DIGITALCOMMONS
—@WAYNESTATE—

Wayne State University

Wayne State University Dissertations

1-1-2011

The relationship between functional health literacy of African American veterans and nonveterans and their ability to read and comprehend medical information for a chronic illness

David Stephen Points
Wayne State University,

Follow this and additional works at: http://digitalcommons.wayne.edu/oa_dissertations

Part of the African American Studies Commons, and the Other Education Commons

THE RELATIONSHIP BETWEEN FUNCTIONAL HEALTH LITERACY OF AFRICAN AMERICAN VETERANS AND NONVETERANS AND THEIR ABILITY TO READ AND COMPREHEND MEDICAL INFORMATION FOR A CHRONIC ILLNESS

by

DAVID S. POINTS

DISSERTATION

Submitted to the Graduate School

of Wayne State University,

Detroit, Michigan

in partial fulfillment of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

2011

MAJOR: CURRICULUM AND INSTRUCTION

Approved by:

_____
Advisor   Date

_____

_____

_____

_____

DEDICATION

This dissertation is dedicated to my mother

Bethesda W. Points, a Detroit Public School Administrator and Educator,

my father Isaac B. Points III, a Chemist and World War II Army Veteran,

and my sister, Audrienne Points Carter,

who along with my other siblings encouraged me

to read, learn, understand and share.

Additional research material and support….

        Dr. Joanne R. Nurss, STOHLA

        Dr. Kathy L. Jefferson, Endodontist

        Dr. Loise Lahore

Wayne State University Friends and Colleagues….

        Attorney Jason T. Range

        Margaret A. Hoard

        Paul W. Johnson

        Sandra Renay Jenkins

        Saundra K. Sumner

        Alton Mallory

        Tanya Equette Smith

        the Air Force, Army, Coast Guard, Marines, Navy, National Guard and Reserve veterans

        and I owe my deepest gratitude to June A. Cline.

My family members: My sister, Sharyl Points Chatman, Sr., and my brothers, Isaac B. Points IV and Michael G. Points,

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

Background

People who visit their doctors for diagnosis and treatment of chronic diseases often are given patient education materials to provide them with self-care information in order to minimize the negative effects of their illness. However, traditional patient education materials often are written at reading levels making them virtually incomprehensible for people with limited literacy skills. The inability of patients to read and comprehend the health literacy materials could reduce successful patient self-care. Other factors that could influence adoption of and adherence to treatment protocols and self-care of chronic illnesses include health beliefs and locus of control. However, patients with inadequate functional literacy who have attended formal patient education classes may not have the necessary literacy skills to understand the basics of their disease and, as a result, may be unable to perform self-management to help control the disease.

Research has shown that minority groups, including African Americans, have lower literacy skills than the majority population (Goody, 2000; Sum, 1999; Thomas, 1992). African Americans often tend to be more functionally illiterate than their European American counterparts. Whether this difference is a result of attending urban schools or having lower socioeconomic levels is not a part of this discussion, the fact remains that literacy skills for African Americans often are lower than the majority population. However, serving in the military has provided opportunities for African Americans to improve their literacy skills beyond those acquired from previous educational experiences.

Literacy

Literacy has been defined by the United Nations as the ability of a person to be able to "both read and write a short simple statement about everyday life" (Hussey & Gilliland, as cited in Lee, 1999, p. 100). Some experts in the United States define literacy as the degree to which a person has been educated or the educational grade level that he or she completed (Lee, 1999). However, using this definition often overstates reading ability by three to five grade levels. Consequently, functional literacy is the term that defines the ability to read and comprehend written text and to take action based on the ability to understand the written word. Research has shown that illiteracy is not always directly related to intelligence, but rather is due to an inability to organize and process the information presented in the text. Lee (1999) also contended that people with low literacy skills often think in concrete terms and have difficulty understanding abstract concepts.

Reading and writing are fundamental aspects of literacy and are a basic part of the learning process. Literacy is an emerging process that begins in infancy and continues to evolve across the lifespan. Babies and toddlers learn to respond to sounds and eventually talk; as they mature, they learn to recognize letters and discover that letters form words. When a child starts school, reading is taught in a formal sense, and throughout early elementary school phonics, comprehension, and fluency are taught. By the time a child is in the fourth grade, he or she is expected to have mastered reading to the extent that learning to read becomes reading to learn. At this point, a child who has not learned to read often lags behind his or her reading peers and may become functionally illiterate (National Institute for Literacy, 2008).

While most Americans can recognize words, many are unable to comprehend written language. This inability is both pervasive and unrecognized, although results of the National

Adult Literacy Survey found that 47% of adults do not have the necessary literacy skills to function in society (Miles & Davis, 1995). Miles and Davis (1995) asserted that functionally illiterate people "are more likely to live in poverty, to have fewer years of education, to have more health problems, to be older, or to be in prison" (p. 1719). According to Lee (1999), literacy does not seem to be related to either years of education or experiences. Being literate can improve quality of life, allow people to communicate effectively, increase employment opportunities, and promote self-care of chronic health problems.

Literacy skills have been divided into five levels, with most people literate at level 3 or higher. Table 1 presents the five literacy levels and examples of information that can be understood at each level.

Table 1

Literacy Levels

Reading Level and Definition	Key Abilities Associated with Level
Below basic indicates no more than the most simple and concrete literacy skills Score ranges for below basic: Prose 0 – 209 Document 0 – 204 Quantitative 0 – 234	• Locating easily identifiable information in short, commonplace prose texts • Locating easily identifiable information and following written instructions in simple documents (e.g., charts or forms) • Locating numbers and using them to perform simple quantitative operations (primarily addition) when the mathematical information is very concrete and familiar.
Basic indicates skills necessary to perform simple and everyday literacy activities. Score ranges for basic: Prose 210 – 264 Documents 205 – 249 Quantitative 235 – 289	• Reading and understanding information in short, commonplace prose texts • Reading and understanding information in simple documents • Locating easily identifiable quantitative information and using it to solve simple, one-step problems when the arithmetic operation is specified or easily inferred
Intermediate indicates skills necessary to perform moderately challenging literacy activities Score ranges for intermediate: Prose 265 – 339 Document 250 – 334 Quantitative 290 – 349	• Reading and understanding moderately dense, less commonplace prose texts as well s summarizing, making simple inferences, determining cause and effect, and recognizing the author's purpose • Locating information in dense, complex documents and making simple inferences about the information • Locating less familiar quantitative information and using it to solve problems when the arithmetic operation is not specified or easily inferred
Proficient indicates skills necessary to perform more complex and challenging literacy activities Score ranges for proficient: Prose 340 – 500 Document 335 – 500 Quantitative 350 – 500	• Reading lengthy, complex, abstract prose texts as well as synthesizing information and making complex inferences • Integrating, synthesizing, and analyzing multiple pieces of information located in complex documents • Locating more abstract quantitative information and using it to solve multi-step problems when the arithmetic operations are not easily inferred and the problems are more complex

Note: U. S. Department of Education, National Center for Education Statistics, Health Literacy of America's Adults, 2003

Kutner et al. (2007) reported on the findings of the 2003 National Assessment of Adult Literacy. Figure 1 illustrates the four literacy levels and the percent of adults by race at each level. More Hispanics (44.0%) and African Americans (24.0%) were classified at below basic

literacy levels than the other categories, and would typically lack the skills needed to read most informational materials.
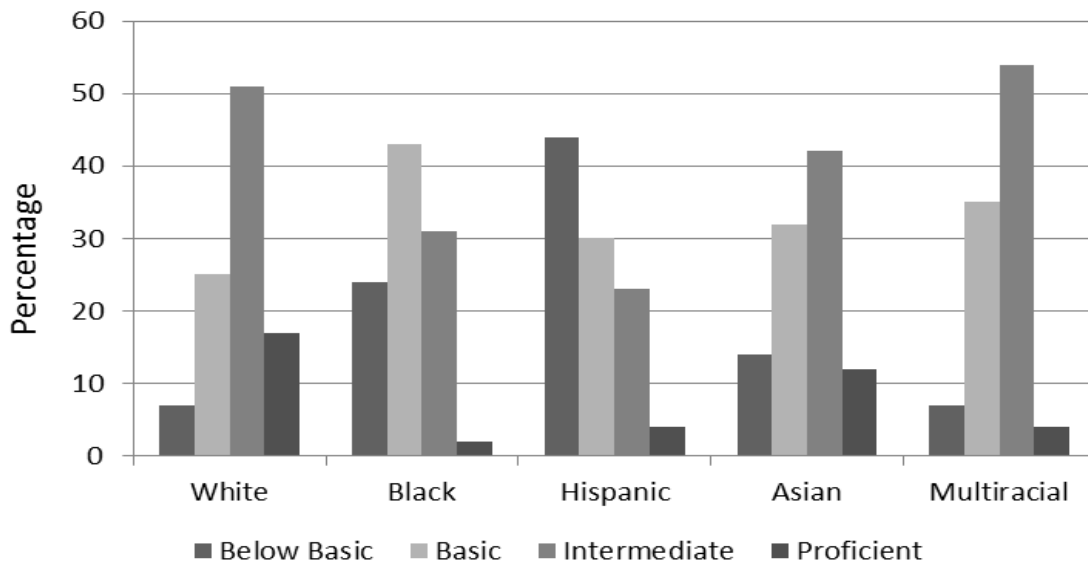
Figure 1. Percentage of adults at each literacy level by gender (Kutner et al., 2007, p. 16)

DeAnda and Hernandez (2007) conducted a study of literacy and earnings, comparing African American and European American males and females. They indicated that European American females had the highest literacy levels ($M = 307.06$, $SD = 40.36$), followed by European American males ($M = 306.86$, $SD = 46.05$). Male African Americans had the lowest literacy levels ($M = 244.57$, $SD = 55.27$), with female African Americans having literacy levels ($M = 256.79$, $SD = 44.83$) that were higher than male African Americans, but lower than either European American males or females. These findings indicated that African Americans typically were at the basic literacy level, while European Americans were at the intermediate literacy level.

Literacy and Medical Information

Reading and writing proficiency allows individuals to address healthy life styles that, in turn, can result in increased life expectancy, influence employment and income levels, and assist

in attaining educational success including college degrees or vocational certifications. People who are at first or second literacy levels are considered to be functionally illiterate, and are more likely to drop out of school, fail to attain the necessary skills to make a living wage, and experience difficulty in comprehending informational text, especially text associated with facts about medicine and diseases (Funchess, 2008).

Kutner, Greenberg, Jin, Paulsen, and White (2006) reported on the results of the National Assessment of Adult Literacy (NAAL) survey funded by the Department of Education. As part of this study, the health literacy of 19,000 adults was assessed to determine the extent to which the participants' literacy levels were below basic, basic, intermediate, or proficient. The specific topics included in this analysis were literacy skills associated with dental care, preventive care, and ability to move through the health system. Their findings showed that most adults were at the intermediate level (50%), with fewer at the basic health literacy level (22%), and the fewest were below basic health literacy levels (14%). In addition, they found that men, minorities, older adults, high school dropouts, and socioeconomically disadvantaged individuals tended to have lower health literacy levels. Immigrant or non-English speaking adults, as well as those who were on Medicare or Medicaid or were not covered by a health insurance plan, also scored lower.

Literacy and the tools of literacy are used to determine patients' understanding of medical terminology that can impact a patient's quality of life. According to The Literacy Company (2008), approximately 50% of adults in the United States are either functionally illiterate or are poor readers and have difficulty comprehending drug labels. Literacy assessment tools, including visual and oral communication tests (e.g., charts, reading and understanding medicine directions and following guideline presented in prescribed medication, or following the healthcare

directions for administering medication) are being used to assist medical professionals in evaluating the level of understanding that patients may have regarding their medical conditions.

Patients' ability to understand chronic diseases can be influenced by inadequate or less than adequate health literacy levels (Williams, Baker, Parker, & Nurss, 1998). Reading comprehension and writing ability also can have a major influence on healthcare in the African American community. Results from the National Adult Literacy Survey (Kirsch, as cited in Williams et al., 1998) indicated a positive relationship between the literacy skills of American adults and poorer self-reported health status. Individuals with poor literacy skills are at an educational disadvantage and their ability to be aware of their illness and understand self-management skills have not been clearly defined or made clear.

The low reading, comprehension, and writing skills of male African Americans can have direct and indirect influences on their ability to understand disease processes, particularly type 2 diabetes. Patients who are going to be actively involved in controlling their chronic diseases need to be health literate. According to Williams et al. (1998), developing informational media and creating innovative ways to educate patients diagnosed with chronic diseases such as diabetes, are necessary to reduce barriers associated with understanding health literacy.

Self-care for chronic diseases such as diabetes is generally addressed by providing patients with various forms of education. These educational programs are used to help patients understand the disease process for their illness, and to provide strategies and programs that include diet and exercise, along with learning how behavior can influence the disease process. Through these educational programs, patients diagnosed with type 2 diabetes are able to help and assist with the care and treatment of their illnesses (Williams et al., 1998).

Health Beliefs

Understanding directions on a medical bottle, following the healthcare provider's recommendations, and recognizing the need for proper dietary sources for maintaining proper eating habits, are examples of ways that people can improve their health outcomes. Research has shown that 30% to 70% of people with chronic illnesses such as diabetes, fail to follow physicians' recommendations regarding medication dosages and that within one year, 30% to 50% of patients discontinue their medication therapy (Ritch, 2009). This failure to comply with physicians' instructions can lead to poor health outcomes, especially in low-income populations, where noncompliance can exceed 60%.

The health belief model, originally developed by Rosenstock (1988), can provide guidance and present determining factors that reflect an individual's concerns for seeking or not seeking healthcare. The health belief model includes the following elements:

- The individual's subjective state of readiness to take action relative to a particular health condition, determined by both the person's perceived likelihood of susceptibility to the particular illness, and by his or her perceptions of the probable severity of the consequences of contacting the disease;

- The individual's evaluation of the advocated health behavior in terms of its feasibility and efficaciousness (i.e., an estimate of the actions potential benefits in reducing susceptibility and /or severity), weighed against perceptions of physical, psychological, financial and other cost or barriers involved in the proposed action; and

- The individual's response to a cue to action that must occur to trigger the appropriate health behavior. This stimulus can be either internal (e.g., perception of bodily states) or external (e.g., interpersonal interactions, mass media communications).

While diverse factors—demographic, personality, structural, and social—can in any given instance influence a person's health motivations and perceptions, these variables are not considered to have a positive influence on compliance with medical directions.

Some reviewers have concluded that the health belief model variables provide acceptable justifications for most research findings regarding behaviors associated with health prevention (Rosenstock, 1988). The health belief model is based on theories of Kirscht (as cited by Rosenstock, 1988) who suggested that the health belief model grew from the need to provide basic answers to practical health problems. Figure 2 presents a graphic depiction of the health belief model.
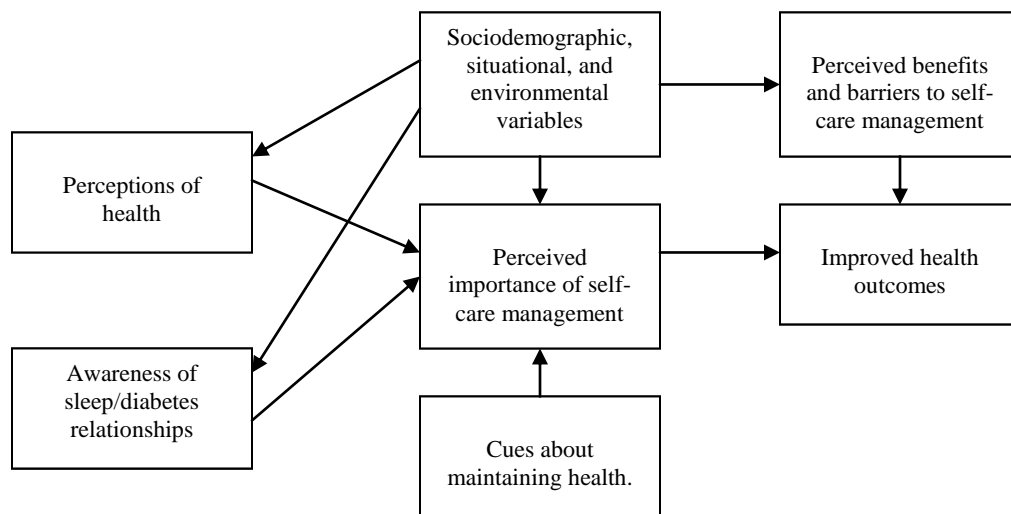
Figure 2. Health Beliefs Model.

