physician's office. Mass media and social networks are two modes through which health educators can disseminate health education. The potential that the health education is accepted and utilized may be enhanced if it is provided through community networks. Gollop also found that health education seeking behaviors were impacted by access to health information (1997).

Improving the effectiveness of health education, like health literacy, goes beyond readability. The author implores health educators to develop an encompassing program that utilizes available community resources and an individual's social networks, and family members while considering the individual's health beliefs, locus of control and self-efficacy as determinants of compliance with health education.

Recommendations for Future Studies

This study provides insight into the health education preferences of older adults so that preferences can be used in the development of health education materials to improve their effectiveness. Whether or not utilizing preferences in the design of health education improves its effectiveness has not been proven. The author suggests that future research be considered to evaluate the effectiveness of health education programs and materials designed using preferences or any of the other suggestions for improving efficacy of health education described in the literature.

The author found during the course of this study that a large number of the participants in the house calls program relied heavily on their caregiver to administer their medications and to assist in completing Activities of Daily Living.[4] Through observation, the author witnessed a caregiver unable to explain why the patient was out of compliance with her medication and had not kept accurate documentation of the patient's blood glucose levels. It may be beneficial to examine the role that the health literacy level of the caregiver has in health outcomes of the patients.

The Internet has changed healthcare delivery and access to health education by providing accurate research-based health information to patients and clinicians. Its use presents many opportunities to increase the availability of health education (Brodie, Flourney, Altman, Blendon, Benson, & Rosenbaum, 2000, Metcalf, Tanner, & Coulehan, 2001). However, there is little research on the accessibility of Internet information for elderly and/or individuals with limited literacy skills. Older adults may be perceived as those who are not technologically savvy. However, the Austin-Wells, Zimmerman, and McDougall (2003) study suggested that older community-dwelling adults preferred PowerPoint presentations to overheads or flipcharts. This preference may indicate a change in the reception of older adults to new technology. In 2002, Neafsey, Strickler, Shellman, and Chartier found that older adults who were educated about the potential drug interactions caused by over the counter medications with prescription medications utilizing an interactive computer program reported a decrease in adverse self-medication behaviors. This is significant as older adults in

[4] Activities of Daily Living include bathing, eating, toileting, transferring, continence, and dressing (Parkland Health & Hospital System, 2003)

that study who were educated without the use of an interactive computer program (ICP) did not report any changes in adverse self-medication behaviors. Neafsey and associates also found that users of the ICP had greater knowledge and self-efficacy scores in comparison to those who did not use the ICP. Neafsey also found that participants using the ICP were satisfied with the program.

The Neafsey and Austin-Wells (2002; 2003) studies are pioneering research into the receptiveness and potential use of computer and other forms of technology among older adults. The author believes that further evaluation of the feasibility and accessibility of using technically advanced methods of delivering health education should be done. The results would lend to the usefulness of the Internet as a forum of disseminating health education materials, as well as other forms such as PowerPoint presentations or email communication of health information.

In addition to, if not precedent to, designing health education programs and materials to meet specifics needs of persons with limited literacy skills, there is a need for awareness of health literacy. Although health education is a key element in improving disease management and health promotion with the potential to enhance health outcomes, nationally, fewer than 10 percent of adults who could benefit from literacy programs and health education are currently being served (Journal of Family Practice, 1998). McVea, Venugopa, Crabtree and Atta report that a many of the providers in family medicine clinics examined in their 2000 study did not have a formalized method of conducting health education, nor was there a clear

understanding or awareness of the link between health literacy and comprehending health education.

There is an overwhelming need to enhance awareness of health literacy among healthcare providers. Streiffer and Nagle admit to a lack of awareness among primary care providers about problems associated with health literacy as well as resources available to providers on enhancing health education (2000). Streiffer and Nagle report that there is a need to enhance awareness of, and to accentuate the use of, effective health education in family practice offices (2000). In 2002, Williams reported that there is a significant need for healthcare providers to recognize inadequate health literacy in their patients and to understand the barriers that inadequate literacy skills have to appropriate healthcare.

