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Preventive Health Education Media and Older Worker Health Literacy

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This is to certify that the doctoral dissertation by

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Abstract

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MSA, Central Michigan University, 1991

BSN, Howard University, 1985

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

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Abstract

The United States has experienced an increase in older workers as individuals born between 1946 and 1964 have remained in the labor force. Preventive health screening education, such as an immunization flyer, is necessary to avert preventable illness among older workers. Based on previous research, there is a gap regarding age-specific methods for educating the older worker about preventive health. Therefore, the purpose of this study was to explore the relationship between various media providing preventive health screening information and the assessed health literacy of the older worker. Based on the health belief model, a quantitative, cross-sectional method was used. A population of older workers (n = 159), starting at age 45, of diverse racial groups and job types, was surveyed to determine their health literacy, preventive health screening knowledge, and frequency of exposure to diverse types of media that facilitate preventive health education. Analysis of variance was used to evaluate the relationship between the various media providing preventive health screening used by the older worker and the health literacy of the older worker. According to the study, the 45-54 age group had the lowest health literacy scores, and all age groups possessed comparable knowledge of preventive health screening education. Finally, 2 types of media—television and radio—were effective in improving health literacy by exposure, and 4 types of media—television, radio, newspaper, and Internet—were perceived effective in providing preventive health education. Implications for positive social change included age-specific methods for educating the older worker about preventive health, which could, in turn, reduce morbidity and mortality caused by preventable diseases such as cancer and heart disease.

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Dedication

I would like to thank GOD for being present in my life and providing the vision as well as provision to pursue this degree. I would like to thank my mother Fannie Pearl, for being my inspiration at an early age and never placing limits on my dreams or abilities. I thank you mom for always encouraging me to reach higher. I would like to thank my husband and sons for enduring this journey with me. Thank you to my husband Kenneth, and my sons Kenneth Jr, and Kendall for your love, patience and understanding. Lastly, I would like to extend sincere thanks to my siblings Leanna and Dannette as well as my family, and friends for your continued love, prayers, support, and encouragement as I pursued this degree.

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I am truly thankful to the medical professionals that served on my Expert Panel. The panel consisted of one physician and five registered nurses. These individuals did not hesitate when asked to impart their medical knowledge and provide assistance for this research study. I have the upmost respect for each individual and appreciate these people for lending their time and talents to this study. Thank you.

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Chapter 1: Introduction to the Study

Introduction

This study explored the health literacy of older workers and the educational media (television, radio, pamphlet/flyer, newspaper and Internet) that are effective in teaching about preventive health screening. The Age Discrimination in Employment Act of 1967 or ADEA states employment discrimination is prohibited for those individuals 40 years of age or older (U.S. Equal Employment Opportunity Commission [EEOC], 2014). According to Roth (2009), older workers can be classified as those ranging in the ages of 45 to 70 years or older. The study was conducted to ascertain health literacy levels of older workers as well as the knowledge of preventive health in this population. Additionally, effective methods of educating the older worker were explored through regularity of exposure to preventive educational media. This study provided insight into the health literacy levels of older workers and their knowledge of preventive health, as well as information as to which of the various media provided health screening information for this population.

This chapter provides a background to the subject. It presents (a) a description of the study methodology; (b) the research questions as well as the study's variables; (c) the theoretical foundation correlated the study approach and the research questions; (d) definitions of study terms, (e) assumptions, scope and delimitations, and limitations; and the implications for social change implications.

Background

People born prior to 1938 can retire at 65 and receive full Social Security retirement benefits, however as of 2003, those born after 1960 cannot receive full retirement benefits until age 67 (Social Security Administration [SSA], 2009). The revision of the retirement age is related to the increasing longevity of older people. Life expectancy has increased for men and women to 81 and 84 years, respectively (SSA, 2009). As a result of the increased age requirement for Social Security eligibility, many workers have remained in, or returned to, the workforce, thus working well past full retirement age. Older workers between the ages of 45-64 who will reach 65 in the next two 2 decades have increased by 33% (U.S. Department of Health and Human Services [HHS], 2012). Women represented 59% of persons 65 years or older in 2003;in the next 30 years, there will be a 16.5% increase in minorities 65 years and older (Black, American Indian/Alaskan, Hispanic and Asian/Pacific Islander), with Hispanics increasing 10.9% (Centers for Disease Control and Prevention [CDC], 2003). These drastic increases result in older workers who are susceptible to decreased productivity, illness, occupational injury, and mortality; they require teaching about health screening to maintain productivity and deter illness.

Aging can be defined as a reduction in the functional capacity of various bodily systems; physical performance is dependent on genetics, personal regimen, and presence of chronic illnesses (Padula et al., 2013). In essence, workers between the 45 and 60 years of age experience decreases in their ability to work due to the natural progression that aging has on reflexes and body systems. Additionally, older workers in stressful jobs,

such as medicine, law enforcement, or customer service, might experience stress-induced illnesses and chronic conditions (Hartley, 2001). Given the potential health outcomes, these factors equate to increasing health care expenditures as well as operational costs.

The increasing older worker population ultimately has an effect on the public health system. These individuals put stress on the resources allocated for older adults such as health care and medical assistance. CDC (2003) reported during the period of 1990-2001, home health care as well as nursing home expenditures reached approximately $132 billion with Medicare and Medicaid paying 57% while individuals or their family members paid 25%. This article did not account how the remaining 18% was paid. The potential challenge includes reducing or eliminating chronic illness and potential disability experienced by this population. As a result of the aging process, adults can develop chronic illnesses. CDC (2003) estimates 80% of individuals 65 years or older have one chronic condition, with 50% having two chronic conditions. The chronic illnesses, which may lead to disability, include diabetes, cardiovascular disease, arthritis, and back or spinal problems. Within an estimated population of 45,000, diabetes affects 4.5% of persons, cardiovascular disease 6.6%, arthritis 19%, and back or spinal problems 16.8% (CDC, 2009). The common causes of disability among aging adult's based on this information, ranks arthritis first, then back or spinal problems, followed by cardiovascular disease then diabetes. With respect to gender, the occurrence of back or spinal problems and cardiovascular disease is more prevalent among men, whereas women experience arthritis at a higher rate. Both genders experience diabetes at proportionate rates. A report from *Morbidity and Mortality Weekly Report* (MMWR,

2009) concluded chronic conditions in a representative population of 45,000 adults over the age of 18 to be the following: arthritis for women is 24.3% and 11.5% for men, back or spinal problems are 16.9% for men and 16.8% for women, cardiovascular disease is 8.4% for men and 5.4% for women, and diabetes represents 4.8% for men and 4.2% for women. Given this statistical data, preventive health efforts should be focused on averting disability or reducing the severity of disability among aging adults, especially those who remain in the workforce. This projected scenario calls for proactive solutions such as targeted education to counteract these potential outcomes. The vast majority of chronic illnesses can be prevented or delayed with health promotion education and preventive health interventions that address the changing needs of the aging population.

Disease prevention can be classified into three categories: primary, secondary or tertiary prevention (Katz & Ather, 2009). This study will focus on primary prevention, which is defined as health promotion efforts that avert the disease from beginning (Katz & Ather, 2009). Immunization constitutes an example of primary prevention. Preventive health screening, which is a component of health promotion, is necessary to prevent disease while maintaining the health status of older workers. According to the National Library of Medicine/National Institutes of Health (NLM/NIH, 2011) health screening should include examinations or tests that are performed before the disease or condition is symptomatic and thus is easier to treat. Examples of health screenings include prostate and breast cancer screening, as well as blood pressure and cholesterol checks.