The health belief model can be a direct factor in predicting preventative health behavior. The health belief model has been used to identify personal attitudes, adaptive elements, and the

possibility for action. A person's attitude is the perceived susceptibility or severity of a specific disease. The adaptive elements include personal characteristics (age, sex, race, ethnicity, etc.) and sociopsychological factors (personality, social class, peer and reference group demands, etc.). Through an adaptive factor, one perceives a threat of the specific disease and reacts with certain cues of action. Those cues of action can be multimedia promotions, suggestions from others, reminder phone calls, postcards or emails from doctors or dentists, illnesses of family members or friends, and television, newspaper, magazine or Internet articles. The informal cost-benefit analysis of the health benefit model is that the probability of action could consist of perceived benefits of preventative action less perceived barriers to preventative action. If the cost-benefit analysis is positive (benefits exceed barriers), then the chance of taking suggested preventative health action is enhanced.

Healthcare beliefs and illness philosophy often are influenced by cultural considerations in patient care (*Professional Guide to Diseases* [9th Ed.], 2008). African Americans form a unique cultural group that may believe that some illnesses are related to, or associated with, supernatural causes. Some members of this cultural group may seek advice, counseling, or remedies from faith or folk healers; show stoic response to pain until it becomes unbearable; and/or be family orientated (i.e., it is customary for many family members to remain with a dying patient in the hospital and may express grief by crying, screaming, praying, singing and reading scriptures).

Research on the health benefit model concluded that tenets exist that could be used to explain other health behaviors (Rosenstock, 1988). For example, the health benefit model can be used to address health education problems. Medical care providers, in recognizing personal and financial costs associated with engaging negative health behavior, as well as understanding the

severity and barriers of a health condition, can collectively work with patients to reduce problems associated with medical literacy.

Diabetes

Diabetes is a metabolism disorder affecting how food is used for growth and energy. After eating, most food is broken down into glucose, the form of sugar in the blood. Glucose is the main source of fuel for the body (National Institute of Diabetes & Digestive and Kidney Diseases [NIDDK], 2008, ¶1, p. 1). Diabetes is a common chronic ailment that affects many people in the United States. Type 2 diabetes typically is adult on-set, and approximately 90% to 95% of people diagnosed with diabetes have type 2. Type 2 diabetes has been linked to older age, obesity, a family history of diabetes, a previous history of gestational diabetes, physical inactivity, and certain ethnicities. African Americans, American Indians, Alaskan Natives, some Asian Americans, Native Hawaiians and other Pacific Islander Americans, and Hispanics/Latinos tend to diagnosed with type 2 diabetes more frequently than European Americans.

Statistics on the prevalence of the disease indicate that 23.6 million (7.8%) people of all ages in the United States are estimated to have diabetes (NIDDK, 2008). This number includes 17.9 million people who are diagnosed and 5.7 million people who have not been diagnosed. In addition, 23.5 million (10.7%) of people 20 years of age and older have been identified as either having type 1 or type 2 diabetes. Of the population that is over 60 years of age, 12.2 million (23.1%) have this disease. Twelve million (11.2%) men over 20 years of age have been diagnosed with diabetes, compared to 11.5 million (10.2%) of women of the same age. A greater percentage of non-Hispanic African Americans (3.7 million, 14.7%) more than 20 years old have

diabetes compared to 14.9 million (9.8%) of non-Hispanic Caucasians (National Diabetes Information Clearinghouse, 2008).

The prevalence of diabetes in the United States is expected to continue increasing for several reasons:

- A large segment of the population is aging;

- Hispanics/Latinos and other minority groups are at increased risk as they comprise the fastest-growing segment of population in the United States; and

- Americans are becoming increasingly overweight and sedentary.

Based on current estimates from the Center for Disease Control and Prevention (CDC), one third of people born in 2000 in the United States are expected to obtain a diagnosis of diabetes. The CDC also predicted that by 2050, diagnosed cases of diabetes are anticipated to increase by 165%.

In 2006, diabetes was listed as the cause of death on 72,507 death certificates in the United States (NIDDK, 2008). However, diabetes also was considered to be a contributing factor in 233,619 deaths in 2005. According the NIDDK, diabetes is under-reported as a cause of death, with diabetes listed anywhere as either an underlying cause of death or a contributing factor on 35% to 40% of all death certificates. The fourth leading cause of death among African Americans is diabetes, following heart disease, cancer, and cerebrovascular diseases (National Center for Health Statistics, Center for Disease Control and Prevention, 2006).

Annual costs (both direct and indirect) associated with diabetes in 2007 were $174 billion, with direct medical costs estimated at $116 billion. Indirect costs, which include disability insurance, work loss, and premature death, amounted to $58 billion. After holding age

and sex differences constant, medical costs for people with diabetes were 2.3 times as high as those not diagnosed with this chronic condition (NIDDK, 2008).

African American Veterans

Male African Americans who have served in any branch of the armed services are more likely to be literate than male African Americans who have not served. Since World War I, all recruits have been tested for literacy skills, although it has only been in the past 40 years that literacy skills have become a prerequisite for serving in the military (ASVAB, n.d.).

Veterans, as a group, change over time. For example, the composition of the veteran population is changing as a greater number of women, minorities, and individuals with higher levels of education are serving in the military. In addition, differences in backgrounds including military experiences, sociodemographic characteristics, and health beliefs may result in disparities regarding health status and health needs (Wilson et al., n.d.). By understanding demographic changes in the veteran population, programs can be altered as needs change over time.

In 2000, approximately 25.2 million veterans of uniformed services were living in the United States and Puerto Rico. Veterans include people from many different races and ethnic groups. The majority are non-Hispanic Caucasian, married males with a mean age of 58 years. The largest group of veterans is between the ages of 45 and 64 years, have completed high school, are working, and have family income levels greater than $50,000 dollars a year (National Survey of Veterans [NSV], 2001).

The 2001 NSV report indicated that approximately 50% had served in the Army, 25% in the Navy, 20% in the Air Force, 10% in the Marine Corps, and slightly less 1% served in the Coast Guard. A greater percentage of African American veterans (60.3%) have served in the

Army, with the percentage of African Americans serving in the Navy (14.3%) being lower than veterans of other races (21.9% to 25.7%). Table 2 presents the comparison of veterans by service branch and race.

Table 2.

Percent Distribution of Veterans by Branch of Service and Race

Service	White	African American	Race Unknown	Total*
Number of Veterans	21,763,200	2,206,000	778,800	25,095,000
Army	49.2	60.3	47.7	47.7
Navy	25.7	14.3	21.2	21.2
Air Force	19.9	17.5	16.7	16.7
Marine Corps	9.5	10.9	17.1	17.1
Coast Guard	1.5	0.6	1.3	1.3

*Data from ethnic and racial groups with less than 300,000 veterans are excluded from the table.

Note: Total does not add to 100% because percentages for Women's Services (e.g., Women's Army Corps, Navy Nursing Corps, Air Force Nursing Corps, etc.) are not included in the percentages. From the National Survey of Veterans, 2001, Table 4.3.

Racial diversity in military services has been encouraged in recent decades, with increased racial and ethnic representation among military service members. During the post-Vietnam War era and Gulf War, the proportion of minorities in the armed services— including African Americans—is substantially greater than that of European Americans. Table 3 provides the percentages of veterans from World War II through the Gulf War by race (National Survey of Veterans, 2001).

Table 3.

Percent Distribution of Veterans by Time of Service and Race

Time of Service	White	African American	Race Unknown	Total**
Number of Veterans	21,763,200	2,206,000	778,800	25,095,000
World War II	22.4	10.1	9.7	20.5
Between World War II and the Korean Conflict	7.1	4.6	3.5	6.7
Korean Conflict	17.7	13.3	9.5	16.9
Between the Korean Conflict and the Vietnam Era	26.8	18.8	17.9	25.6
Vietnam Era	35.9	34.8	38.2	36.1
Post-Vietnam Era	25.2	45.8	37.7	27.9
Gulf War	11.9	26.4	27.0	13.9

Note: Total does not add to 100% because percentages for Women's Services (e.g., Women's Army Corps, Navy Nursing Corps, Air Force Nursing Corps, etc.) are not included in the percentages. From the National Survey of Veterans, 2001, Table 4.6.

**Data from ethnic and racial groups with less than 300,000 veterans are excluded from the table.

Prior to the Vietnam era, the percentage of European American veterans was substantially greater than African American veterans. The percentage of European American veterans (35.9%) and African American veterans (34.8%) from the Vietnam era were similar. Following the Vietnam era, the percentage of African American veterans (45.8%) was considerably greater than European American veterans (25.2%). The percentage of European American veterans (11.9%) continued to decrease, while the percentage of African American veterans (26.4%) increased (National Survey of Veterans, 2001.). The significant increases in minority veterans can be attributed to healthcare needs, programs, and benefits for which they are eligible. Approximately 60% of veterans have are either high school graduates or have

obtained GEDs. Fifty percent have some type of postsecondary education or training (National Survey of Veterans, 2001).

Veterans and Literacy

Since 1917, the military services have used standardized tests to assess the ability of their enlistees. The earliest testing was divided into two types: the Army Alpha test was used with enlistees who had literacy skills and measured their verbal and numerical ability, their capacity for following instructions, and their ability to understand information (ASVAB, n.d.). The Army Beta test was used to test illiterate, uneducated, or non-English speaking enlistees. Through the years, the aptitude tests have changed, with increasing reliance on standardized tests used as screening devices. Since 1968, the Armed Services Vocational Aptitude Battery (ASVAB) has been used with students to determine aptitude in vocational areas. The test also measures literacy skills and English language proficiency.

Powers (2008) detailed the three educational levels as defined by the military: (a) Tier 1 consists of a high school diploma, adult education diploma, or completed one semester of college; (b) Tier 2 is an alternative credential holder, test-based equivalency diploma graduate, certificate of attendance, alternative/continuation high school, home study, correspondence school diploma, occupational program certificate; and (c) Tier 3 is a non-high school graduate. Most recruits have achieved a Tier 1 educational level, with fewer enlistees accepted with a Tier 2 education. Generally, applicants for military service with a Tier 3 educational level are almost never accepted. Based on this information, the military services no longer accept applicants for military service who are uneducated or illiterate.

Statement of the Problem

Traditional patient education materials are written at levels that often preclude patients with low literacy levels from being able to comprehend the basic points presented. High readability levels associated with patient education programs and health literacy reading materials could be factors that limit the success of patients in assuming responsibility for their care. Reports have determined that a patient's literacy skills must be considered in the care and education of chronic diseases such as diabetes. Other factors influencing knowledge and impacting adherence to treatment regimens and disease outcomes could also include health beliefs and locus of control. However, knowledge is an important goal of patient education programs and suggests that patients with inadequate functional health literacy, including those who have attended formal diabetes educational classes, may unable to comprehend the basics of their disease and maybe not be able to perform self-management to help control their diabetes.

According to Williams et al. (1998), additional research needs to focus on using oral, visual, and other forms of communications to convey the necessary medical information through one-on-one teaching, audiotapes, videotapes, and computer multimedia. In one study, even with additional forms of communications, 97% of elderly patients reported that the major source of their medical information was television.

As the population continues to age, finding healthcare becomes a greater challenge for all Americans. An increasing number of veterans are seeking medical treatment in the VA system, from 2.5 million in 1995 to 5.3 million in 2005 (Brahim, 2007). In comparison to the general population, veterans are more likely to have lower incomes, be older, experience more physical illnesses, and tend to suffer from mental and emotional illness. Veterans may also have better literacy levels than nonveterans as a result of the increased educational requirements for military

recruits over the last 40 years. Examining the correlation between health literacy and the ability to understand medical literature for a chronic disease such as diabetes, is needed to determine how best to serve aging male African Americans.

Purpose of the Study

The purpose of this study is to determine if there are differences between male African Americans who have served in the military and those who are not veterans in their ability to read and comprehend medical information for a chronic illness prevalent among African Americans, such as Type II diabetes.

Research Questions

The following research questions were addressed in this study:

1. What is the difference in health literacy between male African American veterans and that of male African American non-veterans?

2. What is the difference in the ability of male African American veterans to read and comprehend medical information regarding self-care for type 2 diabetes (e.g., monitoring blood sugar levels, taking medications, choosing the right foods, etc.) and that of male African American non-veterans?

3. How can the ability to read and comprehend medical information regarding self-care for type 2 diabetes (e.g., monitoring blood sugar levels, taking medications, choosing the right foods, etc.) be predicted from age, educational level, health literacy levels, and veteran's status?

4. Is there a statistically significant association between the reading level and the African American veterans' and nonveterans' decision-making regarding following health care practitioners' suggestions for self-management of health care?

Research Hypotheses

H_1: There is a statistically significant difference in health literacy between male African American veterans and male African American non-veterans.

H_2: There is a statistically significant difference in the ability of male African American veterans to read and comprehend medical information regarding self-care for type 2 diabetes (e.g., monitoring blood sugar levels, taking medications, choosing the right foods, etc.) and that of male African American non-veterans?

H_3: The ability to read and comprehend medical information regarding self-care for type 2 diabetes (e.g., monitoring blood sugar levels, taking medications, choosing the right foods, etc.) is significantly predicted by age, educational level, health literacy levels, and veteran's status?

H_4: There is a statistically significant association between reading level and African American veteran's and nonveterans' decision-making regarding following health care practitioners' suggestions for self-management of health care.

Null Hypotheses

H_{01}: There is no statistically significant difference in health literacy between male African American veterans and male African American non-veterans.

H_{02}: There is no statistically significant difference in the ability of male African American veterans to read and comprehend medical information regarding self-care for type 2 diabetes (e.g., monitoring blood sugar levels, taking medications, choosing the right foods, etc.) and that of male African American non-veterans?

H$_{03}$:   The ability to read and comprehend medical information regarding self-care for type 2 diabetes (e.g., monitoring blood sugar levels, taking medications, choosing the right foods, etc.) is not predicted by age, educational level, health literacy levels, and veteran's status.

H$_{04}$:   There is no statistically significant association between reading level and African American veteran's and nonveterans' decision-making regarding following health care practitioners' suggestions for self-management of health care.

Significance of the Study

As type 2 diabetes becomes more prevalent among the adult African American population, the need for medical information that can be comprehended by people with low literacy levels becomes more important. The goal of medical professionals should be to help patients with chronic diseases understand the disease process, determine what they need to do to control the disease, and be aware of potential symptoms that could be precursors of negative disease outcomes. To attain this goal, the patient has to be literate. By comparing African American veterans and African American nonveterans, researchers, educators, and medical professionals can develop educational materials that people with low literacy levels can comprehend.

Limitations

The following limitations are acknowledged for this study:

1. The study is limited to male African Americans, both veterans of the Armed Forces and non-veterans who have not served in any military unit. As a result, the findings may not be generalizable to African American women or men and women of other ethnic groups.

2. The study is limited to participants who live in the metropolitan Detroit area. The results may be different for African American veterans who live in other parts of the United States.

Assumptions

The following assumptions are made for this study:

1. Male African Americans who agree to participate in this study self-reported a diagnosis of type 2 diabetes. No attempt were made to confirm the diagnosis with their primary care physicians.

2. All participants are assumed to speak English.

3. Participants who meet the criteria for inclusion in the study answered the surveys honestly.

Definition of Terms

The following terms are specifically defined for this study:

Chronic illness. An illness that persists over time, generally three months or more (MedicineNet, n.d.)

Disease. A pathological condition of a part, organ, or system of an organism resulting from various causes, such as infection, genetic defect, or environmental stress, and characterized by an identifiable group of signs or symptoms (*Stedman's Pocket Medical Dictionary*, 1987).

Literacy. Reading and writing competently at a level determined by the U.S. Department of Education (National Center for Education Statistics, The Health Literacy of America's Adults, 2003).

Medical information. Printed information on a disease process or chronic illness that is available for patients to help them learn self-care or to understand the course of treatment. This

information is often presented in pamphlets and tracts available in physician's offices and prepare by pharmaceutical companies.

Non-veteran. A person who has not served in the military in any official capacity.