To increase awareness and expand the reach of literacy programs, the author suggests the formation of coalitions or agencies such as by Health Literacy Consulting (HLC), a firm that spearheads many initiatives geared towards promoting the dissemination of understandable health information globally and that initiated health literacy awareness month. HLC has designated October as health literacy awareness month. During this month, HLC provides flyers brochures and campaign materials to grassroots organizations interested in increasing awareness of health literacy. This initiative is designed to assist healthcare professionals in reaching that target population who could greatly benefit from health education (HLC, 2003). The formation of such coalitions could use medical conferences and publications as a forum to increase awareness of health literacy issues. In addition, health literacy

should be included in course curriculums for healthcare practitioners. Williams, Davis, Parker and Weiss suggest increasing awareness of health literacy of medical students and physicians in the form of continuing medical education and other educational forums (2002).

Awareness of the problems associated with poor literacy may trigger health educators to evaluate the literacy level of their clients. If health practitioners are aware of a literacy problem, they may be better prepared to engage in a health education session with the patient. In an editorial brief, Demott states that health literacy skill assessment efforts should be done on a targeted case by case basis and that a sign of a literacy problem could lie in repeat visits to the hospital or repeated non-compliance with instructions (2001). However, there are few discrete and quick methods of identifying literacy levels of patients. The author suggests that further research be conducted into discovering accurate, quick and confidential ways to detect a literacy problem in individual patients.

The author also recommends that investigation into the potentiality and effectiveness collaboration with community-based agencies to enhance to use of health education by target populations be conducted. Perhaps involvement of and collaboration with community agencies that primarily serve older adults will create more forums for health education to be delivered and received, while further enhancing awareness of the health literacy problem. The potential to collaborate with organizations that are recognized as places where an individual can obtain educational information, such as the public library system, should also be evaluated.

In a 1997 study by Gollop, it was discovered that older urban African-American women have a highly positive perception of the public library. Although the results also indicated that only a small segment use the library regularly, the potential to establish a collaborative effort could be built upon the positive perception of the library held by the target population (Gollop, 1997). This and other efforts should be attempted to improve the effectiveness of health education especially among individuals with inadequate health literacy abilities.

The author believes that the development of a paradigm to serve as a framework of addressing health literacy level in the learning process should be developed. This paradigm could serve as a tool that constructs the many considerations that health educators must take in designing health education programs for individuals with inadequate health literacy into one theoretical framework. There are many health education and health promotion theories such as the health belief model (HBM) or social learning theory (SLT) that address learning and acting on health information. These theories can serve as the foundation from which an all-encompassing model can be built. The author suggests that a newly developed paradigm include the following considerations: age, race, ethnicity, gender, language, culture, health beliefs, self-efficacy, and locus of control, technology, readability of information, community collaboration, environmental constructs, learning style, and preference. This paradigm could serve as a guide for healthcare professionals to utilize in the development of programs for individuals with inadequate literacy skills.

Additional Considerations

Much of the literature on health literacy addresses the relationship between medication errors and inadequate literacy skills. These medication errors lead to decreased health outcomes. The author questions the responsibility of pharmaceutical companies to simplify drug information such as side effects and contraindications, and the role of government in legislating such changes. Pfizer Inc. has taken tremendous steps in addressing literacy problems through funding research and providing health education for individuals with low health literacy. Perhaps other pharmaceutical companies should follow suit. Organizational policy has been effective in instituting change. Perhaps organizations can adopt policies that address health literacy in terms of enhancing patient safety. There are multiple opportunities for national, state, local and organizational policy to address and eliminate the affects of health literacy on health outcomes and quality of life.