Health literacy is a primary component for understanding preventive health screening and education. According to NLM/NIH (2008), health literacy enables an

individual to make sound decisions concerning their health, which would assist with maintaining their physical condition. The maintenance of overall health includes physical, psychological and social functioning. This functioning is vital for continued occupational capacity and is actualized through possessing an appropriate level of health literacy. White et al., (2008) reported that limited health literacy hinders the ability to understand and to implement health related education, thereby affecting a person's ability to incorporate timely and recommended health care activities to maintain wellness. Health literacy is directly correlated with health outcomes. Berkman et al., (2004) suggested that health literacy is the ability to understand and to take action on information related to health care, health conditions, or health issues. The integration of health literacy primarily facilitates self-efficacy and the ability to make informed health decisions, thereby potentially influencing health-related results. It is estimated that low health literacy results in an annual cost of $73 billion based on data from 1998 figures from the Academy on an Aging Society (White et al., 2008).

Berkman et al., (2004) suggested that there is a relationship between health literacy and education: low literacy can be found in specific groups such as persons with minimal education, the aged, and certain ethnicities or racial groups. Preventive health programs should be geared toward the aging population, thereby improving preventive health practices. Gazmararian et al., (1999), recommend that programs be designed to convey educational information effectively regarding management of chronic health conditions for elderly patients that require substantial instruction. This identified gap in the literature points to the need for age-specific methods to educate older workers. This

study conveys various methods of educating the older worker 45-84 and to assess, through frequency of exposure, which methods are most efficacious.

In conclusion, this study is needed to address age-specific methods for educating older workers. This study was conducted to ascertain which methods of education augment older worker health literacy regarding preventive health. The frequency of exposure to preventive health screening media provided information regarding which method of education is most conducive to learning for older workers. This study also assessed health literacy in the older worker population and level of knowledge of preventive health screening. Health literacy focuses on understanding health information whereas knowledge of preventive health screening focuses on understanding the diagnostic tests required to maintain health.

Problem Statement

The most effective method of education for older workers has not been determined. Berkman et al., (2004) concluded that 65 year-old participants in a sleep apnea study exhibited increased knowledge through use of a videotaped educational tool and medication adherence improved over time from verbal teaching. Berkman et.al. (2004) also discussed a colorectal screening trial that used both videotape and a brochure on preventive health screening education. As a result, knowledge improved in both low and high literacy groups. These studies demonstrated the use of three methods of education—videotape, verbal teaching, and educational brochure, all of which were effective in educating the older individuals about varying health issues such as sleep apnea, medication adherence and colorectal screening. The question that still requires an

answer is which method is most effective in improving older worker knowledge about preventive health. To address this gap in the literature, this study investigated older workers' frequency of exposure to preventive health screening education media to determine which methods of education were most successful. Through exploring the relationship between preventive health screening education media and health literacy, recommendations can be provided to improve older worker preventive health knowledge and literacy.

Purpose of the Study

The literature regarding age-specific health promotion practices dedicated primarily to the older worker population is limited (Naumanen, 2006). Thus, the purpose of this study was to explore the relationship between preventive health screening education media and health literacy of the older worker. Additionally, methods of health education for improving health literacy in the older worker population were appraised through evaluating the frequency and type of exposure to preventive health screening education media. The effectiveness of preventive health screening education media was obtained through participant response. The intent of this research was to provide preventive health screening education recommendations for promoting health literacy among older workers. This study is expected to contribute to the literature by proposing specific methods to improve health literacy in the older worker population. The specific objectives of this study were as follows:

1. Assess older worker health literacy through administration of the Short Form Test of Functional Health Literacy in Adults (STOFHLA).

2. Assess general preventive health screening knowledge of the older worker through administration of the Preventive Health Screening Knowledge Quiz (PHSKQ). General preventive health screening education focused on areas such as blood pressure screening, cholesterol screening. as well as gender specific screening such as mammogram or prostate screening.
3. Ascertain effective methods of preventive health screening education through examining the frequency of exposure of older workers to diverse types of media such as television, radio, pamphlet/flyer, newspaper, or Internet in addition to participants' perception about the effectiveness of preventive health media as educational tools.

The research tools are explained in the section, Nature of Study, and the terms are presented in the section, Operational Definitions.

Research Questions and Hypotheses

1. Is there a difference in health literacy scores, as measured by the STOFHLA, by age group (45-54, 55-64, 65-84) of older workers?

   H_{01}: There is no statistically significant difference in health literacy scores, as measured by the STOFHLA, by age group (45-54, 55-64, 65-84) of older workers.

   H_{A1}: There is a statistically significant difference in health literacy scores as measured by the STOFHLA by age group (45-54, 55-64, 65-84) of older workers.
2. Is there a difference in preventive health screening knowledge scores as measured by the PHSKQ, by age group (45-54, 55-64, 65-84) of older workers?

H_{02}: There is no statistically significant difference in preventive health screening knowledge scores, as measured by the PHSKQ, by age group (45-54, 55-64, 65-84) of older workers.

H_{A2}: There is a statistically significant difference in preventive health screening knowledge scores as measured by the PHSKQ, by age group (45-54, 55-64, 65-84) of older workers.

3. Is there a difference in health literacy for older workers, as measured on the PHSKQ , by source of preventive health screening education exposure (television, radio, written materials, newspaper or Internet ?

   H_{03}: There is no statistically significant difference in health literacy for older workers, as measured on the PHSKQ by source of preventive health screening education (television, radio, written materials, newspaper or Internet.

   H_{A3}: There is a statistically significant difference in health literacy for older workers, as measured on the PHSKQ by source of preventive health screening education (television, radio, written materials, newspaper or Internet.

4. Is there a difference in perceived effectiveness among older workers, as measured on the PHSKQ between types of media (television, radio, written materials, newspaper, or Internet) for preventive health education?

   H_{04}: There is no statistically significant difference in perceived effectiveness among older workers, as measured by participant response on the PHSKQ between types of media (television, radio, written materials, newspaper or Internet for preventive health education.

H_{A4} : There is a statistically significant difference in perceived effectiveness among older workers, as measured by participant response on the PHSKQ between types of media (television, radio, written materials, newspaper or Internet for preventive health education.

A thorough description of the method that was used to answer these questions and test the hypotheses is provided in Chapter 3.

Theoretical Framework

The theory used for this study was the health belief model. Originating in the 1950s, the health belief model was formulated as a result of unresponsiveness to public health services being implemented, such as polio vaccinations and tuberculosis screening (Finfgeld et al., 2003). The model was developed to account for preventive health behavior or lack thereof. The context of the model was later expanded to include additional health services and therapeutic treatments. This model is utilized to predict health behaviors; it is relevant for evaluating the effectiveness of preventive health education. Bellamy (2004) summarized the health belief model as follows: perceptual components such as susceptibility to disease, severity of disease, benefits of preventive actions, and barriers to preventive actions (see Figure 1). (Permission to use the health belief model can be found in Appendix A.)