Type 2 diabetes. A type of diabetes in which the pancreas' beta cells make insulin, but the body cannot use it effectively, because the cells of the body are resistant to the action of insulin. While this type of diabetes is not as life-threatening as type 1 diabetes, people with a diagnosis of type 2 diabetes can be prone to similar risks and complications as those with type 1 diabetes (MedicineNet, n.d.).

Veteran. A former member of a military organization (e.g., United States Army, Marines, Navy, Air Force, Coast Guard, etc.).

Overview of the Study

Chapter 1 has presented the background of the study, statement of the problem, purpose of the study, research questions, and significance of the study. In addition, limitations, assumptions, and a list of definitions of terms used specifically in this study have also been presented. Chapter 2 provides a comprehensive review of related literature that supports the need for this study. Chapter 3 presents methods that were used to collect and analyze the data needed to address the research questions. Chapter 4 provides a profile of the participants and presents inferential statistical analyses to address each of the research questions. Chapter 5 presents conclusions and recommendations for practice and further research.

CHAPTER 2

REVIEW OF LITERATURE

Introduction

The review of literature presented in this chapter provides a comprehensive overview of research that has been published on literacy, medical literacy, type 2 diabetes, and veterans of the Armed Services. The review contains a combination of empirical research and articles by experts on the topics presented in the review of literature.

Literacy

People need to be literate to function effectively in society. The United Nations Educational, Scientific and Cultural Organization (UNESCO, 2003) has adopted the following definition of literacy:

> "Literacy" is the ability to identify, understand, interpret, create, communicate, compute and use printed and written materials associated with varying contexts. Literacy involves a continuum of learning to enable an individual to achieve his or her goals, to develop his or her knowledge and potential, and to participate fully in the wider society. (p. 13)

Literacy remains a challenge for many developing and developed countries, with many literacy resources concerned with the growth of primary education (UNESCO Position Paper, 2004). The worldwide generic definition of literacy must be inclusive of the many diverse cultural influences for acceptance. The World Declaration on Education for All (1990) indicated that attention was needed to address four areas of literacy concerns, including: learning (a) to know, (b) to do, (c) to live together and (d) to be. People interacting with diverse forms of written communication use literacy daily. They need to read, comprehend, and interpret street signs, forms, bank statements, calendars, shopping lists, posters, advertisements, letters, books, etc. on a daily basis. According to the UNESCO Position Paper (2004):

The notion of literacy is complex and has evolved in accordance with recent political and socioeconomic transformations, globalization, and the advancement of information and communication technologies. Yet no matter how complex this notion may be, we should address the huge and diverse literacy needs through simpler yet relevant policies and cost-effective provision. (p. 30)

Sentell (2003), in addressing literacy, suggested the ability to perform basic everyday tasks or educational completion level should be the measure of literacy. According to Parker, Baker, Williams, and Nurss (as cited in Sentell, 2003) the United States Census Bureau defined illiteracy as having less than a ninth grade education. Using this basic definition, the majority of the adult population of the United States is literate, with Sentell observing that the World Health Organization (WHO) deemed that 99% of the United States' population is literate. In contrast, the 2003 United States National Assessment of Adult Literacy (NAAL) presented findings that about 93 million adults in America are rated as having literacy levels as either basic or below basic (Elliott, Charyton, & Long, 2007). The NAAL survey was the most thoroughly conducted survey at the time to recognize and report literacy in the United States. It reported that many individuals struggle to complete daily tasks such as completing forms, read signs, or use transportation schedules (Wilson, 2003).

Literacy and Culture

According to research, a gap exists in literacy proficiencies among different ethnic and cultural groups (Holt & Smith, 2005). While the gap is closing for some groups (i.e., African American), Caucasian Americans continue to lead other ethnic groups in literacy proficiency. Holt and Smith (2005) argued that literacy proficiency differences may be due to complex factors associated with culture, economics, and history. "Observed ethnic and racial differences

in parents' communicative styles (i.e., ways of using and objectifying language) when talking with their children have also been associated with differences in students' literacy acquisition and achievement" (Heath as cited in Holt & Smith, 2005, p. 2).

Sentell (2003) commented that both race and ethnicity contribute to literacy. Kirsch, Jungeblut, Jenkins, and Kolstad (as cited in Sentell, 2003) reported that scores of the NAAL, which measured average prose on a scale from 0 to 500, were 26 to 80 points higher for Caucasian Americans than for the other racial or ethnic groups. The reasons for these differences was the level of education, with Caucasian Americans having the most years of education, followed by African Americans, with Hispanics having the least years of education. Vahabi (2007) asserted that limited educational levels can have a direct impact on literacy, and that numerous individuals who have received high school diplomas also have inadequate literacy ability. Sentell (2003) argued that racial or ethnic differences persist even when education is controlled.

Veterans/Nonveterans Literacy

Upon induction into the armed forces of the United States, standardized tests are used to assess the skills best suited for the needs of the military service. The armed forces use written tests for assessment verification of matching an individual's skills for military jobs and occupations. For approximately 50 years, the armed forces have used aptitude tests to match an individual's skills and abilities for specific placement in military job assignments, adaptation to military life, and to become a successful member of the armed services (ASVAB, n.d.).

Since World War I, aptitude tests have been used by the armed forces. The aptitude tests originally were classified as the Army Alpha and Army Beta. These tests were created to allow military officers to measure the cognitive abilities of enlistees. The Army Alpha tested the ability

to follow directions and communicate verbally, as well as numerical ability and general understanding of facts and data. The non-verbal Army Beta test was used to assess the recruits who were considered to be uneducated, unable to read, or did not speak English (ASVAB, n.d.).

Testing remained consistent among the branches of military services until after World War II. Individual branches of services began to develop their own aptitude tests, measuring vocabulary, arithmetic, and special relationship items. The Army General Classification Test (AGCT) and the Navy General Classification Test (NGCT) replaced the Army Alpha and Army Beta test during World War II. The AGCT and NGCT were enhanced tests with additional classifications, e.g., specialized aptitude tests related to specific skills, clerical, administrative tests, radio code operations, language, and driver selection (ASVAB, n.d.)

The Armed Forces Qualification Test (AFQT), revamped after the AGCT, became the military's single test in 1950. The AFQT used by all branches of the service was specifically designed to screen, establish, and assess an examinees' ability to understand military training and measure the examinees' potential. The AFQT was used until 1972, overlapped by Armed Services Vocational Aptitude Battery (ASVAB) developed in 1968.

Since 1968, the military has used the ASVAB to complement the military's student testing program. The Air Force began using the ASVAB in 1973, with the Marine Corps adopting this test in 1974. During the same period, the Navy and Army used their own testing processes (ASVAB, n.d.).

In 1979, the Department of Defense made the determination that all branches of the military should use the ASVAB to test recruits and provide designations for careers in the armed forces that were representative of the tested skills results. The selection and classification testing has assisted in streamlining the testing process and allowed the military services to place an

individual into job positions for which he or she may be qualified (ASVAB, n.d.). Presently, all of the different branches of the armed forces use the computer adaptive ASVAB, selecting individuals who exhibit skills and ability to be successful in a variety of careers within the armed services.

Civilian and military reading, writing, and oral comprehension testing and assessment procedures differ. Military assessments are compulsory and determine the eligibility of a volunteer's or draft inductee's entrance in the service. Civilian reading, writing, and comprehension assessments are voluntary, individual, and personal. Veterans—specifically those from the post-Vietnam era—tend to have adequate literacy levels because of the screening that has been part of the enlistment process since the early 1970s.

In serving in the armed forces, all individuals who enlist in military organizations are required to meet minimum physical and health readiness standards of military participation successfully. While officers and enlisted service members in all branches are required to meet the minimum health standards, each branch has a specific manual detailing the physical requirements. In meeting the minimum healthcare standards, regular physicals and immunizations, and corrective dental and medical care, veterans have an appearance of a higher level of understanding of medical literacy.

Health Literacy

"Health literacy is defined as the degree to which individuals can obtain, process, and understand basic health information and services needed to make appropriate health decisions" (Nielsen-Bohlman, Panzer, & Kindig as cited in Elliott et al, 2007, p. 525). The Center for Healthcare Studies (CHCS) defined health literacy as the "ability to read, understand, and act on healthcare information" (CHCS Fact Sheet, n.d., p. 1). Health People 2010 added to the

definition of health literacy stating "the degree in to obtain process and understand basic health information and services needed to make appropriate healthcare decisions" (CHCS Fact Sheet, n.d., p. 1). The American Medical Association (AMA) Council of Scientific Affairs defined "health literacy as the ability to read and comprehend prescription bottles, appointment slips, and other essential health-related materials to successfully function as a patient" (CHCS Fact Sheet, n.d., p. 1). Gazmararian, Curran, Parker, Bernhardt, and DeBuono (2005) listed characteristics of a health literate country:

- Everyone has the opportunity to improve his/her health.

- Everyone has the opportunity to use reliable, understandable information that could make a difference in her/his overall well-being, including everyday behaviors such as how she/he eats, whether she/he exercises, and whether she/he gets checkups.

- Health and science content would be basic parts of k-12 curricula.

- People are able to accurately assess the credibility of health information presented by health advocate, commercial and new media sources.

- Health-literacy policies and practices include monitoring ad accountability.

- Public health alerts, vital to the health of the nation, are presented in everyday terms to enable people to take needed action.

- The cultural contexts of diverse peoples, including those from various cultural groups and non-English speaking peoples, are integrated to all health information.

- Health practitioners communicate clearly during all interactions with their patients, using everyday vocabulary.

- Ample time is available for discussion between patients and healthcare providers.

- Patients feel free and comfortable to ask questions as part of the healing relationship.

- Rights and responsibilities in relation to health and healthcare are presented or written in clear, everyday terms so that people can take needed action.

- Informed consent documents used in healthcare are written in a way that allow people to give or withhold consent based on information they need and understand. (p. 319)

Readability is the degree to which written text can be understood by the reader (Shieh & Hosei, 2008). However, many literacy experts have noted that higher reading levels often are found in published information about health topics. French and Larrabee (as cited in Shieh & Hosei, 2008) asserted that people with poor literacy skills often consider the available health information that is provided in print as useless. When the readability level of published information on health-related topics is high, the potential user may have difficulty in understanding the information. While printed health information is an important component of patient care, these materials must be comprehensible and suitable if healthcare recipients and their families are to use the information effectively. When the readability of the published healthcare information is too high, people with low literacy skills may encounter problems trying to read and understand the information or experience problems if the information is misinterpreted.

Written health-related documents such as medical discharge instructions, patient consent forms, and medical brochures often surpass patient reading capabilities. Patients with chronic

diseases and low literacy levels are less likely to understand their conditions, treatment, and strategies for self-care than knowledgeable patients with these types of conditions (CHCS Fact Sheet 2 of 9, n.d.). Gazmararian et al. (2005) provided health-related goals and the skills that the public need to meet these goals, as shown in Table 4.

Table 4.

Health-Related Goals and Skills Needed to Meet These Goals

Health-Related Goal	Skills Needed to Meet the Goal
Promote and protect health and prevent disease	• Read and follow guidelines for physical activity • Read, comprehend, and make decisions based on food and product labels • Make sense of air-quality reports and modify behavior as needed • Find health information on the Internet or in periodicals and books
Understand, interpret, and analyze health information	• Analyze risk factors in advertisements for prescription medicines • Determine health implications of a newspaper article on air quality • Determine which health websites contain accurate information and which do not • Understand the implications of health-related initiatives in order to vote
Apply health information over a variety of life events and situations	• Read and apply health information regarding child or elder care • Read and interpret safety precautions at work; choose a healthcare plan
Navigate the healthcare system	• Fill out health insurance enrollment or reimbursement forms • Understand printed patient rights and responsibilities • Find one's way in a complicated environment, such as a busy hospital or clinical center
Actively participate in encounters with healthcare professionals and workers	• Ask for clarification • Ask questions • Make appropriate decisions based on information received • Work as a partner with care providers to discuss and develop an appropriate regimen to manage a chronic disease
Understand and give consent	• Comprehend required informed consent documents before procedures or for involvement in research studies
Understand and advocate for rights	• Advocate for safety equipment based on worker right-to-know information • Request access to information based on patient rights documents • Determine use of medical records based on privacy act

Note: From Gazmararian et al. (2005), p. 320.

Understanding basic healthcare instructions for self-care can be difficult when patients

with chronic diseases lack English language proficiency (Cassey, 2007). This deficit can be a

barrier in providing quality medical care. Cassey (2007) suggested that patients should be assessed for health literacy and healthcare professionals should be advised if the patient has difficulty reading and comprehending printed materials, and offered six suggestions that could be used to minimize patient comprehension problems, including:

1. Medical instructions should be given to the patient slowly.

2. The discussion should be in simple, nonmedical language.

3. Pictures and diagrams should be used to reinforce the directions.

4. The amount of instructions should be limited to avoid overloading the patient with information.

5. Healthcare professionals should incorporate a teach-back or show-me technique to determine if the patient understands the instructions being given.

6. The medical environment should be shame free.

Poor health literacy can be a barrier that keeps patients from following physician directions and understanding information provided by healthcare providers. Patients may have difficulty in taking medications correctly and at the appropriate times, following disease prevention programs, applying self-management instructions, and/or understanding forms that detail patients rights (Baker et al., Davis et al., Hopper et al., as cited in CHCS Fact Sheet 1 of 9; Wilson, 2003).

As reported by Gazmararian et al. (2005), many minorities, including African Americans and Hispanics, have lower levels of health literacy, possibly due to inadequate educational experiences. Kleinbeck (2005) asserted that a patient's ability to manage his or her disease was dependent on reading and the ability to comprehend health literature. Table 5 presents the consequences of low health literacy.

Table 5.

Consequences of Low Health Literacy

• Poorer health and disease state outcomes	• Labeled as "noncompliant" or seen as seeking secondary gain from being sick
• Higher incidence of chronic disease	• Fail to keep appointments
• Repeated hospitalizations resulting in increase complications	• Missed well child care appointments and delayed immunizations
• Higher rates of infant mortality	• Improperly mixed infant formula
• Shorter life expectancies	• Unable to follow instructions for diagnostic tests
• Increased healthcare costs	• Unable to comprehend a standard consent form
• Increased complexity of medication or treatment regimens	• Unable to understand how to access community resources
• Lack of understanding and use of preventive services	• Feelings of inadequacy, shame, and embarrassment
• Lack of knowledge about medical care, medical conditions, and complications	• Poorer self-reported health status
• Unable to make informed healthcare decisions	• Inadequate communication between al involved
• Medication errors due to inability to interpret medication instructions correctly	• Healthcare provider unable to assess level of comprehension
	• Nonadherence to medication regimen

Note: Data from Andrus & Roth; Moon, Chang, Patel, Baumhaft, & Scheidt; Stang; as cited in Kleinbeck, 2005, p. 19.

Healthcare providers should encourage patients to bring friends or family members to appointments, especially when treatment regimens or options are going to be discussed. This type of patient support is an effective intervention that can minimize the influence of limited health literacy when healthcare providers are attempting to implement programs. Most healthcare providers lack the time needed to develop formal healthcare literacy programs to screen patients for limited health literacy (Schlichling et al., 2007). While recognizing the effectiveness of interventions, such as providing healthcare materials to patients at low cost, healthcare providers indicated that efforts could be supported if friends, family members, or social workers came to the office to support the limited health literacy effort.

Patients in today's healthcare environment are expected to have the capability to self-manage their healthcare conditions and become promoters of their health needs (Marks, 2009). In accomplishing these goals, patients must research, read, comprehend, and apply knowledge related to their self-care. These individuals have to have the ability to interact with their healthcare providers, comprehend consent forms and the legal ramifications, read prescription labels and correctly use medications, understand complications and contraindications for medications, and read appointment cards (Gazmarian et al. as cited in Marks, 2009). Marks cited problems that arise with patients who have low health literacy:

- Adherence problems.

- Compromised information and healthcare-seeking practices.

- Compromised and adverse health outcomes.

- Difficulties in understanding informed consent documents.

- Improper medication use.

- Immense healthcare costs.

- Loss or inability to access entitlements.

- Missed appointments.

- Reduced or limited participation in the client-provider partnership.

- Unwarranted fear. (Adapted from Freda & Mayer and Villaire as cited in Marks, 2009).