Inadequate health literacy is epidemically affecting health outcomes and the effectiveness of the very health education that is intended to improve health outcomes. Inadequate health literacy disproportionately affects minorities and older adults, the two groups who may benefit from health education the most. In addition, health literacy contributes to exacerbated healthcare expenditures. While the etiology of poor literacy skills remains arcane, many contributing factors have been identified and discussed in this study. Health educators must maintain a plenary awareness of the factors that contribute to and the effects of poor health literacy. This awareness will enable practitioners to continually seek methods of enhancing the efficacy of

health education until the health hindering and quality of life impacting effects of poor health literacy are eradicated.

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APPENDIX A

Institutional Review Board Approval Letter

SOUTHWESTERN

THE UNIVERSITY OF TEXAS
SOUTHWESTERN MEDICAL CENTER
AT DALLAS

Institutional Review Board

TO: Kathleen Spears, MHA, PhDc
Geriatrics

FROM: David Karp, MD, PhD
Institutional Review Board 1 Chairperson
IRB - 8843

DATE: 15 August 2003

RE: **Expedited Approval of Protocol, Consent Form, HIPAA Waiver Form, and Acknowledgement of the HIPAA Authorization Form**
IRB Number: 0803-513
Title: The Effects of Inadequate Health Literacy on Pharmacy Costs Among Older Adults: Addressing the Issue Through Identifying Health Education Preferences

The Institutional Review Board determined that this research was eligible for expedited review in accordance with 45 CFR 46.110(a)-(b)(1), 63 FR 60364, and 63 FR 60353. The Board approved the protocol and informed consent document(s) dated 15 August 2003 and waiver form dated 14 August 2003 as well as the acknowledgement of the authorization form dated 15 August 2003. IRB approval of this research lasts until 14 August 2004. If the research continues beyond twelve months, you must apply for updated approval of the protocol and informed consent document one month before the date of expiration noted above. DHHS regulations permit oral presentation of informed consent information in conjunction with a short form written consent document (stating that the elements of consent have been presented orally) and a written summary of what is presented orally. A witness to the oral presentation is required, and the subject must be given copies of the short form document and the summary. **Your approved subject sample size is 100 subject(s).**

If applicable, when this procedure is used with subjects who do not speak or read English, (1) the oral presentation and the short form written document should be in a language understandable to the subject; (2) the IRB-approved English language informed consent document may serve as the summary; and (3) the witness should be fluent in both English and the language of the subject.

If applicable, at the time of consent, (1) the short form document should be signed by the subject (or the subject's legally authorized representative); (2) the summary (i.e., the English language informed consent document) should be signed by the person obtaining consent as authorized under the protocol; and (3) the short form document and the summary should be signed by the witness. When the person obtaining consent is assisted by a translator, the translator may serve as the witness.

The IRB requires that you report to the Board any unexpected adverse events that occur during the study. In the future, if you require a modification to the protocol, obtain review and approval by the Board prior to implementing any changes except when prompt changes are necessary to eliminate apparent immediate hazards to a subject.

The IRB requires that all personnel who interact with research subjects or who have access to research data identified with the names of subjects receive a copy of the Multiple Project Assurance on file with the Department of Health and Human Services. Document their agreement to comply with the statements therein. Such documentation should be kept with other records of the research, which are subject to review by the IRB. Copies of the Multiple Project Assurance and the Federal regulations governing the participation of human subjects in research (45 CFR 46) are available on the IRB website (http://www2.swmed.edu/irb) or from Pat Fisher at irb@utsouthwestern.edu.

Approval by the appropriate authority at a collaborating facility is required before subjects may be enrolled on this study.

Reminder: Please put the following information on the footer of <u>every</u> page of the consent form: 1) IRB file number, 2) consent form approval date (date of this memo) and consent form expiration date (see first paragraph).

If you have any questions related to this approval or the IRB, you may telephone Tanya Poe at 214.648.2137.