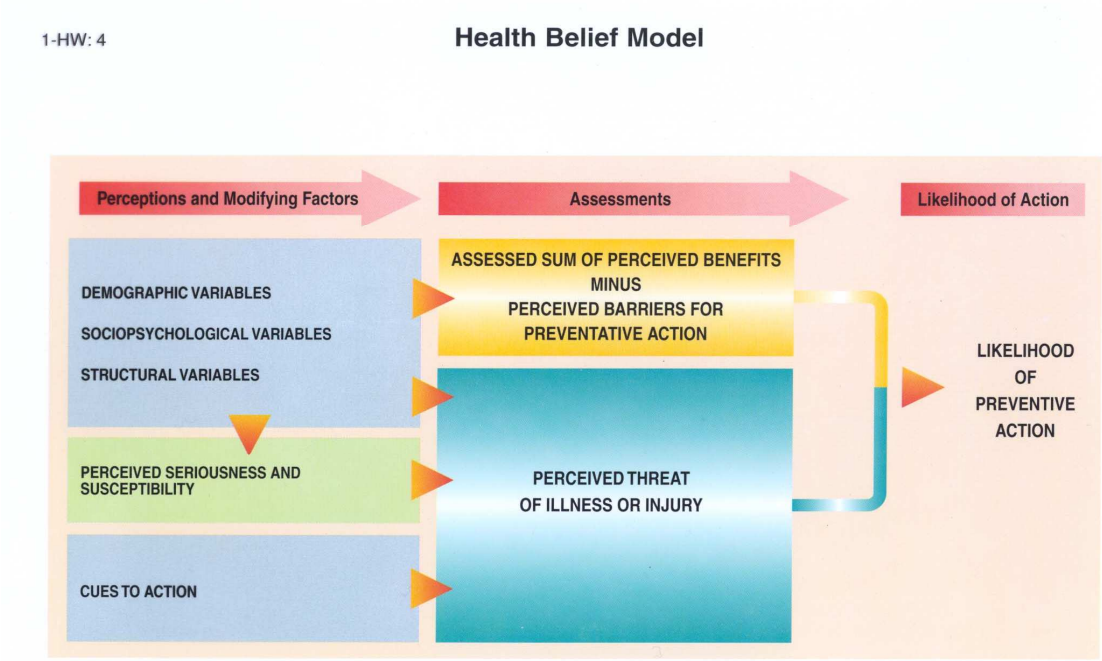

Figure 1. Health belief model. Reprinted from Nursing411: Nurses Influencing Change by J. Kaminski (2012). Retrieved 4/25/12 from http://www.nursinginformatics.com/N4111/LA2.html. Reprinted with permission.

These components represent an individual's receptivity to taking action, thereby facilitating the modification of behavior. Bellamy (2004) noted that susceptibility is defined as the way a person views the likelihood of contracting a condition. Susceptibility to disease encompasses defining the population and specific risk levels for both individuals as well as the population under study. Severity of disease, the next component, identifies the seriousness the disease as well as outcomes that could result. Bellamy (2004) suggested a pairing a condition with an outcome to provide comprehensive representation of the seriousness of the disease. Next, benefits of preventive actions include one's belief that proposed actions are worthy and are beneficial. In other words, will the intervention reduce vulnerability to negative outcomes of a condition? For this component, it is necessary to define what, when, and how

specific actions should be taken, in addition to the positive outcomes that will result. Finally, preventive barriers hinder participation in prescribed inventions and actions, and suggest that negative consequences could result (Bellamy, 2004). To counteract this component, barriers should be identified early and support provided via assistance, reassurance. or incentives to encourage the undertaking of preventive measures.

In addition to the four basic components, the health belief model also includes cues to action and self-efficacy. Cues to action are methods incorporated to trigger action for taking preventive steps. These cues also represent specific stimuli needed to activate certain health behavior (Gatewood et al., 2008). Cues to action can be disseminated via reminders or specific messages via mass media that promote awareness and identified interventions. Conversely, self-efficacy is representative of an individual's confidence in his or her ability to perform the health behavior as well as adoption of behavior that will be preventative in nature (Bellamy, 2004). In essence, self-efficacy involves the ability to take action and can be encouraged through individualized training and education to support the preventive action.

Originally, the model was created to account for failure of individuals to engage in preventive healthcare. Bellamy (2004) also suggests individual behavior is predicated on a valuation system that considered not only the outcome, but how specific actions could possibly contribute to the outcome. The primary emphasis of the health belief model focuses on motivating individuals or populations to adhere to recommended health behaviors, thereby preventing negative health consequences and improving health outcomes. To apply this theory to the older worker, perceived susceptibility of

contracting diseases, such as diabetes or hypertension, should be identified with perceived threat of illness or injury. For this study, it was proposed that preventive health screening education provide information about illness and/or disease severity, thus providing the older worker with knowledge to make informed decisions.

Nature of the Study

A quantitative, cross-sectional method was used for this study. The cross-sectional approach was used to observe a sample population at a specific period in time (Babbie, 2007). This study involves two surveys, which were combined into one format and divided by sections. The STOHFLA was used to measure baseline literacy levels, whereas the (PHSKQ) was administered to determine the study population's knowledge about preventive health screening. PHSKQ surveyed the study participants regarding the types and frequency of exposure to sources of preventive education as well as participants' perception regarding preventive health awareness. This information was used to assess which type of media was used most frequently to educate the older worker. Additionally older workers offered which type of media they perceived as effective in providing preventive health education.

The variables for this study were preventive health screening education media exposure and older worker health literacy. The independent variable was frequency of exposure to diverse types of preventive health screening education media such as television, radio, written materials (pamphlet or flyer), newspaper or Internet. A dependent variable measured is older worker health literacy. Additional dependent variables that were measured include participant preventive health screening knowledge

and participant perception of an effective media of preventive health screening education as a result of frequent exposure. Using the data obtained, statistical analyses were performed to determine if the hypotheses were supported. To analyze differences between groups, Analysis of Variance (ANOVA) was used. Table 2 in Chapter 3 shows the testing method used for each research study question and hypothesis created.

The study's population consisted of male and female workers, 45 years and older, with diverse job types and ethnicities. The sample population was obtained through the Walden Participant Pool, which consists of members of the Walden community, including students, faculty, and employees, who enrolled for the study online. But the Walden Participant Pool did not yield an adequate sample population; therefore, a contingency plan was implemented: the Internet-based Survey Monkey was used to complete the sample population. (Survey Monkey has a pool of respondents who participate in academic research. The service was paid by the researcher; the company, in turn, compensated their respondents.) The study's defined population attributes such as age, gender diverse ethnicities and job types was entered in the Survey Monkey database to obtain the specific population for this study. The sample population obtained through Survey Monkey also participated in the study online. To determine the sample size of participants for this study, G*Power was utilized. G*Power is a program used for power analysis of various statistical tests used in behavioral and social research (Faul et al., 2007). The effect size was set at .5 and the power was set at .80 for a one-way ANOVA, thereby producing a total sample size of 159 participants. The detailed discussion of

participants can be found in Chapter 3. All were administered all components of the study.

Operational Definitions

Health literacy: The capacity to comprehend health information and utilize this information to select appropriate care for medical and health needs (NIH, 2008). This variable was measured by the short form Test of Functional Health Literacy in Adults (TOHFLA) that measures literacy levels for adult populations.

Health education: The process of improving knowledge concerning health as well as influencing the perception of an individual or community through the use of multiple instructional methods (WHO, 2012).

Health promotion: The process of managing or enhancing individual health through various types of interventions (WHO, 2012).

Health screening: Medical tests, procedures, or examinations performed for early detection of disease or illnesses (NIH, 2011).

Older worker: An older worker is a mature adult over the age of 45 years. This individual can experience loss of the physical ability to work in addition to decline in health as a result of the aging process (Naumanen, 2006). This variable was measured by a question on PHSKQ health survey questionnaire that requests participant age.

Preventive health: Perceiving changes in health status that deviate from an established pattern of functioning and seeking medical treatment in response to the recognized change before progression of the status occurs (NLM/NIH, 2012).

Preventive care: Medical care or treatment performed to avoid illness and improve health. (HHS, 2014).