According to Marks (2009), health outcomes can be predicted by levels of health literacy, which is influenced by education, age, culture, healthcare beliefs, and provider/patient ethnicity. Recognizing low literacy is essential to providers who are trying to provide health-related education and materials to patients with chronic illnesses.

Sources of Health-Related Materials

Multiple sources of collection of health-related materials exist. Printed health materials have advantages for patients. For example, printed information allows the patient to read and spend time comprehending the materials at his or her own pace (Shieh & Hosei, 2008). Many sources of healthcare information are available to patients to help in understanding the disease process. The most popular and expedient information takes the form of printed materials. However, most information is beyond the comprehension ability of many patients (Gazmararian et al., 2005). Healthcare materials should be easy to read and understand. According to Estey, Musseau, and Keehn (1994), text should be simplified for printed health materials because being able to read and comprehend this type of information is important. The simplification of health material should reduce the reading level to less than grade six to make it useable to most patients who are hospitalized (Estey, Musseau, & Keehn, 1994). Based on recommendations made by the National Institute of Medicine, health-related materials should be prepared at sixth grade levels or lower, while the U.S. Department of Education recommends reading levels of eight grade or lower.

However, Gazmararian et al. (2005) reported that the average American can read at an eighth grade level, while most health-related literature is written at a twelfth grade level. Elliott et al. (2007) reported that evaluations of health literacy on the Internet indicated that cancer information is presented at grade levels 10.7 to 12.9, pediatric educational materials range from grade levels 7.1 to 12.2, asthma educational materials are at grade levels 8.8 to 12.0, and mental health brochures are written at grade levels 11.1 to 14.8. Gazmararian et al. (2005) also asserted that regardless of the reading ability of a patient, most require assistance to comprehend the materials provided by healthcare providers.

With increased expansion of healthcare technology, patients must be aware of advances, suggesting that patient teaching has become an essential part of present day healthcare. Patients have distinctive learning styles, with their capability to understand health instructions influenced by anxiety, physical discomfort, and a lack of awareness of hospital or healthcare situations. In the hospital environment, patients may experience interruptions when physicians, nurses, technical testing staff, family guests and visitors, as well as housekeeping personnel, come into rooms for treatment or visits. Noise on the hospital floor may prevent the patient from reading a medical pamphlet, handout, or brochure. Other reading and comprehension distractions are anxiety resulting from being in the hospital, medication related drowsiness, pain, or discomfort. Removing these variables could be difficult, thus creating a challenge to simplify healthcare and medical information.

Printed material distributed within hospitals is limited. Verbal directions or explanations of procedures for the patient to comprehend regarding his or her healthcare are minimal. A suitable reading level should be established for the patient that identifies the specific and intended group, reading and comprehension ability, understanding the content, and motivation level.

Printed healthcare materials used for hospitals and providers of healthcare services must be written for individuals whose reading abilities are limited. Therefore, medical literacy sensitivities must be developed for patients who have difficulties with reading and comprehension.

Members of the healthcare profession must make a diligent effort to improve the readability of printed materials related to medical literacy that are distributed to patients and community members. Within the community, the lack of or misunderstanding of, medical

literacy can influence lifestyles of African American males. It may be a cause of embarrassment for people who cannot read or have low comprehension skills.

In a study of epilepsy patients, Moult, Frank, and Brady (as cited in Elliott et al., 2007) reported that patients whose health literacy levels are low are at greater risk for poor health outcomes because without "supplemental printed information" (p. 526), about 50% of information given during medical instruction or consultation is forgotten after five minutes. Twenty percent of the patients were able to retain this information; however when patients receive printed information, the retention rate increased by 50% (Entwistle & Watt; MacFarlane et al. as cited in Elliott et al., 2007).

Medical Literacy

In hospital physician residency programs, resident physicians often overrate the literacy abilities of their patients and do not understand that many patients have low literacy levels (Bass & Wilson, 2002). Bass and Wilson (2002) determined that resident physicians could recognize individuals with poor reading ability based on their clinical exchanges with patients when making visits to community clinics. Using the Rapid Estimate Adult Literacy in Medicine-Revised (REALM-R), an instrument that monitors possible reading difficulties, resident physicians found that at least 25% of patients may have difficulty in interpreting instructions on prescription bottles, understanding printed materials associated with patient education, following common instructions when preparing for medical tests, or giving informed consent. Bass and Wilson (2002) reported that a certain amount of shame is associated with poor literacy skills. The study found that a group of urban individuals with poor reading and comprehension levels (65%) failed to reveal their reading difficulties to their spouses, with 19% never telling anyone about their inability to read.

The Internet is a relatively new tool for dispensing health information, with sites ranging from the American Medical Association (AMA) to WebMD. More people are using these sites to obtain information about symptoms, pharmacology, prevalence of disease, treatment for disease, etc. Most of the information on the Internet is written at a twelfth-grade level, which may preclude individuals with poor reading abilities from accessing and using the information (Wilson, 2003). According to researchers Davis (2002) and Kickbusch (2001), the Internet is an excellent resource for obtaining health-related information, although poor readers are at a disadvantage in comprehending and applying the information.

Assessing Health Literacy

At the present time, a verbal test for assessing English language proficiency in healthcare is unavailable (Downey & Zun, 2007). The Short Test of Functional Health Literacy Assessment (STOFHLA) can be used to assess health literacy with a written examination, although it does not measure language competency. An oral test for determining English literacy, the Basic English Skills Test (BEST) is available and can be administered to determine English language competency.

Literary issues are problematic for all healthcare providers who must learn to identify literacy problems in patients (Lee, 1999). They need to recognize that literacy problems exist and solutions must be developed to help identify the reading levels of the people in their care. Regardless of their educational levels, healthcare providers may need to have educational materials, discharge instructions, and consent forms simplified to accommodate patient literacy levels. Patient educators and healthcare providers need to understand that educational materials must be developed to reflect different reading levels and utilize the tools that are available to

assist in helping patients understand their treatment regimens (e.g., need for examinations, taking medications properly, etc.).

The BEST and STOFHLA tests can assist in measuring different types of skills (Downey & Zun, 2007). The BEST assesses verbal competency allowing the exchange of oral communications in a healthcare environment. The BEST literacy test also is used by employers and government agencies to determine English language fluency levels. The Center for Applied Linguistics (CAL) designed the BEST Literacy Test in 1986 as a wordless, picture-based examination to test individuals' verbal comprehension and communication skills. Unlike tests for English language literacy such as the STOFHLA that assesses reading and comprehension capabilities for healthcare literature, the BEST is used to assess the ability to communicate verbally in English (Downey & Zun, 2007). The reliability and validity of the BEST has been determined, with reliability coefficients ranging from .72 to .90. The BEST assesses verbal competency allowing the exchange of information in a healthcare environment. People who have low level English language fluency skills can be identified and tested in a short time during emergency room visits to determine the need for a translator who can facilitate communication between the medical staff and the patient.

An assessment tool for health literacy is the TOFHLA—the Test of Functional Health Literacy in Adults (Harper, Thompson-Robinson, & Lewis, 2003). This instrument was based on the assumption that a greater reading ability than was obtained in school is needed for individuals to read and understand healthcare materials properly and cope with the healthcare system appropriately. The TOFHLA is used to assess both numeracy (quantitative literacy) and reading comprehension in people with low to moderate literacy levels. A patient's ability to read prescription bottle labels, medication instructions, doctor appointment follow-up notices,

informed consent forms, diagnostic test instructions, and completion of insurance forms is assessed on the TOFHLA, which requires approximately 20 minutes to complete.

The STOFHLA is a more efficient test than the TOFHLA and measures literacy and reading comprehension (Harper et al., 2003). However, the STOFHLA does not include a numeracy assessment. The STOFHLA includes 36 items and can be completed in approximately seven minutes. The test assesses a patient's ability to complete tasks, including reading prescription bottle labels, understanding instructions on how and when to take medications, and reading notices about doctor's appointments, as well as completing informed consent forms and insurance forms. However, the STOFHLA does not measure listening and/or verbal comprehension, which is essential in emergency rooms and when visiting the doctor.

The REALM provides an estimate of an individual's functional health literacy level (Harper et al., 2003). The test can be administered in one to two minutes and often is used in clinical environments to determine the literacy levels of individuals seeking treatment. The test does not assess the numeracy that is considered to be an essential component of health literacy.

Harper et al. (2003) tested the health literacy of 30 women in rural Florida who volunteered to participate in interviews with the researchers. The STOFHLA was administered to the women who had to complete the test within seven minutes. Of the 30 women, 29 who were tested had passable health literacy levels, with one participant having a marginal level. The authors concluded that the STOFHLA is a valid, reliable tool that can measure the health literacy levels of people who may have low to moderate levels of literacy.

Chronic Illnesses

Chronic illnesses affect individuals all over the world and place substantial liability on individuals, as well as the governments that support healthcare costs (Strong, Mathers, Leeder, &

Beaglehole, 2005). Chronic illness as defined by Frietas and Mendes (2007) was "the medical condition or health problem with symptoms or limitations that require long-term management" (p. 592). Frietas and Mendes (2007) further asserted that chronic illnesses typically are permanent and result in a deviation from normal life that can influence many aspects of life (e.g., physical, psychological, and social abilities). Finseth (2009) indicated that chronic illnesses generally last three or more months. Hippocrates, the ancient Greek father of medicine, categorized chronic illness as an illness that presents with long-term symptoms and/or pain that lasts, despite medical treatment, and acute illness as an illness that occurs abruptly, is short lasting, and self-terminating (Answers.com, n.d.). By 2015, chronic illnesses are expected to result in death for 17 million individuals who are under the age of 70 (Strong et al., 2005), with more than 80% of the burden for chronic diseases assumed by people under 70 years of age.

Life expectancy in the United States hit a new high in 2005, as deaths from circulatory diseases and cancer continued to decline (Goetzel, 2009). While individuals are living longer, they can expect to receive a diagnosis associated with a chronic illnesses such as cancer (9.8 million), diabetes (20.8 million), and heart disease (71.3 million) (Ayers & Kronenfeld, 2007). Many individuals suffer from more than one chronic illness, including 80 million Americans who are expected to have multiple chronic conditions by 2020 (Wolff, Starfield, & Anderson, 2002). Seventy-five percent of the total U.S. healthcare costs are spent on treatment for chronic illnesses (Ayers & Kronenfeld, 2007). Increased sick time, fewer days worked, the inability to work at all, and higher levels of depression are some of the effects of chronic illness (Loeb, 2006).

African Americans experience chronic illness at higher rates with poorer outcomes than their Caucasian American counterparts (Gitlin et al., 2008). African Americans often experience

poorer physical health and have greater functional disabilities, and areat higher risk for conditions that are disabling and are more likely to encounter serious health issues such as stroke, diabetes, cancer, and cardiovascular disease.

African Americans also tend to have higher rates of obesity and hypertension that are contributing factors in the development of diabetes than Caucasian Americans. Many chronic illnesses can be prevented for both African Americans and Caucasian Americans through lifestyle modifications such as better nutrition, physical activity, diet plans, and smoking cessation that can minimize risks associated with chronic illnesses like diabetes, cardiovascular disease, and cancers (Paez, Zhao, & Hwang, 2009). However, African Americans also have limited access to goods and services needed to help reduce chronic illnesses because goods such as healthy foods like fruits and vegetables may not be available in racially-segregated neighborhoods because large grocery stores are not in close proximity. Services, including workout facilities to promote exercise, or access to affordable healthcare, may not be located in their neighborhoods. As African Americans lack access to these types of goods and services, they may encounter health disparities that reflect their socioeconomic status.

The increase in chronic illnesses makes health promotion difficult. Diabetes, a common chronic illness, affects many people—especially African Americans—and is an important element resulting in a public health crises that negatively affects chronic illness management in the United States (Jessup et al., 2009).

Type 2 Diabetes

Diabetes is a growing health problem in the United States that affects a greater percentage of people who are older, from minority groups, and have low socioeconomic status. Diabetes mellitus (referred to as type 2 diabetes) is associated with elevated levels of blood sugar

that result from deficiencies in insulin secretion (MedicineNet, n.d.). Insulin is created in the body to monitor blood glucose levels that rise after eating. When the pancreas does not produce sufficient insulin, hyperglycemia (high levels of blood glucose) occurs. Diabetes is a chronic disease that can be controlled, but not cured. When not controlled, diabetes can result in blindness, kidney failure, and/or nerve damage. In addition, diabetes can accelerate narrowing and hardening of the arteries that can result in cerebrovascular accidents and coronary heart disease.

Approximately 16 million people in the United States have diabetes, and only about 50% are aware of their illness (Young, Maynard, & Boyko, 2003). When compared to Caucasian Americans, African Americans tend to be diagnosed with diabetes more often and also are prone to developing complications, including amputations of limbs and end stage renal disease. However, Caucasian Americans developed cardiovascular disease more frequently than African Americans.

Patient Education Programs

Freda (2004) discussed the change in patient care that has resulted in a shift from a patriarchal system of care (i.e., patient was treated as the object of care) to a system of healthcare that considers the patient to be a partner. As a partner, patients are expected to develop sufficient knowledge about their conditions to participate in making healthcare decisions. Freda (2004) asserted that patient education has changed from telling patients which healthcare behaviors they must practice to helping patients learn about managing their illness or disease in ways that can result in improved quality of life. Many older patients often have difficulty in accepting their new role as a partner in their healthcare. According to Freda (2004), two principles—simplicity and reinforcement—are needed in providing patient education. "Simplicity means that

educational messages must be delivered so the client can readily understand them" (p. 205). The four concepts associated with simplicity are:

1. Teach easy topics about an illness first, and then add information on more complex topics.

2. Use words that the patient can understand easily and keep away from using medical jargon when possible.

3. Use language that is meaningful to the general public. For example, the word "positive" generally has a good meaning to most people, but "positive" can mean something bad in healthcare. Patients may be confused if this type of word is used in education programs.

4. Use basic language to tell patients exactly what they should do. Do not use ambiguous terms if you want patients to become educated consumers of healthcare.

Four concepts also are associated with reinforcement. These concepts are:

1. Teach the one topic that clients should learn first in the lesson and then teach that same topic again at the end of the session.

2. Ask patients to repeat what they learned in the lesson to determine the extent to which they have internalized the information.

3. Employ visual aids in the education program as the use of multiple senses can improve understanding.

4. Provide educational materials to the patients at each session to reinforce the information at home.

Using these types of measures when teaching patients to self-manage their diseases can provide positive results with patients becoming partners in their healthcare rather than objects of

healthcare. Reinforcement is needed at every patient visit, with the information being repeated multiple times both during each teaching session and at different teaching sessions. The more times a patient hears the educational message, the more likely it is that he or she will retain the information.

Successful diabetes care is dependent on a patient's ability to self-manage his or her disease (Gebhart, 2008). Participation in patient education programs can help patients manage their disease successfully and improve their quality of life, while reducing the possibility of amputation, blindness, premature cardiovascular disease, renal failure, and other complications associated with diabetes.

When individuals are diagnosed with diabetes, they often experience negative feelings although they may be comforted that their diagnosis is better than what it could have been (Weiss & Funnell, 2009). They question what does being a diabetic mean and why is this disease happening to them. While they do not want an inclusive assessment of "'pancreatic mechanics' or the pathogenesis and other clinical aspects of diabetes" (Weiss & Funnell, 2009, p. 149), they need simple explanations of the disease process and how it influences their situation clinically and environmentally. Many physicians suggest that their patients newly diagnosed with diabetes should attend education programs. According to Weiss and Funnell (2009), these programs provide seven key messages that can make self-management of their diabetes easier:

- Diabetes is self-managed

- Diabetes needs to be taken seriously

- Patients should learn all they can about their disease

- Treatment is dynamic, not static, changing over time

- Patients may experience negative emotions when trying to cope with diabetes

- Patients should take one step at a time when making lifestyle and behavioral changes

- Complications associated with diabetes (e.g., cardiovascular disease, amputations, retinal problems, etc.) are not inevitable.

Through participation in patient education programs, a LIFE approach can be developed. Four specific steps are used in the LIFE approach:

1. *Learn* about your diabetes, your healthcare team, your personal life circumstances, and your feelings about diabetes.

2. *Identify* your three guiding principles, your role, how much flexibility you need in your life and diabetes plan, and the blood glucose and other targets toward which you are working.

3. *Formulate* your personal self-management plan, including both clinical care and your self-management strategies.