Attachment(s): Consent Form, HIPAA Waiver Form, and HIPAA Authorization Form

DK/tp

TWU
TEXAS WOMAN'S UNIVERSITY
DENTON DALLAS HOUSTON

Institutional Review Board
Office of Research and Sponsored Programs
P.O. Box 425619, Denton, TX 76204-5619
940-898-3378 Fax 940-898-3416
e-mail: IRB@twu.edu

September 16, 2003

Ms. Kathleen Spears

Dear Ms. Spears:

Re: Examination of Health Education Preferences Among Older Adults with Low Health Literacy

The above referenced study has been reviewed by the TWU Institutional Review Board (IRB) and has been determined to be exempt from further review because it has been reviewed and approved by an Institutional Review Board at the University of Texas Southwestern Medical School (UTSW). The TWU IRB understands that all the participants will be recruited from Parkland Health and Hospital System, Department of Geriatrics.

Another review by the TWU IRB is required if your project changes in any way. If you have any questions, feel free to call the TWU Institutional Review Board at the phone number listed above.

Sincerely,

Dr. Linda Rubin, Chair
Institutional Review Board - Denton

cc. Dr. Kweethai Neill, Department of Health Studies
Dr. Susan Ward, Department of Health Studies

APPENDIX B

Agency Approval Letter

Parkland
Health & Hospital System

COPC Administration

August 25, 2003

Jennifer Martin, PhD
Texas Woman's University
Dean, The Graduate School
P.O. Box 425649
Denton, TX 76204-5649

Parkland Memorial Hospital

RE: Agency Approval Letter

Community Oriented Primary Care

Dear Dr. Martin:

This letter is to acknowledge that Kathleen N. Spears has been granted permission to conduct her Doctoral study on health literacy in older adults at Parkland Health & Hospital System in the Community Oriented Primary Care Clinics (COPC). As Vice President - COPC Operations, I am fully aware of the purpose and protocol of the study and have approved its conduction. If you have any questions, please call 214-590-0101.

Parkland Community Health Plan Inc.

Sincerely,

Parkland Foundation

Sharon Phillips, RN, MBA
Vice President, COPC
Parkland Health & Hospital System

APPENDIX C

Permission to use Short Test of Functional Health Literacy in Adults

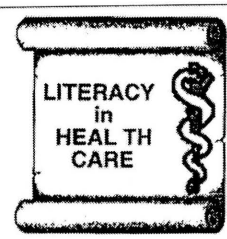
From: "Ruth Parker" <rpark01@emory.edu>
To: "KATHLEEN SPEARS" <K1SPEA@parknet.pmh.org>
Date: 6/15/03 11:53AM
Subject: Re: TOFHLA

You are absolutely able to use the TOFHLA in your work. It has been used in hundreds of studies now, and is available for a small cost (covers duplication, handling) from Peppercorn books, which you can access through their web site.
best of luck in your work...
ruth parker
----- Original Message -----
From: "KATHLEEN SPEARS" <K1SPEA@parknet.pmh.org>
To: <rpark01@emory.edu>
Sent: Friday, June 13, 2003 8:20 PM
Subject: TOFHLA

> Dr. Parker:
>
> I am writing to request permission to use a health literacy measurement
> tool that you and your team designed...the TOFHLA-short version. I am a
> candidate for the degree of Doctor of Philosophy in Health Studies at
> Texas Woman's University in Denton, Texas and am in the process of
> conducting my dissertation research. The focus of my study will be on
> the relationship, if any, between health services utilization rates of
> older adults and health literacy. I will also interview the
> participants with lower health literacy to discover their preferred
> method of receiving health education/health information.
>
> Please tell me how I can obtain permission and a copy of the TOFHLA -
> short version in English and in Spanish. I hope to hear from you soon!
>
> Thank you,
> Kathleen
>
> Kathleen N. Spears, MHA
> Education & Outreach Coordinator
> Department of Geriatrics
> Parkland Health & Hospital System
> Dallas, TX
> 214-590-0411
>
> "...take your dreams and make them real!"
>
> PLEASE NOTE: This message (including any attachments) is intended only
> for the use of the addressee(s) and may contain information that is
> privileged and confidential. If you are the intended recipient, further
> disclosures are prohibited without proper authorization. If you are not
> the intended recipient or an authorized representative of the intended
> recipient, the use, dissemination or reproduction of this communication