Primary prevention: Health promotion that averts disease processes from being created by reducing the causes of disease or increasing disease resistance (Katz and Ather, 2009).

Assumptions

Assumptions, as defined by Simon (2011) are things not under one's control. In relation to this study, assumptions have been postulated that are believed true but cannot be fully confirmed. Assumptions were necessary for the study to provide rationale why the interventions provided may or may not be fully effective. The following assumptions were made for this investigation:

1. It was assumed that participants may already have knowledge about certain areas of preventive health.
2. It was assumed that participants were able to recall the frequency of exposure and types of exposure to preventive health screening education they had received over the past 30 days.
3. It was assumed that the participants fully participated in the study by completing all portions (STOFHLA, PHSKQ, and supplemental questions) and by answering the survey questions honestly.

Scope and Delimitations

The study used older workers: women and men of diverse racial groups and job types who were at least 45 years of age. The broad attributes of the population were

selected to facilitate application of the findings to other populations of older workers. The limited sample and self-selection of participants does not permit generalizing results to the Walden Participant Pool.

Limitations

This study cannot fully explain why or if health literacy is influenced by preventive health education. Other factors, such as access to preventive health screenings and socioeconomic factors, may be variables for partaking in preventive health screening. Additionally, personal attitudes or emotions, such as fear of the unknown, may also be variables. Lastly, self-reporting may affect study results as the participants may over or under report their knowledge or experience to provide the answer they feel is best. All of these factors may affect participant response as well as receptiveness to the survey questions. Due to the constraints of an online study, there is no ability to clarify the questions for participants nor ensure that they would understand them. Given these influences, the variations in health literacy were accounted for by analyzing the survey score results to determine if the differences were subtle or distinct.

Significance of the Study

This study explored the practical use of preventive health screening education to prevent or limit potential adverse health outcomes for older workers. Given the possibility for illness, older workers could significantly impact the occupational environment by decreasing productivity in addition to increasing health care and operational costs. The vast majority of these potential effects can be prevented with health promotion practices that address the changing needs of the older population. Harris

(2006) suggested that, to produce well-being for the older population and reduce the health services expended by this group, enhanced health maintenance is a key societal requirement. This study proposed a framework for preventive health screening education that would foster literacy about health screenings.

The implication for social change resulting from this study was to offer recommendations that address the preventive health educational needs of the older worker population. By determining which preventive health screening education media are effective in educating the older worker population, health education programs can be developed that incorporate those media. Education could be a motivational factor in changing health behaviors as well as outcomes for the older worker population. Additionally preventive health screening education could (a) improve older worker health literacy, (b) contribute to older worker well-being, and (c) reduce the health services expended by this group. On a social change level, this research could provide insight on how to effectively educate the older worker population thereby contributing to the existing research on this topic.

Summary

The workforce in the United States has an expanding number of older workers. As a result of the increase in retirement age requirements, the population of workers over the age of 45 continues to grow. For this population, preventive health and the ability understand primary preventive care is essential for older worker health literacy. Health literacy or the ability to understand and select appropriate care is needed for this population. According to White et al., (2008), deficient health literacy can decrease an

adult's ability to comprehend health information that is important for initiating appropriate and effective preventative actions to sustain health. The health belief model—the foundation of this study—postulates that individuals will alter their behavior when they believe (a) they are susceptible to disease or illness and that (b) implementing specific behaviors will reduce the severity of a potential medical condition. For this study, a survey design was incorporated to evaluate the relationship between preventive health screening education media and health literacy.

Chapter 2's comprehensive literature review addresses the literature on the probable relationship between preventive health screening education and health literacy. Past research findings, the current status on research and gaps in the literature are presented. The synopsis of literature also supports the importance of this study. The initial portion of the chapter reviews the health belief model and its relationship to the study. Next, the chapter addresses various topics associated with the study by theme: older workers, health literacy, preventive health screening, and health education. Chapter 2 concludes with the implications for future research.

Chapter 3 covered the methodology of this study. It explored the research questions and the quantitative methods that were used to analyze research data. The chapter was divided into the following subsections: the research design, the sample population, the research process (recruitment and data collection), data analysis, and ethical considerations.

Chapter 2: Literature Review

Introduction

There is an increase in older workers in the United States workforce that will produce a population which are potentially susceptible to illness and increased occupational injury. The problem is that there is inadequate health literacy regarding preventive health in the older worker population. Hart (2007) stated workforce projections released by the Bureau of Labor Statistics in 2005, predicted an increase in those between the ages of 55 to 64 to more than 7 million between the periods of 2004-2014. Additionally, number of individuals in the workforce who are past retirement age will also grow. There will be an increase in workers aged 65 and over at a rate that is seven times more rapid than the total workforce growth rate (Hart, 2007). To address this situation, improving older worker health literacy regarding preventive health screening education may be a solution to reducing potential health outcomes experienced in aging. The purpose of this study was to determine if preventive health screening education can influence health literacy among older workers. Additionally, the study provides recommendations for educational methods given the imminent increase in the older worker population. Recent studies have presented the necessity of health education as a benefit to enhance health literacy for aging individuals. Harris (2006) suggests there should be a shift in the perception of aging and health and use this opportunity to promote well-being as well as to provide health education on a holistic level. Health education facilitates the process of learning, thereby allowing individuals to make informed decisions regarding their health through enhanced health literacy. Additionally, Syx

(2007) stated patient education fosters comprehension by the patient of their health condition as well as assists with their ability to implement recommended health related changes to obtain an optimal level of health. Although health literacy is influenced by various factors such as educational level or socioeconomic status, preventive health screening education targeted specifically for the aging person is a significant factor to improve understanding and learning.

Literature has been selected and reviewed to evaluate both health literacy and preventive health screening education that address the needs of older workers. Additionally, literature is divided by theme to support the relevance of this study: the health belief model, older workers, health literacy, preventive health screening, and health education. The literature selected provided data necessary to identify the correlation between health literacy and preventive health screening education thereby ascertaining the educational requirements for an aging workforce.

Literature Search Strategy

Literature for this review was obtained electronically through research databases such as MEDLINE, PubMed, SAGE, ProQuest, Academic Search Complete and EBSCOhost. The database search encompassed peer reviewed articles and reports dating from the years 2000 to 2014. The following key words were used, alone and in combination: *older worker, health belief model, health literacy, health education, health promotion, health screening, preventive health,* and *preventive care*. Previous use of the health belief model is analyzed with implications for use with this study. Next, the

compilation of literature is synthesized by theme to provide a synopsis. The implications for future research are identified and presented to conclude the chapter.

Theoretical Foundation

The theoretical framework selected for this study was the health belief model. Originating in the 1950's by the United States Public Health Service, the health belief model was developed to address non-participatory behavior of individuals in preventive health programs ("Health Belief Model (HBM)", 2012). Its premise is that an individual takes action against a specific threat based on perceived susceptibility and severity. Additionally, health related behavior is associated with perceived benefits of proposed actions as well as potential barriers to executing a prescribed action. Often used to predict behavior, the health belief model can provide insight into how individuals will perceive their health and comply with recommended health care treatments. The health belief model, as represented in the articles selected, can prove to be an effective theoretical framework for evaluating health knowledge and behavior. The articles selected to evaluate the health belief model were grouped by topic. Of the articles reviewed, studies involving education for disease prevention utilizing the health belief model were analyzed.