4. *Experiment* with and *Evaluate* your plan based on both your achievement of target levels and your ability to sustain this plan given your life circumstances and other priorities. (Weiss & Funnell, 2009, p. 151)

According to Williams, Baker, Parker, and Nurss (1998), patients diagnosed with chronic illnesses such as hypertension and type 2 diabetes should benefit from patient education classes designed to provide knowledge about their conditions. For example, participation in patient education classes for diabetes can improve a patient's understanding of the need for adherence to diet, medications including insulin injections, and glucose monitoring systems. Through education programs, a patient can accept his or her diagnosis and begin to understand the behavioral changes that are needed to become active participants in self-management of his or her chronic conditions.

Patient education programs typically use written materials that explain the "disease process, medical management, and self-care instructions" (Williams et al., 1998, p. 166). The researchers continued that materials used for health education are readily available that provide consistent content; however, the materials have reading levels that generally are too high for

patients who have low literacy levels or those who are functionally illiterate. Therefore, these patients may not benefit from patient education classes.

Williams et al. (1998) tested the correlation between attendance at diabetes education and literacy. The research indicated that most study participants (73%) who were diagnosed with diabetes had attended a mean of 5.8 (*SD* = 7) diabetes education classes. The correlation between the number of classes attended and literacy levels were not related. Williams et al. (1998) findings indicated that "patients with diabetes and inadequate functional health literacy had significantly less knowledge of their disease" (p. 169). Based on this finding, Williams et al. (1998) suggested that people who have a diagnosis of diabetes and poor literacy skills were likely to less have knowledge about their illness regardless of participation in diabetes education classes. This conclusion supports the conjecture that patients with poor reading skills are not likely to benefit from educational programs developed for people diagnosed with diabetes.

"Males receiving VA care with self-reported diabetes indicated receiving preventative care services at equivalent or higher levels than their counterparts receiving care outside the VA and nonveterans" (Reiber, Koepsell, Maynard, Haas, & Boyro, 2004, p. B3). The authors reported that a disproportionate number of individuals who were older, members of racial minorities, and low income were diagnosed with diabetes. In 2002, 4.5 million veterans were eligible to receive VA care in 2002. These veterans made 46.5 million VA outpatient clinical visits, with 564,700 veterans hospitalized in VA medical centers. Veterans using VA medical services were more likely to be diagnosed with a chronic disease. According to Reiber et al. (2004), the third most common VA diagnosis was diabetes, with 1.7 million hospital bed days and 25% of pharmacy costs used to treat the veterans for this condition. Reiber et al. (2004) reported that a higher percentage of veterans (16.0%) receiving care in VA medical centers were

diagnosed with diabetes than was found in the general population (7.2%). Veterans who used VA medical services tended to be male, non-White, with lower socioeconomic status, poorer health status, and a greater number of limitations placed on their activities of daily living than male veterans who were not receiving care from VA sources. According to Reiber et al. (2004), the VA offered veterans diagnosed with diabetes several different strategies to help them learn to self-manage their disease. Their philosophy was that veterans who attended diabetes education classes were better able to perform the daily self-management requirements necessary to live with the disease. The authors indicated that the necessary components of self-management involve the following five activities that were interrelated:

1. Assessment and feedback on current self-management behaviors;

2. Collaborative setting of specific self-management goals;

3. Identification of barriers and social environmental supports for accomplishing goals;

4. Developing individually tailored problem solving strategies to overcome obstacles; and

5. Including strategies for follow-up support. (Reiber et al., 2004, p. B8)

Patient action plans were created and refined using these strategies to improve the care and management of diabetes.

A study by Volk, Spawn, Cass, Hawley (2003) studied the use of patient education programs on making informed decisions about prostate cancer screening. A total of 160 men were placed into two groups: a treatment group that received the patient education program and a control group that received a pamphlet two weeks following the initial screening. At the end of one year, 70% of each group reported having had a physical examination during the year between recruitment and follow-up. The obtained difference in the number of men in the intervention group who reported having had a PSA test than men in the control group was

statistically significant. While the authors argued that informed men were less apt to have a PSA test, they also indicated that the differences may have been cultural, with more African American men screened (56.3%) than Caucasian American men (28.3%).

Reluctance of African Americans to Participate in Research

African Americans are often reluctant to participate in research and as a result, are underrepresented in important research on literacy, health-related literacy, and chronic illnesses. According to Freimuth et al. (2001), African Americans are hesitant to volunteer for health-related clinical trials. Much of this lack of participation is due to mistrust of the research community, lack of understanding of the process of research, and legalities associated with the informed consent procedures. Researchers need to develop trust with African Americans when explaining medical research procedures. They can build trust by developing educational programs that discuss the purpose of the clinical trials and African Americans' role in the research. Friemuth et al. (2001) further explained that when African Americans participate in clinical trials, they are presented with challenges in meeting the compliance demands of the study, and their attrition rates are higher than Caucasian Americans, resulting in further disproportionate representation in the final study.

Smith of John Hopkins University (as cited in Freimuth et al., 2001) indicated that African Americans perceive that the Tuskegee syphilis study "provides validation for common suspicions about the ethical even-handedness in the medical establishment and in the federal government, in particular when it comes to Black people" (p. 799). African Americans who perceive they may be mistreated by researchers are less likely to volunteer and complete health-related clinical trials. They may perceive that researchers are motivated by money, thinking that

if a medical product (i.e., medication or equipment) works successfully, the researcher will gain monetary rewards after the study is completed.

Friemuth et al. (2003) conducted a study with 60 African Americans (20 men and 40 women) using focus groups held in four cities: Washington, DC, Los Angeles, Atlanta, and Chicago. The focus group participants were placed into groups using income (low or moderate) as a basis. The findings of the focus groups indicated that researchers must use active approaches when recruiting African American participants into research. They must provide educational programs to improve knowledge and trust between research participants and researchers, as well as improve communications. With these approaches, researchers can increase the number of volunteers for clinical trials and reduce attrition during the study. Friemuth et al. (2003) indicated that the focus group members were aware of the importance of research, but made differences in the types of research in which they would feel comfortable participating.

CHAPTER 3

METHODOLOGY

The methods that were used to collect and analyze the data needed to test the research questions developed for this study are presented in this chapter. The topics that were discussed include: restatement of the purpose, research design, participants, instrumentation, data collection procedures, and data analysis. Each of these topics are/is presented separately.

Restatement of the Purpose

The purpose of this study was to determine if there were differences between African American men who have served in the military and those who were nonveterans in their ability to read and comprehend medical information for a chronic illness, such as type 2 diabetes, that is prevalent among African Americans.

Research Design

A nonexperimental, descriptive research design was used in this study. A descriptive research design is used when no treatment or intervention is provided for participants and the researcher does not attempt to manipulate the independent variable. Three questionnaires were used to collect the data for this study.

Participants

Population

African American adult men who lived in the Detroit metropolitan area were included in the population defined for this study. According to the 2008 census estimates from the United States Census Bureau (2009), approximately 256,152 African American adult men were living in Detroit. Of this number, 33,558 were veterans of at least one service branch (Air Force, Army, Coast Guard, Marines, and Navy) of the military. These numbers are estimates that are expected

to continue changing on a daily basis as African American men are discharged from the service and become veterans, while other veterans die from a variety of causes. The second group of participants was approximately 215,623 adult African American nonveterans.

Sample

A total sample of 98 participants was used in this study (Krejcie & Morgan, 1970). The veteran sample included 35 participants and the nonveteran sample had 35 participants. Veterans were asked to participate if they are members of veteran organizations (American Veterans, Veterans of Foreign Wars, etc.). The inclusion criteria for the sample included: (a) over 18 years of age, (b) male, (c) self-identified as African American, and (d) either a veteran or nonveteran. There are no educational criteria required for participation. While the study focuses on diabetes as a chronic disease, the participants did not have to be diabetic as the study was concerned with their ability to read and comprehend a brochure containing medical information.

The leadership of the veteran organizations was approached to ask permission to approach their members. Those who agreed were asked to provide a letter of support indicating their willingness to allow the researcher to address their members regarding participation in the study. The nonveterans who are members of fraternal organizations (Masons, Alpha Phi Alpha, etc.) were invited to be included in the study. To obtain a representative sample of nonveterans living in Detroit, the members of Alpha Phi Alpha were asked to bring an African American acquaintance to a meeting as potential participants.

Instruments

Each participant completed three instruments. The first instrument was a demographic survey developed by the researcher specifically for this study. The second instrument was the Short Test of Functional Health Literacy in Adults (STOFHLA) and the third instrument was a

researcher-developed questionnaire measuring the extent to which the participant understood the information presented in a brochure regarding diabetes management. Copies of all instruments are included an Appendix A.

Demographic Survey

The researcher developed a demographic questionnaire to collect data on the personal characteristics of the participants. The items are age, marital status, race/ethnicity, education, work status, veteran status, and self-reported diagnosis of diabetes. Each participant answered these items using both forced-choice and fill-in-the-blank response formats. These items were used both to describe the participants, with some also used as independent variables to address the research questions posed for the study.

STOFHLA

The STOFHLA (Baker, Williams, Parker, Gazmararian, & Nurss, 1998) is a 36-item assessment measuring reading ability. The test took up to seven minutes to complete and was group administered. The participant must read and understand two passages: (a) directions for an upper gastrointestinal tract radiographic procedure that has been written at a 4.3 grade level, and (b) the Medicaid rights and responsibilities passage that has been written at a 10.4 grade level. According to Chew, Bradley, and Boyko (2004), the STOFHLA is strongly correlated with other validated health literacy instruments. The STOFHLA has been selected for the present study as a reading assessment because of its ability to quickly evaluate health literacy.

Participants read the passages in the STOFHLA and have to select the correct word from a list of four words to complete a sentence or phrase. For example, the first sentence is "Your doctor has sent you to have a _____ X ray." The participant then chooses the correct word from the list of four words—stomach, diabetes, stitches, germs—that makes contextual sense. The first

passage has 16 words and the second passage has 20 words that must be selected. The participant gets one point for every correct word choice, with a total possible score of 36.

The scores were divided into three groups that are mutually exclusive. Scores from 0 to 16 indicate inadequate health literacy. People who score at this level typically misread simple instructions, medication bottles, and appointment cards. People with scores between 17 and 22 have marginal health literacy, are able to comprehend simple instructions, but generally are unable to understand complicated directions. People who score between 23 and 36 are considered to have adequate health literacy and can understand medical brochures and other health-related information.

The STOFHLA measures an individual's ability to read and understand written information. It does not assess the ability of an individual to understand verbal instructions. However, for the purpose of this study, health literacy is defined as the ability to read written information.

Reliability. The internal consistency of the STOFHLA was reported to be .97 by Baker et al. (1998). As a measure of reliability, this alpha coefficient provided support that the survey had good internal consistency.

Validity. Validity was tested by correlating STOFHLA scores with scores on the REALM, a valid instrument that measured literacy. The correlation of .80 provides support that the STOFHLA had good validity.

Brochure

The brochure, *Type 2 Diabetes: The Silent Disease*, was developed by the Michigan Department of Community Health. This brochure provided information about diabetes, including warning signs, risk factors for diabetes, what to do if at risk for diabetes, and tips for working

with doctors to manage diabetes. The short brochure was written at a 6.5 grade point level as indicated by the Flesh-Kincaid readability index.

The researcher developed a questionnaire to determine if a participant gained any knowledge about type 2 diabetes after reading the brochure. A multiple choice format with one correct response and three incorrect distracting responses was used for the 10 questions on this instrument. The instrument was scored by giving one point for each correct answer. Total scores can vary from 0 to 10, with higher scores indicating greater knowledge gained from the brochure.

Reliability. As the instrument has been developed by the researcher and has not been used in previous research, data are not available on the reliability of the instrument. The researcher used data collected from the study to test the internal consistency of the instrument. The Cronbach alpha coefficients obtained from the analysis are presented in the final dissertation.

Validity. The purpose of this instrument was to determine if a participant could read and comprehend information presented in a brochure on a chronic illness that is common in the African American population. To assess the content validity of the instrument, the researcher sent a copy to the Michigan Department of Community Health and asked them to review the questions. In addition, two other people familiar with type 2 diabetes were asked to evaluate the brochure and the instrument to assess the extent to which the instrument was measuring the ability to read and understand the information presented in the brochure. The questionnaire was considered to measure the information contained in the brochure.

Data Collection

Following approval from the Human Investigation Committee (HIC) at Wayne State University, the researcher began the data collection process. The researcher met with leaders of the organizations that had agreed to allow distribution of survey packets to their members. These organizations included the Alpha Phi Alpha Fraternity Inc., the Masons, Detroit Literacy, Veterans of Foreign Wars, and American Veterans. These organizations allowed the researcher to address their memberships to recruit potential participants.

The researcher developed survey packets including a copy of the brochure, the three instruments, a research information sheet, and a pre-addressed, postage-paid envelope as a means of returning the completed surveys. The research information sheet contained the same information as an informed consent form, but did not require a signature. Using the research information sheet provided greater anonymity to the participant as the researcher has no information regarding the name of the participant. See Appendix B for a copy of the research information sheet.

The survey packets were not coded in any way as the researcher was unaware of the number and names of potential participants from any organization. Although the researcher maintained a list of the number of surveys distributed to the organizations, there was no way to link any individual to an organization.

The researcher developed a script to read to potential participants at organizational meetings. This script (see Appendix B) provided consistency in the recruitment process. The researcher answered any questions the potential participants had in regard to the research and the participants' roles in the study.

The participants were asked to return the completed surveys to the researcher at the end of their meetings. As no coding was used on the survey packets, follow-up on non-responding individuals was not possible. However, the researcher asked the leaders of the participating organizations to remind their members of the importance of participating in this study. All data collection was completed three to four weeks after initial distribution of the survey packets.

Data Analysis

Data collected from the surveys were analyzed using SPSS. The data analysis was divided into three sections, and the first section described the participants using frequency distributions, measures of central tendency and dispersion, and crosstabulations. The second section provided information on the scaled variables (STOHFLA and the brochure). The research questions and associated hypotheses were tested using inferential statistics in the third section of the survey. These statistical analyses included t-tests for independent samples and stepwise multiple linear regression analysis. Decisions on the statistical significance of the findings were be made using a criterion alpha level of .05. Table 6 presents the statistical analyses that was be used in this study.

Table 6

Statistical Analysis

Research Questions	Variables	Statistical Analysis
1. What is the difference in health literacy between male African American veterans and that of male African American non-veterans? H_1: There is a statistically significant difference in health literacy between male African American veterans and male African American non-veterans. H_{01}: There is no statistically significant difference in health literacy between male African American veterans and male African American non-veterans.	<u>Dependent Variable</u> Health literacy levels <u>Independent Variable</u> Veteran/nonveteran status	t-Test for two independent samples were used to compare the health literacy levels as measured by the STOFHLA between African American men who are veterans and those who are nonveterans.
2. What is the difference in the ability of male African American veterans to read and comprehend medical information regarding self-care for type 2 diabetes (e.g., monitoring blood sugar levels, taking medications, choosing the right foods, etc.) and that of male African American non-veterans? H_2: There is a statistically significant difference in the ability of male African American veterans to read and comprehend medical information regarding self-care for type 2 diabetes (e.g., monitoring blood sugar levels, taking medications, choosing the right foods, etc.) and that of male African American non-veterans? H_{02}: There is no statistically significant difference in the ability of male African American veterans to read and comprehend medical information regarding self-care for type 2 diabetes (e.g., monitoring blood sugar levels, taking medications, choosing the right foods, etc.) and that of male African American non-veterans?	<u>Dependent Variable</u> Scores for the knowledge test based on knowledge from the "Type 2 Diabetes: The Silent Disease" brochure <u>Independent Variable</u> Veteran/nonveteran status	t-Test for two independent samples were used to compare scores on the knowledge test based on knowledge from the "Type 2 Diabetes: The Silent Disease" brochure between African American men who are veterans and those who are nonveterans.