APPENDIX D

Short Test of Functional Health Literacy in Adults



Test of Functional Health Literacy in Adults

Short Test of Functional Health Literacy in Adults (STOFHLA)

STOFHLA
Large Print Version
English, 14 point font

Short Test of Functional Literacy in Adults

STOFHLA

READING COMPREHENSION

HAND PATIENT THE READING COMPREHENSION PASSAGES TO BE COMPLETED. FOLD BACK THE PAGE OPPOSITE THE TEXT SO THAT THE PATIENT SEES ONLY THE TEXT.

PREFACE THE READING COMPREHENSION EXERCISE WITH:

> "Here are some other medical instructions that you or anybody might see around the hospital. These instructions are in sentences that have some of the words missing. Where a word is missing, a blank line is drawn, and 4 possible words that could go in the blank appear just below it. I want you to figure out which of those 4 words should go in the blank, which word makes the sentence make sense. When you think you know which one it is, circle the letter in front of that word, and go on to the next one. When you finish the page, turn the page and keep going until you finish all the pages."

STOP AT THE END OF 7 MINUTES

PASSAGE A: X-RAY PREPARATION

PASSAGE B: MEDICAID RIGHTS AND RESPONSIBILITIES

PASSAGE A

Your doctor has sent you to have a _____ X-ray.

a. stomach
b. diabetes
c. stitches
d. germs

You must have an _____ stomach when you come for _____.

a. asthma
b. empty
c. incest
d. anemia

a. is.
b. am.
c. if.
d. it.

The X-ray will _____ from 1 to 3 _____ to do.

a. take
b. view
c. talk
d. look

a. beds
b. brains
c. hours
d. diets

THE DAY BEFORE THE X-RAY.

For supper have only a _____ snack of fruit, _____ and jelly,

a. little	a. toes
b. broth	b. throat
c. attack	c. toast
d. nausea	d. thigh

with coffee or tea.

After _____ , you must not _____ or drink

a. minute,	a. easy
b. midnight,	b. ate
c. during,	c. drank
d. before,	d. eat

anything at _____ until after you have _____ the X-ray.

a. ill	a. are
b. all	b. has
c. each	c. had
d. any	d. was

THE DAY OF THE X-RAY.

Do not eat _____.

a. appointment.
b. walk-in.
c. breakfast.
d. clinic.

Do not _____, even _____.

a. drive,	a. heart.
b. drink,	b. breath.
c. dress,	c. water.
d. dose,	d. cancer.

If you have any _____, call the X-ray _____ at 616-4500.

a. answers,	a. Department
b. exercises,	b. Sprain
c. tracts,	c. Pharmacy
d. questions,	d. Toothache

PASSAGE B

I agree to give correct information to _____ if I can receive Medicaid.

a. hair
b. salt
c. see
d. ache

I _____ to provide the county information to _____ any

a. agree
b. probe
c. send
d. gain

a. hide
b. risk
c. discharge
d. prove

statements given in this _____ and hereby give permission to

a. emphysema
b. application
c. gallbladder
d. relationship

the _____ to get such proof. I _____ that for

a. inflammation
b. religion
c. iron
d. county

a. investigate
b. entertain
c. understand
d. establish

Medicaid I must report any _____ in my circumstances

a. changes
b. hormones
c. antacids
d. charges

within _____ (10) days of becoming _____ of the change.

a. three
b. one
c. five
d. ten

a. award
b. aware
c. away
d. await

I understand _____ if I DO NOT like the _____ made on my

a. thus
b. this
c. that
d. than

a. marital
b. occupation
c. adult
d. decision

case, I have the _____ to a fair hearing. I can _____ a

a. bright
b. left
c. wrong
d. right

a. request
b. refuse
c. fail
d. mend

hearing by writing or _____ the county where I applied.

a. counting
b. reading
c. calling
d. smelling

If you _____ AFDC for any family _____, you will have to

a. wash
b. want
c. cover
d. tape

a. member,
b. history,
c. weight,
d. seatbelt,

_____ a different application form. _____ , we will use

a. relax
b. break
c. inhale
d. sign

a. Since,
b. Whether,
c. However,
d. Because,

the _____ on this form to determine your _____ .

a. lung
b. date
c. meal
d. pelvic

a. hypoglycemia.
b. eligibility.
c. osteoporosis.
d. schizophrenia.