In a study evaluating the effect of an education intervention on osteoporosis prevention, Lashgarara et al., (2012) postulate that the health belief model (HBM) is often used for disease prevention and evaluating interventions associated with individual health behavior. The HBM construct was used to interpret the effect of education on preventing osteoporosis among health volunteers. Subjects were tested about awareness

of osteoporosis before and after the educational intervention. This study revealed the HBM was effective in improving osteoporosis awareness and knowledge. According to Lashgarara et al., (2012), the HBM-based education was effective in improving awareness scores with regard to the areas of calcium intake as a result of realizing the perceived susceptibility, severity, benefits and perceived barriers through the educational component. In comparison, an earlier study utilizing the same topic of osteoporosis education, Sedlak (2000) noted that the impetus for learning and health behavior participation was derived from each person's health beliefs and that the health belief model (HBM) provides a foundation for altering those beliefs and enhancing knowledge regarding osteoporosis. Similar to the previous study, the HBM was used in this study to assess health beliefs before and after receiving an educational program. The goal of this study was to evaluate osteoporosis health beliefs, improve osteoporosis knowledge and actualize performance of osteoporosis preventing behaviors or OPB (Sedlak, 2000). The results of the osteoporosis educational program demonstrated was an increase in knowledge regarding the prevention of osteoporosis; however, the health beliefs and OPB were not changed, in contrast to the study by Lashgarara et al., (2012). In essence, having knowledge about osteoporosis did not influence participants to change their health beliefs nor alter their behavior (Sedlak, 2000). Lastly, a study on AIDS and at-risk sexual behavior in adults 50 years and older applied the HBM model to assess participant knowledge. This study utilized the Pender HBM, which suggested that two actions are engaged: threat perception to personal health and belief that safeguarding one's personal health through action offsets any type of barrier potentially encountered (Maes, 2003).

The individuals in this study participated in an educational program and completed mailed survey questionnaires. The study results demonstrated that older participants were knowledgeable about AIDS, but perceived it as a low threat, and did not engage in actions such as condom use as a health protecting behavior to prevent HIV transmission (Maes, 2003). This outcome is similar to the study conducted by Sedlak, in that the participants gained knowledge, however did not perceive the condition enough of a threat to alter belief or behavior.

The health belief model (HBM) is a theory associated with patient education. Syx (2008) notes a patient may not be receptive to instruction if he/she does not believe they are threatened, will benefit from a proposed intervention or perceive there is a barrier to prevent them managing their health. As a result, education should be individually tailored to the patient's perception of the disease and its potential outcomes. In the study by Lashgarara et al., (2012), participants perceived osteoporosis as a threat and integrated the educational component provided. However, the studies by Sedlak (2000) and Maes (2003) revealed that participants did not perceive either osteoporosis or AIDS as a threat and did not alter their beliefs or assimilate the behaviors recommended. Bellamy (2004) suggested that HBM can help create effective educational interventions as well as help in understanding patient behavior. Given this premise, it could be recommended that future studies ascertain participant perception when designing educational interventions. These perceptions could be derived from a compilation of individual feedback such as threat perception, barriers to action, and benefits from action regarding a specific illness or disease.

The health belief model was chosen for this study as the theory explains behavior when there is a perceived threat. Mackert (2011) asserted that individual perceptions of health risks and preventive action result from knowledge, and people are likely to adopt a behavior if threatened and perceive they will benefit, despite obstacles presented. For this study, the perceived threat is illness from various treatable conditions and preventive health screening education will foster improving knowledge. Once an individual's knowledge about a specific topic is augmented, their literacy level about that subject is increased. Additionally, after the taking the Preventive Health Screening Knowledge Quiz (PHSKQ) has been provided, it is hoped the participant's perception will change and influence future preventive health behavior. Lastly, the HBM can help determine which method of instruction, through previous frequency exposure, is most advantageous by analyzing results from participant response after receiving the educational intervention.

Literature Review Related to Key Variables and/or Concepts

Older workers

Older workers for the purposes of this study have been designated as those persons aged 45 years old and older. Literature has been selected and reviewed to evaluate both health promotion interventions that address the needs of older workers and occupational risks. The literature is divided into two relevant sections, health promotion for older workers and risks faced by older workers. The health promotion portion supports current practices to promote health and well-being for older workers. The articles accessed presented varying perspectives of the older worker and health

promotion. The articles incorporated cross-sectional and data analysis to obtain findings. Naumanen (2006) defined the older worker and health promotion as interpreted by occupational health professionals to include physicians and nurses, whereas Naumanen (2006), evaluated health promotion practices from the older worker perspective. Both studies findings suggested health promotion necessary for health maintenance and occupational productivity, however, continued investigation is needed to determine the overall effectiveness of health promotion. These studies also suggest organizational changes are required to support health promotion for older workers. Next, Bagwell (2000) evaluated factors that influence participation in health promotion. This study identifies age as an important factor regarding health promotion and programs should be designed with this element in mind. All three articles provide current health promotion measures and areas that require development to integrate the older worker population. The articles suggest older workers should be included in the development of workplace health promotion programs as well as the provision heath examinations and health education. Additionally a positive work atmosphere with access to counseling and workplace flexibility cognizant of age related capabilities are health promotion actions that should be incorporated to assist the aging individual in the workplace. Costa (2008) suggests shift work should be adjusted for older workers to reduce working hours and rotating shift work as well as provide rest periods and reduced commuting. The risk portion supports potential occupational injury and fatality rates for the aging population. Two articles provide data analysis via retrospective study and data extraction. Grandjean's study (2006) reveals an increase of occupational injuries with an increase in

age, however specific causation related to worker characteristics still remains unknown. Economic impact resultant from occupational injury experienced by the older worker is also addressed. Occupational injury is often long for older workers, thus accruing higher insurance bills as well as disability payments for employers. By comparison, the study conducted by Hartley (2001) found an increase in occupational fatality experienced by the older worker. Additionally, the literature recommends research to determine how older workers should be protected from injury. Both articles discuss declining productivity characteristics and determine the need for effective interventions that target the aging population for the purpose of decreasing both injury and fatality. These studies are convincing in substantiating the occupational risks experienced by the older worker and strategies that are required to address this problem.

The literature selected provides supportive data necessary to identify risk and health promotion, which facilitate understanding of the occupational requirements for an aging workforce. To support this study, current risks and health promotion practices should be taken into consideration when providing preventive health screening education to improve older worker health literacy. Also, recommendations regarding specific causation related to older worker occupational injury in addition to determining health promotion effectiveness should be further investigated. Lastly, the literature compiled in this review directly relates to the study's focus by providing a descriptive representation of the older worker and their age related requirements.

Health Literacy

Health literacy is defined as the ability to comprehend health information and to transfer this information into action related to one's health status (HHS, 2012). Health literacy also involves basic reading and writing in addition to active listening, the ability to complete forms and assimilate directions. Low or inadequate health literacy results when an individual is unable to grasp and integrate basic health related information necessary to make informed health decisions. Commonly used instruments for measuring health literacy include the Wide Range Achievement Test (WRAT), the Rapid Estimate of Adult Literacy in Medicine (REALM) and the Test of Functional Health Literacy in Adults (TOFHLA) (Berkman, 2004). For the purposes of this study, the short form TOFHLA designed by Nurss et al., (2004) was used. The TOFHLA requires test subjects to respond to prompts such as appointment slips or instructions on a bottle and incorporates the Cloze method by deleting words in a passage thus guiding the test subject to select the correct word from multiple choice answers (Berkman, 2004). For example, a passage may ask the following:

"This medication can irritate the stomach, therefore take this medicine ____". The multiple choice answers for this question could be:

(a) with water

(b) on an empty stomach

(c) with food or meals

The test subject should select the answer that would best complete the sentence correctly. For this example, answer (c) is the correct choice.