Research Questions	Variables	Statistical Analysis
3. Can the ability to read and comprehend medical information regarding self-care for type 2 diabetes (e.g., monitoring blood sugar levels, taking medications, choosing the right foods, etc.) can be predicted from educational level, health literacy levels, and veteran's status? H$_3$: The ability to read and comprehend medical information regarding self-care for type 2 diabetes (e.g., monitoring blood sugar levels, taking medications, choosing the right foods, etc.) is significantly predicted by age, educational level, health literacy levels, and veteran's status? H$_{03}$: The ability to read and comprehend medical information regarding self-care for type 2 diabetes (e.g., monitoring blood sugar levels, taking medications, choosing the right foods, etc.) is not significantly predicted by age, educational level, health literacy levels, and veteran's status?	<u>Dependent Variable</u> Scores on the knowledge test based on knowledge from the "Type 2 Diabetes: The Silent Disease" brochure <u>Independent Variables</u> Age Educational Level Health Literacy Level Veteran/nonveteran status	Stepwise multiple linear regression analysis were used to determine which of the independent variables can be used to predict the dependent variable.

Research Questions	Variables	Statistical Analysis
4.. Is there a statistically significant association between the reading level and the African American veterans' and nonveterans' decision-making regarding following health care practitioners' suggestions for self-management of health care? H_4: There is a statistically significant association between reading level and African American veterans' and nonveterans' decision-making regarding following health care practitioners' suggestions for self-management of health care. H_{04}: There is no statistically significant association between reading level and African American veterans' and nonveterans' decision-making regarding following health care practitioners' suggestions for self-management of health care.	<u>Dependent Variables</u> Responses on decision making questions (dichotomous variables) <u>Independent Variable</u> Veteran/nonveteran status	Crosstabulations and chi-square tests were used to determine if there is an association between questions related to health-care decision making by veteran/nonveteran status.

CHAPTER 4

RESULTS OF DATA ANALYSIS

This chapter presents the results of the data analyses that were used to describe the sample and address the research questions and hypotheses developed for the study. The chapter is divided into two sections. The first section uses descriptive statistics and crosstabulations to compare demographic characteristics of the veteran and nonveteran groups. Inferential statistical analyses are used in the second section of the chapter to test the hypotheses.

The purpose of this study was to determine if there are differences between male African Americans who have served in the military and those who are not veterans in their ability to read and comprehend medical information for a chronic illness prevalent among African Americans, such as Type II diabetes.

A total of 96 participants completed the Short Test of Health Literacy Assessment (STOFHLA) and a knowledge questionnaire based on a pamphlet developed by the Michigan Department of Public Health (See Appendix C). Two participants did not provide their veteran status and were eliminated from the study. As the study was limited to African American male participants, two individuals who completed the surveys, but self-identified as Caucasian and Hispanic also were eliminated. The remaining 92 participants, including 44 veterans and 48 nonveterans, were used in the statistical analysis of the data.

Description of the Participants

The participants provided their ages on the survey. Their responses were summarized using descriptive statistical analyses. Table 7 presents results of this analysis.

Table 7

Descriptive Statistics – Age by Veteran/Nonveteran Status

					Range	
Group	Number	Mean	SD	Median	Minimum	Maximum
Veteran	42	58.26	14.27	58.50	22	85
Nonveteran	45	52.29	13.89	54.00	24	87
Missing Veteran 2						
Nonveteran 3						

The mean age of the participants who reported they were veterans was 58.26 (sd = 14.27) years with a median of 58.50 years. The range of ages in the veterans group was from 22 to 85 years. The nonveteran participants were younger, with a mean age of 52.29 (sd = 13.89) years and a median of 54.00 years. The participants in the nonveteran group ranged from 24 to 87 years. Two veterans and 3 nonveterans did not provide a response to this question.

The participants provided their marital statuses on the survey. Their responses were crosstabulated by group membership. Table 8 presents results of this analysis.

Table 8

Crosstabulations – Marital Status by Veteran/Nonveteran Status

	Group					
	Veteran		Nonveteran		Total	
Marital Status	Number	Percent	Number	Percent	Number	Percent
Single	9	20.5	14	29.2	23	25.0
Married	27	61.3	29	60.4	56	60.9
Divorced/Separated	4	9.1	5	10.4	9	9.8
Widowed	4	9.1	0	0.0	4	4.3
Total	44	100.0	48	100.0	92	100.0

The majority of the participants in both groups (n = 56, 60.9%) reported their marital status as married. Of this number, 27 (61.4%) were veterans and 29 (60.4%) were nonveterans. Nine (20.5%) veterans and 14 (29.2%) nonveterans were single at the time of the study. Of the 9 (9.8%) participants who indicated they were divorced or separated, 4 (9.1%) were veterans and 5 (10.4%) were nonveterans. Four (9.1%) veterans indicated they widowed.

The participants were asked to indicate their highest level of completed education. The responses to this question were crosstabulated by veteran status. The results of this analysis are presented in Table 9.

Table 9

Crosstabulations – Educational Level by Veteran/Nonveteran Status

| | Group | | | | | |
| | Veteran | | Nonveteran | | Total | |
Educational Level	Number	Percent	Number	Percent	Number	Percent
Less than high school	1	2.3	2	4.2	3	3.3
High school graduate	9	20.5	12	25.0	21	22.8
GED	4	9.1	2	4.2	6	6.5
Some college	16	36.3	12	25.0	28	30.5
Associate's degree/ Technical school	3	6.8	6	12.5	9	9.8
Bachelor's degree	7	15.9	5	10.4	12	13.0
Graduate degree	4	9.1	9	18.7	13	14.1
Total	44	100.0	48	100.0	92	100.0

The largest group of participants (n = 28, 30.5%) indicated that they had some college, including 16 (36.3%) veterans and 12 (25.0%) nonveterans. Twenty-one (22.8%) participants were high school graduates. This number included 9 (20.5%) veterans and 12 (25.0%)

nonveterans. Four (9.1%) veterans and 9 (18.7%) nonveterans indicated they had completed graduate school.

The participants indicated if they were employed on the survey. Their responses were summarized using crosstabulations. Table 10 presents results of this analysis.

Table 10

Crosstabulations – Employment by Veteran/Nonveteran Status

| | Group | | | | | |
| | Veteran | | Nonveteran | | Total | |
Employment	Number	Percent	Number	Percent	Number	Percent
Yes	18	41.9	30	62.5	48	52.7
No	25	58.1	18	37.5	43	47.3
Total	43	100.0	48	100.0	92	100.0

Missing: Veterans   1

The majority of participants (n = 48, 52.7%) reported that they were working. This number included 18 (41.9%) veterans and 30 (62.5%) nonveterans. The participants were asked to provide the type of work they were doing as part of their employment. The categories of employment included manufacturing, business, education, military, and service.

The participants who were military veterans were asked to indicate the branch of service in which they had been members. Their responses were summarized using frequency distributions. Table 11 presents results of this analysis.

Table 11

Frequency Distributions – Branch of Military Service (Veterans Only)

Branch of Military Service	Number	Percent
Air Force	5	11.6
Army	21	48.9
Marines	4	9.3
Navy	12	27.9
Other	1	2.3
Total	43	100.0

Missing 1

The largest group of veterans (n = 21, 48.9%) reported they had served in the Army, with 12 (27.9%) indicating service in the Navy. Five (11.6%) veterans had been in the Air Force, with 4 (9.3%) reporting they had been in the Marines. One (2.3%) participant indicated "other," explaining that he had served in the Air National Guard. One veteran did not provide the military branch in which he had served.

The participants were asked if they had been diagnosed with diabetes. The responses to this question were crosstabulated by veteran status. The results of this analysis are presented in Table 12.

Table 12

Crosstabulations – Diagnosed with Diabetes by Veteran/Nonveteran Status

	Group					
	Veteran		Nonveteran		Total	
Diagnosed with Diabetes	Number	Percent	Number	Percent	Number	Percent
Yes	11	28.2	7	15.6	18	21.4
No	28	71.8	38	84.4	66	78.6
Total	39	100.0	45	100.0	84	100.0

Missing: Veterans   5
　　　Nonveterans 3

Eleven (28.2%) veterans and 7 (15.6%) nonveterans indicated that they had been diagnosed with diabetes. Five veterans and 3 nonveterans did not provide a response to this question.

Research Questions and Hypotheses

Four research questions and associated hypotheses were developed for this study. Each of these questions was addressed using inferential statistical analyses, with all decisions on the statistical significance of the findings.

Research question 1. What is the difference in health literacy between male African American veterans and that of male African American non-veterans?

H_1: There is a statistically significant difference in health literacy between male African American veterans and male African American non-veterans.

H_{01}:   There is no statistically significant difference in health literacy between male African American veterans and male African American non-veterans.

The scores for health literacy were obtained by counting the number of correct responses on the Short Test of Functional Health Literacy in Adults (STOFHLA) assessment. Possible

scores could range from 0 to 36. The scores were compared between veterans and nonveterans using t-tests for two independent samples. Results of this analysis are presented in Table 13.

Table 13

t-Test for Two Independent Samples – STOFHLA by Veteran Status

Group	N	Mean	SD	Range Minimum	Maximum	t-Value	Sig
Veteran	44	28.95	10.04	0	36	-.73	.470
Nonveteran	48	30.27	7.25	0	36		

The comparison of veterans and nonveterans scores on the STOFHLA using a t-test for two independent samples was not statistically significant, $t(90) = -.73$, $p = .470$. Nonveterans ($m = 30.27$, $sd = 7.25$) had slightly higher scores on the STOFHLA than veterans ($m = 28.95$, $sd = 10.04$). Based on this finding, the null hypothesis of no difference in health literacy between veterans and nonveterans is retained.

Research question 2. What is the difference in the ability of male African American veterans to read and comprehend medical information regarding self-care for type 2 diabetes (e.g., monitoring blood sugar levels, taking medications, choosing the right foods, etc.) and that of male African American non-veterans?

H_2: There is a statistically significant difference in the ability of male African American veterans to read and comprehend medical information regarding self-care for type 2 diabetes (e.g., monitoring blood sugar levels, taking medications, choosing the right foods, etc.) and that of male African American non-veterans.

H_{02}: There is no statistically significant difference in the ability of male African American veterans to read and comprehend medical information regarding self-care for type 2 diabetes (e.g., monitoring blood sugar levels, taking medications, choosing the right foods, etc.) and that of male African American non-veterans.

The scores for diabetes knowledge were obtained by counting the number of correct answers on the instrument. These scores could range from 0 to 10, with higher scores indicating greater knowledge about diabetes obtained from the Michigan Department of Public Health pamphlet. The scores were compared by veteran status for presentation in Table 14.

Table 14

t-Test for Two Independent Samples – Diabetes Knowledge by Veteran Status

Group	N	Mean	SD	Range Minimum	Range Maximum	t-Value	Sig
Veteran	44	7.39	2.75	0	10	-.78	.433
Nonveteran	48	7.81	2.44	0	10		

When the mean scores for diabetes knowledge were compared between veterans (m = 7.39, sd = 2.75) and nonveterans (m = 7.81, sd = 2.44) using t-tests for two independent samples, the results were not statistically significant, t (90) = -.78, p = .433. This finding provided evidence that while nonveterans had slightly higher scores for diabetes knowledge, the differences were not statistically significant. Based on these findings, the null hypothesis of no difference in diabetes knowledge between veterans and nonveterans was retained.

Research question 3. How can the ability to read and comprehend medical information regarding self-care for type 2 diabetes (e.g., monitoring blood sugar levels, taking medications,

choosing the right foods, etc.) be predicted from age, educational level, health literacy levels, and veteran's status?

H$_3$: The ability to read and comprehend medical information regarding self-care for type 2 diabetes (e.g., monitoring blood sugar levels, taking medications, choosing the right foods, etc.) is significantly predicted by age, educational level, health literacy levels, and veteran's status.

H$_{03}$: The ability to read and comprehend medical information regarding self-care for type 2 diabetes (e.g., monitoring blood sugar levels, taking medications, choosing the right foods, etc.) is not significantly predicted by age, educational level, health literacy levels, and veteran's status.

A stepwise multiple linear regression analysis was used to determine which of the independent variables (age, educational level, health literacy levels, and veteran status could predict knowledge about the dependent variable, diabetes. The results of this analysis are presented in Table 15.

Table 15

Stepwise Multiple Linear Regression Analysis – Diabetes Knowledge by Demographic Variables

Independent Variables	Constant	b-Weight	β-Weight	Δr^2	t-Value	Sig
Included Variables						
Health Literacy (STOFHLA)	3.23	.15	.49	.24	5.11	<.001
Excluded Variables						
Age			-.18		-1.88	.04
Veteran Status			.01		..08	.934
High school graduate			-.07		-.66	.510
GED			.05		.54	.590
Some college			.06		.66	.509
Bachelor degree			.08		.82	.414
Associate degree			-.11		-1.12	.265
Graduate degree			.01		.10	.920

Multiple R	.48
Multiple R^2	.24
F Ratio	26.68
DF	1, 87
Sig	<.001

        One independent variable, health literacy as measured by the STOFHLA , entered the stepwise multiple linear regression equation, accounting for 24% of the variance in diabetes knowledge, F (1, 87) = 26.68, p < .001. This positive direction of the relationship between health literacy and diabetes knowledge indicated that participants who had higher levels of health literacy were better able to understand the information provided in the diabetes pamphlet and answer the questions on the associated instrument. The remaining independent variables, age of participants, education level, and veteran status, did not enter the stepwise multiple linear regression equation, indicating they were not statistically significant predictors of health literacy. Based on the significant finding on this hypothesis, the null hypothesis is rejected.

Research question 4. Is there a statistically significant association between the reading level and the African American veterans' and nonveterans' decision-making regarding following health care practitioners' suggestions for self-management of health care?

H_4: There is a statistically significant association between reading level and African American veterans' and nonveterans' decision-making regarding following health care practitioners' suggestions for self-management of health care.

H_{04}: There is no statistically significant association between reading level and African American veterans' and nonveterans' decision-making regarding following health care practitioners' suggestions for self-management of health care.

Point bi-serial correlations were used to determine the relationship between the 10 items on the diabetes knowledge questionnaire and health literacy levels as measured by the STOFHLA. The 10 items on the diabetes knowledge questionnaire were recoded to indicate either a correct or incorrect response. The scores on the STOFHLA were the actual number of correct responses and could range from 0 to 36. The results of this analysis are presented in Table 16.

Table 16

Point Bi-Serial Correlations – Diabetes Knowledge and Health Literacy

Item Number		Number	r	p
1	What type of diabetes is considered a silent disease? *Answer: Type 2*	94	.24	.021
2	Diabetes is a silent disease because: *Answer: People often have no symptoms*	94	.25	.013
3	If not managed, diabetes can result in all of the following, except: *Answer: Bad breath*	94	.47	<.001
4	Diabetes often has: *Answer: No outward signs*	94	.34	.001
5	People should be tested for diabetes if they: *Answer: If their vision is blurred*	94	.30	.004
6	People can be tested for diabetes by: *Answer: A blood test*	94	.20	.052
7	All people who have the following characteristics should be tested for diabetes, except: *Answer: Those who do not have high blood pressure or high cholesterol*	94	.29	.004
8	People diagnosed with diabetes can be healthy if they: *Answer: Eat properly*	94	.37	<.001
9	People who have diabetes should examine their feet: *Answer: Daily*	94	.25	.017
10	People who have diabetes should: *Answer: Learn as much about the disease as possible*	94	.20	.059

Eight of the 10 items on the diabetes knowledge questionnaire were significantly correlated with scores on health literacy in a positive direction. The correlations between the correct responses on diabetes knowledge and higher health literacy scores provide evidence that individuals who can read better are more aware of the disease process associated with diabetes. It is assumed that those individuals who are aware of the disease process would be more likely to

follow physician's directions in treating a chronic disease such as diabetes. Based on these findings, the null hypothesis of no relationship is rejected.

Summary

The results of the statistical analyses used to describe the sample and address the research questions and associated hypotheses have been presented in this chapter. The conclusions and recommendations based on these findings are included in Chapter 5.

CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The purpose of this study was to determine if there were differences between male African Americans who have served in the military and those who are not veterans in their ability to read and comprehend medical information for a chronic illness prevalent among African Americans, such as type 2 diabetes.

According to Sentell (2003), literacy levels should be assessed by measuring the ability to perform basic everyday tasks or educational completion level. The United States Census Bureau defined illiteracy as having less than a ninth grade education (Parker, Baker, Williams, & Nurss as cited in Sentell, 2003). Using this basic definition, the majority of the adult population of the United States is considered literate, with the World Health Organization (WHO) indicating that 99% of the United States' population is literate. In contrast, the 2003 United States National Assessment of Adult Literacy (NAAL) presented findings that approximately 93 million adults in America have literacy levels that are either basic or below basic (Elliott, Charyton, & Long, 2007). The results of the NAAL indicated that many individuals struggle to complete daily tasks, such as completing forms, reading signs, or using transportation schedules (Wilson, 2003).