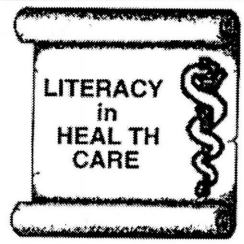
STOFHLA: Reading Comprehension
Scoring Key

14 Point Font

Passage A	Passage A	Passage A	Passage B	Passage B	Passage B
A1 a	A6 a	A12 c	B17 c	B24 d	B33 d
A2 b	A7 c	A13 b	B18 a	B25 b	B34 c
A3 d	A8 b	A14 c	B19 d	B26 c	B35 b
A4 a	A9 d	A15 d	B20 b	B27 d	B36 b
A5 c	A10 b	A16 a	B21 d	B28 d	
	A11 c		B22 c	B29 a	
			B23 a	B30 c	
				B31 b	
				B32 a	

APPENDIX E

Short Test of Functional Health Literacy in Adults in Spanish



Test of Functional Health Literacy in Adults

Short Test of Functional Health Literacy in Adults (STOFHLA)

STOFHLA
Large Print Version
Spanish, 14 point font

Short Test of Functional Literacy in Adults

STOFHLA-SPANISH

READING COMPREHENSION

HAND PATIENT THE READING COMPREHENSION PASSAGES TO BE COMPLETED. FOLD BACK THE PAGE OPPOSITE THE TEXT SO THAT THE PATIENT SEES ONLY THE TEXT.

PREFACE THE READING COMPREHENSION EXERCISE WITH:

> "Estas son ALGUNAS instrucciones médicas que Ud. o cualquier persona puede encontrar aquí en el hospital. En cada frase faltan algunas palabras; donde falta la palabra, hay un espacio en blanco y luego hay 4 posibles palabras para escoger. Quisiera que Ud. lea la frase y decida cuál de estas cuatro palabras es la palabra que falta en las frase, o que le da mejor sentido a la frase. Cuando Ud. decida cuál es la palabra correcta para aquel espacio, marque con un círculo la palabra que Ud. ha escogido y siga leyendo. Cuando termine la página, continue en la página siguiente hasta terminar todas."

STOP AT THE END OF 7 MINUTES

PASSAGE A: X-RAY PREPARATION

PASSAGE B: MEDICAID APPLICATION

LECTURA A

Su doctor le ha _____ a sacarse Rayos X del _____.

a. distinguido	a. estómago.
b. mandado	b. caminar.
c. corrido	c. vestido.
d. formalmente	d. comunmente.

Cuando venga por los _____ debe de tener el estómago _____.

a. libros	a. volar.
b. fiel	b. cabeza.
c. Rayos X	c. vacío.
d. dormir	d. contento.

Este examen de Rayos X _____ de 1 a 3 _____.

a. durará	a. millas.
b. cantará	b. luz.
c. permanente	c. Rayos X.
d. silla	d. horas.

El día antes de _____ radiografía, cene solamente alguna _____,

a. del	a. bailar,
b. alguna	b. inteligente,
c. la	c. fruta,
d. botón	d. receta,

pan con mermelada, y _____ o té. Después de

a. lentes
b. café
c. cantar
d. pensamiento

la _____, no debe comer ni _____ absolutamente

a. taciturno,	a. beber
b. vehículo,	b. nadar
c. medianoche,	c. cabello
d. poder,	d. conocimiento

nada hasta después _____ que le hayan tomado la _____.

a. sentar	a. radiografía.
b. cansar	b. calcomanía.
c. de	c. advertencia.
d. contra	d. estrujar.