A study conducted by Wolf (2005) utilized the TOFHLA to evaluate the relationship between health literacy, health functioning and health related activity in older adults. The short form TOFHLA was used to survey participants and ascertain literacy levels. The results demonstrated those individuals with low literacy experienced poorer physical function, difficulties with activities of daily living instruction and limited activity due to physical health (Wolf, 2005). Essentially, the results correlated low health literacy with poor health outcomes. Conversely, a second study by White (2008), focused on the relationship between health literacy and preventive health practices as self-reported by older adults. This study utilized the National Assessment of Adult Literacy (NAAL) to test health literacy among participants. The NAAL was developed by National Center for Education Statistics by the US Department of Education Institute of Education Sciences and is a national literacy assessment tool that specifically measures health literacy (White, 2008). This study demonstrated progressive aging was a factor regarding low literacy. The older age group of adults 65 years and older were less likely to engage in preventive health practices and had results indicative of low health literacy (White, 2008), whereas this outcome for younger adults aged 40-64 diminished with age. In conclusion, both studies infer health literacy is affected by age and interferes with preventive health activities. Additionally, both studies represent the need to enhance health literacy through age specific education. Lastly, the studies demonstrate health literacy can be gauged by varying instruments.

Health literacy involves integration of multiple factors. Additional articles reviewed suggest promoting health literacy involves three components: age appropriate

teaching strategies, access to obtain health information, and integration of cultural and linguistic considerations. Initially, teaching strategies should be designed mindful of age related constraints. The fundamental goal regarding teaching strategy was to foster a respectful and conducive learning environment. Speros (2009) suggested incorporating the Gerogogy model where older adults are taught on a level that compensates for the effects of aging such as cognition, sensory perception, and physical dexterity. Additionally, Speros (2009) recommended strategies should include a practical, well-defined application of the health information presented linking their life experiences with the data being provided. Lastly, Speros (2009) noted, that including additional time for integration of new information as well as incorporating frequent breaks during instruction to allow for clarification of concepts not understood is necessary. Next, individuals require access to health information to obtain optimal health literacy. Before an individual can be taught effectively to improve their health literacy, access to health information is pertinent. Health information is traditionally obtained through the health provider, however with the advent of the computer, information can be accessed over the Internet as well as through printed sources. Egbert (2009) noted individuals with low health literacy tend to come from the poor, elderly and ethnic groups that speak English as a second language Those persons low in health literacy are challenged as they may not be seen by the same provider consistently and cannot understand medical terminology used on the Internet or on printed materials. To address these issues, Egbert (2009) suggests more time should be allocated for physicians to interact with patients as well as encouraging Internet accessibility in public places such as the library or hospitals, schools

and senior facilities. As a final point, printed literature should be basic, easy to read and simple to comprehend.

The last component of health literacy requires consideration of cultural and linguistic obstacles. The health outcomes in diverse patient populations can be improved by connecting culture, language and health literacy. Referred to as the "triple threat" low health literacy coupled with cultural barriers and limited use of the English language impair health communication and influence how individuals interpret health information (Singleton, 2009). It is necessary to translate medical terms and information in a language understood by individual and infuse the value system of their culture if possible when providing health material. In conclusion, Singleton (2009) recommends developing health literacy strategies through assessment of the patient's cultural norms and verbal skills to facilitate an effective plan of care.

The dependent variable for this study is health literacy. To improve health literacy, general preventive health screening education was provided. The study population was tested to determine baseline health literacy initially utilizing the short form TOFHLA. Given the literature review results on this topic, it is imperative the educational component of this study incorporate appropriate teaching strategies as well as be sensitive to cultural and linguistic considerations. The tool which tests for preventive health screening education for this study, the Preventive Health Screening Knowledge Quiz (PHSKQ), must be easily read as well as simple to access and use. Additionally, this tool has been devleoped to be uncomplicated to foster understanding.

Preventive Health Screening

Health screening, also interchangeable as preventive health screening has been described in the definition section of this study as medical tests, procedures, or examinations performed for early detection of disease or illnesses (NIH, 2011). Preventive health screening should be comprehensive and concentrate on various body systems and areas susceptible to disease manifestation.

> At the core of this report are eight indicators for monitoring the use of clinical preventive services among adults aged 65 and older: two vaccinations (influenza and pneumococcal disease); five screenings for early detection of breast cancer, colorectal cancer, diabetes, lipid disorders, and osteoporosis; and counseling for smoking cessation. Additionally, the report highlights seven other recommend services for older adults (alcohol misuse screening, and counseling, prophylactic aspirin use, screening for blood pressure screening, cervical cancer, depression, obesity, and consideration of zoster vaccination. (Nicholas, 2011, p. 3)

Comparatively, the Agency for Healthcare Research and Quality or AHRQ has published preventive screening guidelines for adult women and men as well as preventive screening guidelines for adult women and men 50 and above. The guidelines for AHRQ include the previously mentioned indicators with inclusion of four indicators for both men and women and two additional indicators for women, one additional indicator for men. AHRQ (2010) recommends the following additional indicators: HIV testing, physical activity, healthy weight maintenance, and STD screening; for women breast cancer drug

therapy for familiar cancer prevention and estrogen therapy; abdominal aortic aneurysm for men.

The literature reviews regarding preventive health screening were inclusive of data extrapolation, qualitative interviews and a controlled randomized trial. The controlled randomized trial conducted by Thomsen (2006) sought to analyze the effects of preventive health screenings through provision of health screenings and counseling . Basic preventive screening was provided for major bodily systems. Health screenings encompassed the following: liver and kidney function, vision and hearing screening, body mass index (BMI), cardiac and pulmonary function testing as well as physical endurance evaluation (Thomsen 2006). The results of this study realized a decrease in hospitalizations as a result of preventive health screening. In a similar study, participants were screened for cardiovascular risk score (CRS). Nielsen et al., (2009), provided preventive health screening through blood testing and other measures to determine participant's predisposition for CRS utilizing intervention and control groups. Those individuals that did not present with an elevated CRS felt reassured they were healthy. The study also noted that results could not guarantee that participants would not require preventive screening for other areas and recommended those with normal CRS levels should adopt healthy lifestyles to maintain well-being (Nielsen, 2009). Last of all, the use of preventive health services among women with health coverage was the focus of a final literature review. Data was extrapolated from the Behavioral Risk Factor Surveillance System (BRFSS) from 2006 for women 18-64 years of age (Ahluwalia, 2006). The BRFSS is a survey to monitor morbidity and mortality through evaluation of health

behaviors. Ahluwalia (2006) noted those without health coverage were more likely to refrain for preventive health screening and not obtain routine health examinations. With the absence of preventive health screening, illness can go undetected and without treatment until clinical illness is manifested. The studies presented are conclusive that preventive health screening is useful in identifying health disorders. Preventive health screening is also a method to detect and treat illness before it can develop into a complicated health condition. The research also cautions that the results from preventive health screening should not provide a false sense of security and recommend continued preventive health screening to avoid problems in other areas.

Health Education

The independent variable of this study is preventive health education. Preventive health screening education is the method by which individuals improve health literacy through the provision of health information and concepts. Health education for the adult requires understanding the principle of adult learning. Rigdon (2009) states andragogy is the framework for adult learning and postulates adults learn when given a reason to learn in addition to being motivated from acquiring knowledge that will be used or eventually beneficial. Basically, adults learned through self-direction drawing on previous experiences and stored information. In order for adults to effectively learn, education should be presented on a comprehension level for the individual. Reading levels for health education should be designated between fifth through eighth grade level and should not be mistaken or interchanged with educational level (Rigdon, 2010). Additionally, health education should be presented in a format that enables learning.