Traditional patient education materials are written at levels that often are difficulty for patients with low literacy levels to comprehend the basic points presented. High readability levels associated with patient education programs and health literacy reading materials are factors that could limit the success of patients in assuming responsibility for their care. Reports have determined that a patient's literacy skills must be considered in the education about, and self-care for chronic diseases, such as diabetes. Other factors influencing knowledge and

impacting adherence to treatment regimens and disease outcomes also could include health beliefs and locus of control. However, helping individuals become more knowledgeable about their condition is an important goal of patient education programs and suggests that patients with inadequate functional health literacy, including those who have attended formal diabetes educational classes, may be unable to comprehend the basics of their disease and may be unable to perform self-management to help control their diabetes.

Sentell (2003) commented that both race and ethnicity contribute to literacy. reported that Scores on the NAAL, which measured average prose on a scale from 0 to 500, were 26 to 80 points higher for Caucasian Americans than for the other racial or ethnic groups (Kirsch, Jungeblut, Jenkins, & Kolstad as cited in Sentell, 2003). The reasons for these differences was the level of education, with Caucasian Americans having the most years of education, followed by African Americans, with Hispanics having the least number of years of education. Vahabi (2007) asserted that limited educational levels can have a direct impact on literacy, and that numerous individuals who have received high school diplomas also have inadequate literacy ability. Sentell (2003) argued that racial or ethnic differences persist even when education is controlled.

Male African Americans who have served in any branch of the armed services are more likely to be literate than male African Americans who have not served. Since World War I, all recruits have been tested for literacy skills, although literacy skills have become a prerequisite for serving in the military in the past 40 years (ASVAB, n.d.).

Since 1917, the military services have used standardized tests to assess the ability of their enlistees. The earliest testing was divided into two types: the Army Alpha test was used with enlistees who had literacy skills and measured their verbal and numerical ability, their capacity

for following instructions, and their ability to understand information (ASVAB, n.d.). The Army Beta test was used to test illiterate, uneducated, or non-English speaking enlistees. Through the years, the aptitude tests have changed, with increasing reliance on standardized tests used as screening devices. Since 1968, the Armed Services Vocational Aptitude Battery (ASVAB) has been used with students to determine aptitude in vocational areas. The test also measures literacy skills and English language proficiency.

As the population continues to age, finding healthcare becomes a greater challenge for all Americans. An increasing number of veterans are seeking medical treatment in the VA system, from 2.5 million in 1995 to 5.3 million in 2005 (Brahim, 2007). In comparison to the general population, veterans are more likely to have lower incomes, be older, experience more physical illnesses, and tend to suffer from mental and emotional illness. Veterans may also have better literacy levels than nonveterans as a result of the increased educational requirements for military recruits over the last 40 years. Examining the correlation between health literacy and the ability to understand medical literature for a chronic disease such as diabetes, is needed to determine how best to serve aging male African Americans.

Methods

A nonexperimental, descriptive research design was used to examine the relationship between African American veterans and nonveterans literacy levels and their ability to comprehend medical information that was included in a pamphlet on diabetes published by the Michigan Department of Health. The participants included 92 African American men of whom 44 were veterans and 48 were nonveterans. The Short test of Health Literacy Assessment (STOFHLA), a knowledge questionnaire, and a short demographic survey were used as the data collection tools.

Findings

The participants ranged in age from 22 to 87. The mean age of the veterans was 58.26 (sd = 14.27), with nonveterans having a mean age of 52.29 (sd = 13.89). The majority of the participants reported that they were married (n = 56, 60.9%), with single the next largest response category (n = 23, 25.0%). The educational levels of the participants were similar, with the nonveterans appearing to have somewhat higher levels of bachelors and graduate degrees. The majority of the nonveterans were employed, while the majority of the veterans were not working at the time of the study, with many indicating they were retired. The largest group of veterans had been in the Army (n= 21, 48.9%), with 12 (27.9%) indicating they had served in the Navy. The remaining veterans indicated service in the Air Force (n = 5, 11.6%), Marines (n = 4, 9.3%), and other (n = 1, 2.3%). The majority of the participants (n = 66, 78.6%) had not been diagnosed with diabetes. Among the 18 (21.4%) who had been diagnosed with diabetes, 11 (28.2%) were veterans and 7 (15.6%) were nonveterans.

The scores for health literacy were determined by counting the number of correct responses on the STOFHLA. Possible scores could range from 0 to 36, with actual scores ranging from 0 to 36. The mean score for veterans (n = 28.95, sd = 10.04) was slightly lower than the mean scores for the nonveterans (n = 30.27, sd = 7.25).

The scores for reading comprehension were obtained by summing the number of correct scores for the Diabetes Knowledge questionnaire developed by the researcher using a pamphlet created by the Michigan Department of Public Health. The number of correct answers could range from 0 to 10, with actual scores ranging from 0 to 10. The mean number of correct answers for veterans was 7.39 (sd = 2.75), while nonveterans had slightly higher scores (m = 7.81, sd = 2.44).

Research questions.

Four research questions were developed for the study. Each of these questions were addressed using inferential statistical analysis. All decisions on the statistical significance of the findings were made using a criterion alpha level of .05.

Research question 1. What is the difference in health literacy between male African American veterans and that of male African American non-veterans?

A t-test for two independent samples was used to determine if literacy levels differed between the veterans and nonveterans. The results of this analysis provided no evidence of statistically significant differences between the two groups.

Research question 2. What is the difference in the ability of male African American veterans to read and comprehend medical information regarding self-care for type 2 diabetes (e.g., monitoring blood sugar levels, taking medications, choosing the right foods, etc.) and that of male African American non-veterans?

The correct responses on the knowledge questionnaire were summed to obtain a total score. The scores on diabetes knowledge were compared between the veterans and nonveterans using t-tests for two independent samples. The results of this analysis were not statistically significant, indicating both groups had similar levels of diabetes knowledge included in the pamphlet from the Michigan Department of Health.

Research question 3. How can the ability to read and comprehend medical information regarding self-care for type 2 diabetes (e.g., monitoring blood sugar levels, taking medications, choosing the right foods, etc.) be predicted from age, educational level, health literacy levels, and veteran's status?

A stepwise multiple linear regression analysis was used to determine which of the independent variables could be used to predict the ability to read and comprehend medical information for type 2 diabetes. One independent variable, literacy levels as measured by the STOFHLA entered the stepwise multiple linear regression equation, accounting for 24% of the variance in diabetes knowledge. The remaining independent variables (age, veteran status, and educational levels) were not statistically significant predictors of diabetes knowledge.

Research question 4. Does reading level influence African American veterans' and nonveterans' decision-making regarding following health care practitioners' suggestions for self-management of health care?

Point bi-serial correlations were used to determine the relationship between the 10 items on the diabetes knowledge questionnaire and health literacy levels as measured by the STOFHLA. The results of this analysis provided statistically significant correlations for 8 of the 10 items on the questionnaire. Each of the statistically significant correlations were in a positive direction, indicating that correct responses were associated with higher health literacy.

Discussion of Findings

The research suggests that little or no variation exists between veterans and non-veterans regarding their health literacy. The mean scores for health literacy as measured on the STOFHLA provided support that many of veterans and nonveterans in the study had good health literacy, possibly due to the higher levels of completed education in both groups. Fourteen of the participants in each group had not completed some education beyond high school.

The ability to read and comprehend medical information also was similar between the two groups. These participants were well educated and had high literacy levels. The pamphlet they were asked to read had a readability index of a 6.5 grade level. Individuals with a seventh

grade reading level should have been able to read and comprehend the information contained in the pamphlet with ease. Based on the combined literacy levels and the low readability index, the findings of no difference between the two groups were not unexpected.

The results of the third and fourth research question further reinforced the relationship between health literacy and reading comprehension of medication information. The only statistically significant predictor of reading and comprehension of the diabetes pamphlet was health literacy as measured by STOFHLA. As health literacy increased the ability to read and comprehend medical information also increased. These findings are important as self-care for chronic illnesses such as diabetes requires health literacy to read instructions, take medications as prescribed, and monitor various health indicators (blood pressure, blood sugar levels, etc.).

Implications for Practice

Health care professionals need to understand the importance of assessing the health literacy of their patients prior to providing them with information regarding their diagnoses. Pamphlets that are written at reading levels that are beyond their ability to comprehend will not be useful in helping them to participate in self-care effectively.

The lack of differences in reading ability and health literacy between veterans and nonveterans may be due to a nonrepresentative sample of African American adult males in general. The study sample was well educated and had high levels of health literacy. African American males generally are reluctant to participate in research because of their concerns for confidentiality. In addition, because the study was on health literacy and many adult males are ashamed of their inability to read, they may have decided that they did not want to participate in a study that would bring attention to their deficiencies in reading and comprehension.

Although the participants in the present study did not appear to have any great difficulty in reading and comprehending the information contained in the pamphlet and generally scored high on the health literacy scale, it may be appropriate to provide some of the educational materials for self-care in a audio form. Compact disks and video disks may be a better way to help African American men obtain the necessary information for performing self-care tasks. These disks could provide both illustrations and examples for diabetes self-care (e.g., how to test for blood sugar levels, how to prepare nutritious foods that meet the dietary needs, etc.). Most people have the players necessary to use these media forms.

Limitations of the Study

The study was limited to African American men who volunteered to participate in the study. The use of a nonrandom, voluntary sample may have biased the results. African American men who are poor readers may have decided not to participate. As a result, the findings may not be generalizable to all African American men.

The study used one pamphlet for diabetes. The results may have been different if a pamphlet for another chronic illness (e.g., hypertension, heart failure, etc.) had been used.

The study was limited to the Detroit metropolitan area. The participants may not be representative of African American men who live in other geographical areas.

Recommendations for Further Research

The present study provided initial information regarding the relationship between health literacy and comprehension of medical information for a chronic disease. Additional study is recommended to further investigate this relationship:

- Replicate the present study, using a larger, random sample of African American men to determine if the findings are similar to the ones in this study.

- Investigate African American men's comprehension of medical information for other chronic illnesses using different types of media (e.g., paper, audio, and video) to determine which media type provides the best educational experiences.

- Study the effects of health literacy and comprehension of medical information using a heterogeneous sample that includes both African American men and women living in urban areas to examine differences in gender on these important topics.

- Examine health literacy and reading comprehension of senior citizens to provide information for health care providers regarding the use of a variety of instructional methods to help this group understand their health care needs.

APPENDIX A: Brochure

TYPE 2 DIABETES; THE SILENT DISEASE

Type 2 diabetes is often called the silent disease because many people who have it show few or no symptoms. While diabetes may not make you feel sick, it's still a serious disease. It it's not managed, diabetes can lead to
- Blindness
- Heart attacks
- Strokes
- Foot and leg amputations
- Kidney disease including dialysis
- Frequent hospitalizations
- Sexual problems

Diabetes warning signs
People with diabetes often show no outward signs of the disease; however, you should get tested if you have any of the following symptoms:
- Thirsty a lot
- Urinating often
- Blurred vision
- Fatigue
- Frequent skin infections or cuts that are slow to heal

Am I at risk for diabetes?
Some people are at a higher risk of getting diabetes than others. A simple blood test can tell you if you have the disease. You should get tested for diabetes if you answer yes to any of the following:
- I am overweight and not active
- I am 45 years of age or older
- I have a parent, brother, or sister with diabetes
- I am of Native American, Hispanic, Asian-American, Pacific Islander, or African American descent
- I have high blood pressure or high cholesterol (high triglyceride and low HDL levels)

What if I am risk or have diabetes?
You can reduce your chances of health problems by teaming up with your doctor or healthcare professional and a diabetes educator to learn more about diabetes and how to stay healthy. Diabetes does not have to get in the way of an active life.

If you have diabetes, here are some of the things you can do at home:
- Be active daily. Strive for just 30 minutes of activity 5 days a week. Talk to your doctor about developing an activity program that's right for you.
- Choose foods and portions to help maintain a healthy body weight. If you have diabetes, talk to a registered dietitian to find the right plan for you.

- Examine your feet every day, looking for sores, calluses, red spots, cuts, swelling, and blisters.
- Quit smoking or don't start.
  - Smoking makes health problems worse and raises your blood sugar level.
  - People with diabetes who smoke are 11 times more likely to have a heart attack than someone who does not smoke.
  - If you need help quitting, talk to your doctor or call the Michigan Department of Community Health at 1-800-QUIT-NOW and ask for a free Quit Kit.
- Keep track of and manage your blood pressure with the help of your doctor.
- If you have diabetes, check and manage your blood sugar.

Pamphlet from the Diabetes Outreach Network (DON) Michigan Department of Community Health

Readability:

Words   422
Sentences per paragraph   1.6
Words per sentence   13,6
Characters per word   4.3

Readability

Passive sentences   5%
Flesch reading ease   72.7
Flesch-Kincaid Grade Level   6.5

APPENDIX B: INSTRUMENTS

Demographic Questionnaire

Please answer the following questions as they apply to you. There are no right or wrong answers and all information will be confidential.

Age _____ years

Marital Status
❑ Single
❑ Married
❑ Divorced/Separated
❑ Widowed
❑ Other _____

Race/Ethnicity
❑ African American
❑ American Indian/Alaskan Native
❑ Asian/Pacific Islander
❑ Caucasian
❑ Hispanic
❑ Middle Eastern
❑ Other _____

Education
❑ Less than high school
❑ High school graduate
❑ GED
❑ Some college
❑ Associate's degree/Technical school
❑ Bachelor's degree
❑ Graduate degree

Are you working?   ❑ Yes   ❑ No

If yes, what kind of job are you doing? _____

Are you a veteran?   ❑ Yes   ❑ No

If yes, what branch of the service?
❑ Air Force   ❑ Army
❑ Coast Guard   ❑ Marines
❑ National Guard   ❑ Navy
❑ Other _____

Have you been diagnosed with diabetes?
❏ Yes ❏ No

When the doctor gives you medical literature to read, do you read it?
❏ Yes ❏ No

Do you follow the directions printed on medication bottles?
❏ Yes ❏ No

Do you base your medical decisions on any printed materials?
❏ Yes ❏ No

Do you rely on your doctor or health care provider to give you verbal instructions?
❏ Yes ❏ No

THE SHORT TEST OF FUNCTIONAL HEALTH LITERACY IN ADULTS

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	a. is.
b. empty	b. am.
c. incest	c. if.
d. anemia	d. it.

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

a. take	a. beds
b. view	b. brains
c. talk	c. hours
d. look	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 <u>after</u> 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   a. hide
  b.   probe   b. risk
  c.   send   c. discharge
  d.   gain   d. prove

statement 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   a. investigate
     b. religion   b. entertain
     c. iron   c. understand
     d. county   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	a. award
b. one	b. aware
c. five	c. away
d. ten	d. await

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

a. thus	a. married
b. this	b. occupation
c. that	c. adult
d. than	d. decision

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

a. height	a. request
b. left	b. refuse
c. wrong	c. fail
d. right	d. mend

hearing by writing or _____ the county where I applied.
                     a. counting
                     b. reading
                     c. calling
                     d. smelling

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

a. wash	a. member
b. want	b. history
c. cover	c. weight
d. tape	d. seatbelt

_____ a different application form. _____, we will use

a. relax	a. Since
b. break	b. Whether
c. inhale	c. However
d. sign	d. Because

the _____ on this form to determine your _____.

a. lung	a. hypoglycemia
b. date	b. eligibility
c. meal	c. osteoporosis
d. pelvic	d. schizophrenia

TYPE 2 DIABETES: THE SILENT DISEASE

Please answer the following questions based on the materials you have just read. Circle the letter in front of the correct answer.

1. What type of diabetes is considered a silent disease?
   a. Type 1
   b. Type 2
   c. Type 3
   d. Type 4

2. Diabetes is a silent disease because:
   a. People often have no symptoms
   b. People do not want to seek treatment even though they have symptoms
   c. People cannot hear the disease
   d. People don't talk about it.