El día de la radiografía, no _____. No beba nada, ni _____.

a. faceta.	a. agua.
b. desayune.	b. hierba.
c. observe.	c. avaro.
d. estruendo.	d. maleta.

Si Ud. tiene alguna _____, llame al departamento de Rayos X

a. pregunta,
b. respuesta,
c. caliente,
d. doctor,

al número (310) 222-2821.

LECTURA B

Yo acepto dar información correcta para ver si puedo recibir Medi-Cal.

Yo acepto proveer _____ al condado para verificar _____

a. información	a. desde
b. positivo	b. cualquier
c. procurar	c. fascinante
d. visión	d. bien

declaración dada en esta _____ y por consiguiente doy _____

a. solicitud	a. boletos
b. periódico	b. permiso
c. fantástico	c. mirar
d. amplitud	d. con

al condado para obtener _____ información. Yo entiendo que

a. dicha
b. noticias
c. estar
d. testarudo

_____ la responsabilidad de _____ a Medi-Cal dentro

a. una	a. comentar
b. desigualdad	b. papel
c. ganas	c. notificar
d. tengo	d. desalmado

de _____ período de diez días _____ de enterarme

a. un	a. recipiente
b. a	b. entonces
c. tiempo	c. después
d. llamar	d. formula

de un _____ en mi situación. Yo _____ que si no estoy

a. canto	a. saco
b. cambio	b. letra
c. girar	c. entiendo
d. mes	d. de

_____ con la decisión tomada _____ mi solicitud, yo

a. estudiando	a. arriba
b. satisfecho/a	b. sobre
c. lección	c. pensado
d. sin	d. pronto

tengo _____ a una audiencia con _____ condado. Yo

a. derecho	a. el
b. prosperidad	b. estos
c. salir	c. increíble
d. valor	d. hospital

puedo pedir _____ audiencia escribiendo o _____ a la

a. estipular	a. candado
b. confianza	b. honesto
c. donde	c. llamando
d. una	d. llorando

oficina del _____ donde entregué mi solicitud.

a. condado
b. escuela
c. ver
d. altivo

_____ Ud. quiere AFDC/Welfare para _____

a. A
b. Corriendo
c. Decididamente
d. Si

a. deber
b. cualquier
c. escritorio
d. vacilar

miembro de su familia, tiene que llenar otro tipo de solicitud.

STOFHLA: Reading Comprehension
Scoring Key

Spanish: 14 Point Font

Passage A	Passage A	Passage B	Passage B	Passage B
A1 b	A10 c	B17 a	B24 a	C34 a
A2 a	A11 a	B18 b	B25 c	C35 d
A3 c	A12 c	B19 a	B26 b	C36 b
A4 c	A13 a	B20 b	B27 c	
A5 a	A14 b	B21 a	B28 b	
A6 d	A15 a	B22 d	B29 b	
A7 c	A16 a	B23 c	B30 a	
A8 c			B31 a	
A9 b			B32 d	
			B33 c	

APPENDIX F

Health Education Preferences Questionnaire

Health Education Delivery Questionnaire

Interviewer lead:

Health education is the information that your healthcare provider gives you that talks about your illness or health status. Sometimes your social worker gives it to you or your doctor or nurse. Even the pharmacist or X-ray tech gives you health information. Tell me about a piece of health education material you've gotten lately (to assure the participant understands what health education materials are. Avoid using a sample, the participants responses may be impacted by the recency effect.). Can I ask you a few questions about the health education materials?

TYPE

Which TYPE of health education do you prefer? You can choose more than one

Handouts/Flyers

Brochures

Videos

Cassette tapes

Booklets

Large books

Is there a TYPE you prefer that I did not talk about?

Is there one you like the best?

Is there one you like the least?

DESIGN

Which DESIGN is most appealing to you? You can choose more than one

Material with lots of pictures

Materials with just a few pictures

Materials with no pictures

Information that is provided in a song

Information that is provided in a cartoon video

Information that is provided in color on a video

Information that is provided in black & white on a video

Materials with large typing/letters

Materials with pictures and words

Materials with just words

Materials with just pictures

Is there a design that you prefer that I didn't ask you about? You can choose more than one

Is there one you like the best?