Illustrations serve as methods to reinforce health messages and should be clear with singular concepts (Rigdon, 2009). The uses of pictures, posters or diagrams are examples of useful illustrations.

The studies conducted by Small (2010), Martin (2013) and Chu (2009) explaining health education focused on transmission of the intended health messages to facilitate learning. Small (2010) conducted a study to ascertain older adult knowledge regarding HIV/AIDS incorporating a quantitative design to disseminate information . Participants were given pre and post surveys to ascertain knowledge before and after receiving health education. Health education was conducted via an education session and focus groups targeted risk-taking behavior among older adults. Consequently, the results of this study revealed there was no change in HIV/AIDS knowledge after receiving a designated HIV/AIDS course which suggests additional development of age specific HIV/AIDS educational program for older adults is needed (Small, 2010). In another study, a health education program regarding prescription medication inappropriateness was implemented. Individuals participated in an educational intervention describing alternatives to their present medication that was potentially unsuitable in addition to receiving detailed risks from taking their current medication (Martin, 2013). Contrary to the previous study, the health education provided in this research influenced the decisions of participants. The recipients of this intervention experienced self-efficacy and consciously decreased use of the potentially harmful medication (Martin, 2013). In the last reviewed article, evaluated computer use and retrieval of Internet health information by older adults. The article suggested older adults lacked confidence and experienced

increased anxiety when navigating on the computer to access health information (Chu, 2009). Adult learners were given a five week educational intervention which provided basic education on how to utilize the Internet and retrieve health education information. As with the previous study, this educational intervention had positive outcomes by decreasing participant anxiety and increasing the participant's use of the Internet to retrieve online health information (Chu, 2009). In summary, health education is relevant to transmit health information. It is important for the health education method to be developed at the level of the learner and provide useful information to influence the participant to engage in the suggest behavior. Finally, health education works in partnership with health literacy, therefore information should be clear and engaging to facilitate learning.

Summary

The literature review rendered investigated the themes of the health belief model , older workers, health literacy, preventive health screening and health education. The health belief model is the theoretical framework for this study and postulates individuals will take action when a threat to health is perceived to improve, despite barriers presented. The concept of an older worker is defined by as individuals aged 45 years and older. Older workers are susceptible to occupational injury and fatality and require age specific health promotion interventions to assist them with maintaining workability. Health literacy, the dependent variable of this study is the ability to assimilate health information and incorporate this knowledge to improve one's health. Low health literacy is directly correlated to poor outcomes, therefore it is imperative teaching strategies as

well as cultural and linguistic considerations are integrated with providing education to improve health literacy. Preventive health screening are the tests and procedures done proactively to prevent disease and illness. It is important not to rely solely on a singular prevent screening result but continue to seek regular routine preventive screening. Lastly, health education and health literacy are partners in learning and integrating health information. Health education can be an effective tool to facilitate knowledge transmission and should be created to facilitate ease of learning and understanding.

It is known there is a relationship between preventive health screening education and health literacy, however the extent of this influence is not known or variable across differing studies. This study will explore the relationship between preventive health screening education media and older worker health literacy. The expected knowledge contribution from this study was achieved by offering data to support the relationship between the study's variables as well as recommend specific methods of education for the older worker. The next chapter describes the procedures that were incorporated to examine association between preventive health screening education and older worker health literacy. The research design for this study was presented and survey instruments that utilized in the study were provided.

Chapter 3 provides a detailed synopsis of the investigative actions that were utilized to test the research questions and hypotheses set forth.

Chapter 3: Research Method

Introduction

HHS (2012) suggested that health outcomes and health literacy are related; thus, persons with low health literacy have difficulty comprehending health information and obtaining preventative health care. Health education is a method by which health literacy is improved. To control disease and increase health literacy, preventive health screening education is necessary for the older worker population. The purpose of this study was to explore the relationship between preventive health screening education media and health literacy.

This chapter presents the study that was used to answer the goals set forth for this research. This chapter includes a description of the research design that was applied with rationale for selection of this process. Within the research design, the population, sampling procedures, and procedures for recruitment, participation and data collection are presented. Next, the instrumentation was introduced with an explanation of the data analysis that deciphered the data. The procedures are also discussed. The chapter concludes with a summary of findings.

Research Design and Rationale

The experimental approach was not appropriate since there were no experimental testing or groups for this study. The study used a quantitative, cross-sectional design. Firstly, the quantitative method was selected for this study as data was be obtained from participants to explore the relationship between preventive health screening education media and health literacy of the older worker. Quantitative analysis involves conversion

of data to numerical values that are representative of observed results (Babbie, 2007). For this study, participants were tested for health literacy and frequency of exposure to health educational media. These data were converted to ascertain health literacy levels and to evaluate associations between the study's variables. Unlike the qualitative approach, which strives to understand meaning by taking into consideration all aspects of phenomena, the quantitative approach seeks numerical measurements in terms of specific elements of a phenomenon (Miller, 2003). The goal for this method was to quantify the results of the study population at a specific point regarding the study variables while determining their exposure to preventive health screening information. Secondly, the cross sectional approach was selected because this design focuses on a specific period and analyzes the population in that period. Tucker (2005) defines the cross sectional design as one that collects data on two or more variables at the same time and these variables are evaluated for their associations. The cross sectional design is often used to examine age or experience differences and can encompass subjects from the representative population or sample of varying age ranges. A cross sectional design is frequently considered in research areas involving experience or age differences (Shanahan, 2010). The cross sectional design was selected for this study of varying age groups and the differing knowledge in this sample regarding preventive health screening.

Methodology

Population

The participants for this study consisted of volunteers who possessed the attributes of the older worker population defined for this study. For this study, an older

worker is defined as an individual 45 years and older. Participants were asked to provide their employment status to include working full time, part time, or other variation. The study's population consisted of male and female workers 45 years and older, of diverse job types and diverse racial groups. The study participant job types are not restricted and will vary based upon the volunteers that register to participate in this research. The classification of racial groups included the following: White, Black, Hispanic or Latino, Asian, Native Hawaiian or Pacific Islander, American Indian or Alaska Native, or Other (participant to provide description) and those that designate other were classified as such.

Sampling and Sampling Procedures

The sample population was obtained through the Walden Participant Pool. The Walden participant pool consists of members from the Walden community (students, faculty and employees). The participants from Walden enrolled for the study online. A contingency plan was formulated if the entire sample population was not obtained through the Walden Participant Pool. The research participant database from Survey Monkey, an Internet-based company was also used to secure the required sample population to supplement the Walden Participant Pool. As previously stated in the Nature of the Study section, the sample size for this study was calculated using G*Power. According to Faul et al., (2007) G*Power is used in research to determine power analysis of statistical tests. For this study a sample size of 159 participants was obtained using G*Power with the following parameters: One-way ANOVA with an effect size of 0.5 and power of .80. It was expected for 159 participants to complete the survey.

Procedures for Recruitment, Participation, and Data Collection

This was an online study. Participants for this study were recruited through the Walden Participant Pool. The Walden Participant pool assigns each participant a unique ID code which allows for identification by the researcher but maintains participant anonymity (Walden, 2012). Study participants selected and signed up for the study based on study criteria for participants and interest. The demographic information that obtained was age, race, gender, and job type. The participants were prompted via demographic questions to provide their age, race, and gender and job type. Participant responses were then grouped according to age (45-54, 55-64, 65-84) based on this information. Participants completed the informed consent via the Internet upon accession of the research study. The participants performed the study survey via online format. The study participants logged out of the study upon completion.