3. If not managed, diabetes can result in all of the following, except:
   a. Blindness
   b. Heart attacks
   c. Foot and leg amputations
   d. Bad breath

4. Diabetes often has:
   a. Many symptoms
   b. Noticeable signs
   c. No outward signs
   d. Specific symptoms

5. People should be tested for diabetes if they:
   a. Are not thirsty
   b. If their vision is blurred
   c. If they are rarely tired
   d. If their cuts heal quickly

6. People can be tested for diabetes by:
   a. A blood test
   b. An x-ray
   c. Skin test
   d. Dental exam

7. All people who have the following characteristics should be tested for diabetes, except:
   a. Those who are overweight and not active
   b. Those who are over 45 years of age
   c. Those who have a parent or sister with diabetes

      d. Those who do not have high blood pressure or high cholesterol

8. People diagnosed with diabetes can be healthy if they:
      a. Are not active everyday
      b. Eat properly
      c. Gain weight
      d. If they continue to smoke daily

9. People who have diabetes should examine their feet:
      a. Once a week
      b. Once a month
      c. Once a year
      d. Daily

10. People who have diabetes should:
      a. Learn as much about the disease as possible
      b. Not read about the disease
      c. Not seek help from a nutritionist
      d. Not see their doctor on a regular basis

APPENDIX C

Research Information Sheet

Title of Study:

The Relationship Between Functional Health Literacy of African American Veterans and Nonveterans and Their Ability to Read and Comprehend Medical Information for a Chronic Illness

Principal Investigator (PI):

David S. Points

Purpose

The purpose of this study is to examine the relationship between male African American veterans and non-veterans and their ability to understand medical information about type II diabetes, a chronic illness prevalent among African American males.

Study Procedures

If you agree to be in the study, you will be asked to complete a short demographic survey, and two surveys to determine your literacy level and your ability to read medical information. You will also be asked to read a short brochure about diabetes. The total time for your participation should not be more than 20 to 30 minutes.

Benefits

As a participant in this research study, there may be no direct benefit to you; however, information from this study may benefit other people now or in the future.

Risks

There are no known risks at this time to participation in this study.

Alternatives

None

Study Costs

Participation in this study will be of no cost to you.

Compensation

You will not be paid for taking part in this study.

Research Related Injuries

None

Confidentiality

All information collected about you during the course of this study will be kept without any identifiers.

Voluntary Participation/Withdrawal

Taking part in this study is voluntary. If you decide to take part in the study you can later change your mind and withdraw from the study. You are free to withdraw from participation in this study at any time. Your decisions will not change any present or future relationship with Wayne State University or its affiliates, or other services you are entitled to receive.

Questions

If you have any questions about this study now or in the future, you may contact me at the following phone number   . If you have questions or concerns about your rights as a research participant, the Chair of the Human Investigation Committee can be contacted at (313) 577-1628. If you are unable to contact the research staff, or if you want to talk to someone other than the research staff, you may also call (313) 577-1628 to ask questions or voice concerns or complaints.

Participation

By completing the surveys, you are agreeing to participate in this study.

APPENDIX D

Human Investigation Committee Approval

WAYNE STATE UNIVERSITY

HUMAN INVESTIGATION COMMITTEE
87 East Canfield, Second Floor
Detroit, Michigan 48201
Phone: (313) 577-1628
FAX: (313) 993-7122
http://hic.wayne.edu

FILE

NOTICE OF EXPEDITED APPROVAL

To: David Points
Teacher Education

From: Dr. Scott Millis
Chairperson, Behavioral Institutional Review Board (B3)

Date: February 01, 2011

RE: HIC #: 013611B3E

Protocol Title: The Relationship Between Functional Health Literacy of African American Veterans and Nonveterans and their Ability to Read and Comprehend Medical Information for a Chronic Illness

Funding Source:

Protocol #: 1101009262

Expiration Date: January 31, 2012

Risk Level / Category: Research not involving greater than minimal risk

---

The above-referenced protocol and items listed below (if applicable) were **APPROVED** following *Expedited Review* Category (#7)* by the Chairperson/designee *for* the Wayne State University Institutional Review Board (B3) for the period of 02/01/2011 through 01/31/2012. This approval does not replace any departmental or other approvals that may be required.

- Revised Protocol Summary Form, received 1/31/11
- Flyer
- Information Sheet, dated 1/11/11
- Receipt of a research protocol

---

* Federal regulations require that all research be reviewed at least annually. You may receive a *"Continuation Renewal Reminder"* approximately two months prior to the expiration date; however, it is the Principal Investigator's responsibility to obtain review and continued approval before the expiration date. Data collected during a period of lapsed approval is unapproved research and can never be reported or published as research data.

* All changes or amendments to the above-referenced protocol require review and approval by the HIC BEFORE implementation.

** Adverse Reactions/Unexpected Events (AR/UE) must be submitted on the appropriate form within the timeframe specified in the HIC Policy (http://www.hic.wayne.edu/hicpol.html).

NOTE:

1. Upon notification of an impending regulatory site visit, hold notification, and/or external audit the HIC office must be contacted immediately.

2. Forms should be downloaded from the HIC website at each use.

*Based on the Expedited Review List, revised November 1998

REFERENCES

Ad Hoc Committee on Health Literacy for the Council of Scientific Affairs. (1999). Health literacy: Report of the Council of Scientific Affairs. *Journal of the American Medical Association, 281*(6), 552-557.

Ansers.com. (2009). Encyclopedia of Public Health Available from www.answers.com/topic/selfcare

ASVAB. (n.d.). History of military testing Available from http://www.offician-asvab.com/history_res.htm

Ayers, S. L., & Kronenfeld, J. J. (2007). Chronic illness and health-seeking information on the Internet. *Health, 22*(3), 237-247.

Brahim, S. A. (2007). The Veterans Health Administration: A domestic model for a national healthcare system? *American Journal of Public Health, 97*(12), 2124-2125.

Cassey, M. (2007). Building a case for using technology: Health literacy and patient education. *Nursing Economic$, 25*(3), 186.

DeAnda, R. M., & Hernandez, P. M. (2007). Literacy skills and earnings: Race and gender differences. *The Review of Black Political Economy, 34*, 231-243. doi:10.1007/s12114-008-9014-2

Downey, L. A., & Zun, L. (2007). Testing of a verbal assessment tool of English proficiency for use in the healthcare setting. *Journal of the National Medical Association, 99*(7), 795-798.

Elliott, J. O., Charyton, C., & Long, L. (2007). A health literacy assessment of the National Epilepsy Foundation web site. *Epilepsy & Behavior, 11*, 525-532. doi:10.1016/j.yebeh.2007.08.021

Estey, A., Musseau, A., & Keehn, L. (1994). Patient's understanding of health information: A multi-hosptial comparison. *Patient Education & Counseling, 24*, 73-78.

Finseth, C. (2009). What is chronic disease: A definintion and explanation of chronic disease Available from http://chronicillness.suite101.com/article_cfm/what_is_chronic_illness

Freitas, M. C., & Mendes, M. M. R. (2007). Chronic health conditions in adutls: Concept analysis. *Review of Latino-amEnfermagem, 15*(4), 590-597.

Funchess, J. M. (2008). *African Americans in the information age: Challenges and social adaptations.* Unpublished Dissertation, Wayne State University, Detroit, MI.

Gazmararian, J. A., Curran, J. W., Parker, R. M., Bernhardt, J. M., & DeBuono, B. A. (2005). Public health literacy in American: An ethical imperative. *American Journal of Preventive Medicine, 28*(3), 317-322. doi:10.1016/jamepre.2004.11.004

Gebhart, F. (2008). Commuity-based diabetes education programs on the rise. *Drug Topics, 152*(11), 8s-10s.

Gitlin, L. N., Chernett, N. L., Harris, L. F., Palmer, D., Hopkins, & Dennis, M. P. (2008). Harvest health: Translation of the chronic disease self-management program for older African Amerians in a senior setting. *The Gerontologist, 48*(5), 698-705.

Goetzel, R. (2009). Do prevention or treatment services save money? The wrong debate. *Health Affairs, 28*(1), 37-41.

Goody, J. 2000 . *The power of the written tradition*. Washington, D.C.: The Smithsonian Institution.

Hensyl, W. R. (Ed.) (1987) Stedman's Pocket Medical Dictionary. Baltimore, MD: Williams & Wilkins.

Jessup, M., Abraham, W. T., Casey, D. E., Feldman, A. M., Francis, G. S., Ganiate, T. G., et al.

(2009). 2009 guideline focused update on heart failure. *Circulation, 11*(1977-2016).

Kaestle, C. (1991). Studying the history of literacy. In C. Kaestle, H. Damon-Moore, L. E.

Stedman & K. Tinsley (Eds.), *Literacy in the U S: Readers and reading since 1880* (pp.

3-32). New Haven, CT: Yale University Press.

Kirsh, I. S., Jungleblut, A., Jenkins, L., & Kolstad, A. (1993). *Adult literacy in America: A first*

look at the findings of the National Adult Literacy Survey. Washington, DC: National

Center for Education Statistics.

Kleinbeck, C. (2005). Diabetes outcomes, low literacy. *Home Healthcare Nurse, 23*(1).

Kutner, M., Greenberg, E., Jin, Y., Paulsen, C., & White, S. (2006). The health literacy of

America's adults: Results from the 2003 National Assessment of Adult Literacy.

Retrieved from http://nces.ed.gov/pubs2006/2006483.pdf

Loeb, S. J. (2006). African American older adults coping with chronic health conditions. *Journal*

of Transcultural Nursing, 17(2), 139-147.

MedicineNet. (n.d.). Definition of chronic illness Available from

http://www.medterms.com/script/main/art.asp?articlekey=2731

MedicineNet.com. (n.d.). Diabetes mellitus Available from

http://www.medicinenet.com/diabetes_mellitus/article.htm

National Diabetes Statistics Fact Sheet. (n.d.). Available from

www.diabetes.middk.nih.gov/dm/pubs/statistics

National Institute for Literacy. (2008). *Developing early literacy: Report of the national early*

literacy panel: A scientific synthesis of early literacy development and implications for

intervention. Washington, DC: National Institute for Literacy.

Ngwudike, B. C. (2008). *The 2003 National Assessment of Adult Literacy (NAAL): Performance*

of African Americans in a national context. Jackson, MS: Jackson State University.

Paez, K. A., Zhao, L., & Whang, W. (2009). Rising out of pocket spending for chronic

conditions: A ten-year trend. *Health Affairs, 28*(1), 15-25.

Parker, R. M., Baker, D. W., Williams, M. V., & Nurss, J. R. (1995). The test of functional

health literacy in adults: A new instrument for measuring patients' literacy skills. *Journal

of Internal Medicine, 10*, 537-541.

Reiber, G. E., Koepsell, T. D., Maynard, C., Haas, L. B., & Boyko, E. J. (2004). Diabetes in

nonveterans, veterans, and veterans receiving Department of Veterans Affairs healthcare.

Diabetes Care, 27(Supplement 2), B3-B9.

Ritch, R. (2009). Physician-patient communication and understanding. *Review of Optometry,

146*(2).

Rosenstock, I. M. (1988). Adoption and maintenance of lifestyle modifications. *American

Journal of Preventive Medicine, 4*(6), 349-352.

Sentel, T. L. (2003). *Literacy, health, and health services use in a nationally representative

sample* Unpublished Dissertation, University of California, Berkeley, Berkeley, CA.

Shieh, C., & Hosei, B. (2008). Printed health information materials: Evaluation of readability

and suitability. *Journal of Community Health Nursing, 25*(73-90).

doi:10.1080/07370010802017083

Strong, K., Mathers, C., Leeder, S., & Beaglehole, R. (2005). Preventing chronic diseases: How

many lives can we save? *Lancet, 366*, 1578-1582.

Sum, Andrew.1999.*Literacy in the labor force: Results from the National Adult Literacy Survey*.

Washington, DC: U.S. Department of Education, National Center for Education

Statistics.

The Literacy Company. (2008). Reading, literacy and education statistics Available from http://www.readfaster.com/education_stats.asp

Thomas, R. W. 1992. *Life for us is what we make it: Building Black community in Detroit, 1915-1945*. Indianapolis: Indiana University Press.

U. S. Department of Health & Human Services The Office of Minority Health. (2009). African American profile Available from

http://www.omhrs.gov/templates/browse.aspx?lvl=2&lvllD=51

UNESCO Education Sector. (2004). The plurality of literacy and its implications for policies and programs: Position paper Available from

http://unesdoc.unesco.org/images/0013/001352/135246e.pdf

United States Bureau of the Census. (2009). *Resident population by sex, race, and Hispanic-origin status 2000-2007*. Washington, DC: Author.

Vahabi, M. (2007). The impact of health communication on health-related decision making: A review of evidence. *Health Education, 107*(1), 27-41. doi:10.1108/09654280710716860

Williams, M. V., Baker, D. W., Parker, R. M., & Nurss, J. R. (1998). Relationship of functional health literacy to patients' knowledge of chronic disease: A study of patients with hypertension and diabetes. *Archives of Internal Medicine, 158*(2), 166-172.

Wilson, J. F. (2003). The crucial link between literacy and health. *Annals of Internal Medicine, 139*(10), 875.

Wilson, M., Perry, S., Helba, C., Hintze, W., Wright, M., & Lee, K. (n.d.). 2001 National Survey of Veterans (NSVV) - Final Report Available from

http://www.1.va.gov/vetdata/docs/NSV%20Final%20Report.pdf

Wolff, J. L., Starfield, B., & Anderson, G. (2002). Prevalence, expenditures, and complications

of multiple chronic conditions in the elderly. *Archives of Internal Medicine, 162*, 2269-

2276.

ABSTRACT

THE RELATIONSHIP BETWEEN FUNCTIONAL HEALTH LITERACY
OF AFRICAN AMERICAN VETERANS AND NONVETERANS
AND THEIR ABILITY TO READ AND COMPREHEND
MEDICAL INFORMATION FOR A CHRONIC ILLNESS

by

DAVID S. POINTS

August 2011

Advisor: Dr. George P. Parris

Major: Curriculum and Instruction

Degree: Doctor of Philosophy

The purpose of this study was to determine if there were differences between male African Americans who have served in the military and those who are not veterans in their ability to read and comprehend medical information for a chronic illness prevalent among African Americans, such as type 2 diabetes.

The participants included 92 African American men of whom 44 were veterans and 48 were nonveterans. The participants were drawn from fraternal organizations and churches in a large metropolitan area located in the Midwestern part of the United States. The Short Test of Health Literacy Assessment (STOFHLA), a knowledge questionnaire, and a short demographic survey were used as the data collection tools.

Four research questions were developed for the study. Each of these questions were addressed using inferential statistical analysis. The findings indicated that veterans and nonveterans did not differ in their health literacy levels or in their ability to read and comprehend medical information contained in a pamphlet about diabetes prepare by the Michigan Department

of Public Health. One variable, scores on the STOFHLA, was a statistically significant predictor of the ability to read and comprehend medical information on the pamphlet.

Health literacy is an important indicator of the ability to read and comprehend medical information in written form that is given to patients with chronic diseases, such as diabetes. Further study is needed to continue research on how to provide this information to individuals, especially those with limited health literacy.

AUTOBIOGRAPHICAL STATEMENT

David Stephen Points

Education:	2011 – Doctor of Philosophy Wayne State University, Detroit, MI Major: Curriculum and Instruction
	2004 – Education Specialist Certificate Wayne State University, Detroit, MI Major: Curriculum and Instruction, English as a Second Language
	1997 – Master of Laws in Labor Law Wayne State University Law School, Detroit, MI Major: Labor Law
	1983 – Doctorate of Jurisprudence Ohio Northern University Law School, Ada, Ohio
	1976 – Bachelor of Arts Saginaw Valley State University, Saginaw, Michigan Major: English Secondary Education
Professional Experience	Wayne State University, Detroit, MI Adjunct Faculty – Teacher Education
	Pontiac Academy for Excellence High School, Pontiac, MI Teacher - English language arts/Specialist and Department Head
	Detroit Public Schools, Detroit, MI Teacher - English and Broadcasting, Science
	Commander - U. S. Navy (Retired) Director – Guantanamo Bay Cuba, Joint Information Bureau
	Michigan House of Representatives State Representative
	30th District Court – State of Michigan Court Administrator – Court Magistrate
Professional Memberships	Association of United States Navy Phi Beta Delta, Honor Society for International Scholars Reserve Officers' Association Care First Community Health Services, Board Member American Swiss Foundation