Is there one you like the least?

DELIVERY

Which way do you like to have your health education DELIVERED?

To you directly

To you and who ever comes to the clinic with you

To just who comes to the clinic with you

Given to you/or family member by just your doctor

Given to you/family member by just your social worker

Given to you/family member by just your pharmacist

Given to you/family member by any of your healthcare providers, it doesn't matter who

Is there a delivery method you prefer that I didn't ask you about?

Is there one you like the best?

Is there one you like the least?

APPENDIX G

Health Education Preferences Scoring Grid

Scoring Grid

ADEQUATE HEALTH LITERACY			
	TYPE		
		HANDOUTS/FLYERS	
		BROCHURES	
		VIDEOS	
		CASETTE TAPES	
		BOOKLETS	
		LARGE BOOKS	
		OTHER	
	DESIGN		
		LOTS OF PICTURES	
		FEW PICTURES	
		NO PICTURES	
		CARTOON	
	DELIVERY		
		SONG	
COMMENTS			

MARGINAL HEALTH LITERACY			
	TYPE		
		HANDOUTS/FLYERS	
		BROCHURES	
		VIDEOS	
		CASETTE TAPES	
		BOOKLETS	
		LARGE BOOKS	
		OTHER	
	DESIGN		
		LOTS OF PICTURES	
		FEW PICTURES	
		NO PICTURES	
		CARTOON	
	DELIVERY		
		SONG	
COMMENTS			

INADEQUATE HEALTH LITERACY			
	TYPE		
		HANDOUTS/FLYERS	
		BROCHURES	
		VIDEOS	
		CASETTE TAPES	
		BOOKLETS	
		LARGE BOOKS	
		OTHER	
	DESIGN		
		LOTS OF PICTURES	
		FEW PICTURES	
		NO PICTURES	
		CARTOON	
	DELIVERY		
		SONG	
COMMENTS			

APPENDIX H

Summary of Qualitative Response to Health Education Questionnaire

Summary of Qualitative Responses

TYPE

- If I can get books I can read it and find out what I am to do
- I have a poor memory honey so when I have a question I call the clinic
- I like to just watch and listen, I don't read
- I like all the pictures they tell me what I am to do
- I can't read baby, my eyes are too bad, I'd rather have people talk to me
- I don't really watch TV, I can't read so I reckon a cassette tape
- I'm not too good on picking up on these things so talk to my daughter
- I don't read too good but a handout or just what ever you have that has pictures is good and some words I can read, mostly though I can't see, sugar got my eyes

DESIGN

- I really just want to be told
- My eyes are going you better give me something with big letters
- Color would help see better, but what I have here is just fine
- I rather have someone talk to me I don't read too good
- I like to sit and talk about it and then that helps me remember
- I don't like too many pictures, I like to just read what is going on
- I like pictures fine
- Black, white, color it doesn't matter to me just so long as I can see it good
- I like it in large typing, that makes it easier to see

DELIVERY

- A month ago at reahb someone came and talk to me and showed me and now I know the exercise I am supposed to do
- I like to be talked too directly, my husband doesn't half way care too much about this type of stuff
- They showed me how to draw my insulin and give me a shot and I practiced with them and now I do it fine
- I like my nurse she is real sweet
- The doctor aint always right
- My daughter or my son, which ever one brings me will talk to them and then they say when I have to take my medicine and all that
- I like the nurse

- I think the doctor knows best so I guess I'd rather hear it from him
- It don't too much matter to me just so long as they tell me right
- I love Sondra – she the only one to come see about me and what ever she say I'm gon to do
- I know what I am supposed to do, I just have to decide to do it
- I love Dr. Kotakati (mispronouced) I don't understand what she say sometime cause you know she not from here, but she explains good and sometimes that other lady will come and talk to me