Instrumentation

The instrumentation tools selected for this study are the STOFHLA and the PHSKQ. Both the STOFHLA and PHSKQ are presented in a survey format. The TOFHLA assesses adult health literacy and measures an individual's ability to comprehend health information (Nurss et al., 2004). Permission to use the TOFHLA and STOFHLA can be found in Appendix B. A second instrumentation tool, the PHSKQ was created for this research study. The PHSKQ quiz was developed to assess preventive health screening knowledge. The quiz tests preventive health screening knowledge as well as requests demographic and survey feedback information. The validation of the PHSKQ quiz is discussed in this section.

TOFHLA. The TOFHLA was published in 1985 at Georgia State University and is available through Peppercorn Books (Nurss et al., 2004). The STOFHLA is an abbreviated version of the TOFHLA. The STOFHLA consists of 21 questions that are divided into two passages, passage A with 9 questions and passage B with 12 questions. The entire test should be taken in 7 minutes. The STOFHLA is scored on a scale from 0 to 36 and measures functional health literacy. Functional health literacy is determined by the STOFHLA under the following criteria: a score of zero-six denotes inadequate functional health literacy, a score of 17-22 denotes marginal functional health literacy, and a score twenty three-thirty six denotes adequate functional health literacy. The TOFHLA and STOFHLA tests can be found in Appendix C. In a study by Jovic-Vranes et al., (2013) the internal consistency (Cronbach's alpha) was 0.94 for the TOFHLA and .90 for the STOFHLA and the Pearson correlation between the TOFHLA and STOFHLA was 0.89. The TOFHLA has been used in previous studies to measure adult literacy in health care (Osborn, 2007) and to measure health literacy and cognitive performance in older adults (Federman, 2009).

PHSKQ. This study requires a second instrument to test for preventive health screening knowledge once health literacy levels had been established. An Internet search was conducted to locate an instrument that would test for preventive health screening knowledge. The following keywords were used: *preventive health knowledge questionnaire, preventive health knowledge quiz, preventive health screening questionnaire, preventive health screening quiz, preventive health screening education questionnaire, preventive health screening education quiz, preventive health screening*

knowledge questionnaire, and *preventive health screening knowledge quiz*. The websites retrieved from this Internet search offered suggestions and recommendations for preventive screening, but no specific tool or instrument such as a quiz or questionnaire was found to test an individuals' knowledge regarding preventive health screening. The development of a tool required research on the type of instrument necessary for this study and the effectiveness to test for preventive health screening knowledge. According to CDC (2011), the decision on the format and contents of the survey should be dependent on the target audience as well as the expected outcomes of the survey. The survey format chosen for this research study is a web-based tool consisting of multiple choice questions. CDC (2011) states a web-based tool allows for preprogramming of questions with specific answers being accepted in addition to providing response rate tracking and database entry as well as analysis. Additionally, the use of multiple choice questions or MCQs was also incorporated in the web-based design format. According to McCourbrie (2004), MCQs are designed to assess interpretation and synthesis of knowledge by providing a lead-in question known as the stem with numerous answers to select from known as branches. Thus, the correct answer to the MCQ should be selected based on participant understanding of the question being queried.

PHSKQ development. Multiple resources were reviewed and utilized to develop the PHSKQ in conjunction with integration of both web-based and multiple choice formats. Essentially, the PHSKQ was designed to address and answer the study questions of this research. The PHSKQ, consisting of 29 questions, was constructed to obtain demographic information, preventive health screening knowledge, preventive

health screening exposure information, and post survey questions regarding the quiz. CDC (2011) suggests using validated and tested survey tools to draw questions from. The demographic questions from the CDC Behavioral Risk Factor Surveillance Survey (BRFSS) were adapted and integrated to determine specific participant identifiers such as age, gender, race, education, and job type. The Agency for Healthcare Research and Quality (AHRQ) provided three resources that were used to construct the preventive health screening knowledge portion of the PHSKQ, the AHRQ Healthy Men quiz, the AHRQ Stay Fit at 50 checklist for men, and the AHRQ Stay Fit at 50 checklist women. The AHRQ Healthy Men quiz (2012) provided ten multiple choice fundamental questions that were modified to address both male and female genders. Additionally, the AHRQ Stay Fit at 50 Checklists for men and women (2011) were used to create gender specific preventive health knowledge questions. Permission to use the BRFSS and AHRQ material can be found in Appendices D and E.

PHSKQ validation. After the PHSKQ was developed, the instrument then needed to be validated to ensure it would produce authentic results. The definition of validity is the extent an instrument measures what is was designed to quantify (Lynn, 1986). To determine the PHSKQ validity, a content validation was performed. Content validity involves determining relevance or representativeness of instrument elements (Lynn, 1986). The specific tool used to perform content validity was the Validation Rubric for Expert Panel or VREP. The email requesting use of the VREP and permission to use the VREP can be found in Appendices F and G. The VREP was developed to measure three types of validity including include face, construct, and content validity

(Simon & White, 2013). The VREP examines an instrument on a scale from 1 to 4 with 1 being not acceptable and 4 being exceeding expectations. The VREP tool can be found in Appendix H. There were ten criteria used to analyze the PHSKQ quiz and four criteria that specifically analyzed the PHSKQ quiz in reference to specific constructs identified. The VREP with specific constructs for the PHSKQ quiz can be found in Appendix H. A panel of experts was recruited to validate the PHSKQ utilizing the VREP. Lynn (1986) suggests an expert panel is required to assert the items of an instrument are content valid, thereby asserting the instrument is also content valid. The determination of the number of expert panel members was obtained through literature research. According to Lynn (1986) the minimum number of five experts would facilitate an adequate level of control for probable consensus, whereas the maximum number of expert panel members should not exceed ten. The total numbers of expert panel members assembled to validate the PHSKQ quiz were six consisting of one physician and five registered nurses. The physician is a Board Certified Orthopedic Surgeon and the registered nurses all have a Bachelor of Science in Nursing. Additionally, four nurses have Master of Science degrees in nursing, with one currently enrolled in a Master of Science in nursing program. Lastly, three of the nurses are Nurse Educators, one a Clinical nurse and one employed in Workers' Compensation. The expert panel participants for the PHSKQ quiz validation process were verbally asked to participate in this process and confirmed participation immediately. The expert panel participants were sent an instructional letter with the validation tool via email and results were received in two weeks. The expert panel members were assigned numbers from 1 to 6 based on receipt of the completed VREP.

The results from the expert panel validation can be found in Table 1. The expert panel feedback to include comments and suggestions can be found in Appendix I.

Table 1

Content Validity Index for Preventive Health Screening Knowledge Quiz (PHSKQ) from VREP results

VREP CRITERIA	EPM#1	EPM#2	EPM#3	EPM#4	EPM#5	EPM#6	CVI
Clarity	4	4	3	4	2	4	5/6.83
Wordiness	4	4	4	4	2	4	5/6.83
Negative Wording	4	4	4	4	3	4	6/6 = 1
Overlapping responses	2	4	4	4	3	3	5/6.83
Balance	4	4	4	4	4	4	6/6 = 1
Use of jargon	3	3	4	4	3	4	6/6 = 1
Appropriateness of responses listed	3	4	3	4	3	3	6/6 = 1
Use of technical language	4	3	4	4	3	4	6/6 = 1
Application to praxis	3	4	4	4	3	4	6/6 = 1
Relationship to problem	4	4	4	4	3	4	6/6 = 1
Measure of Construct A: Health Education	4	4	4	4	4	4	6/6 = 1
Measure of Construct B: Health Screening	4	4	4	4	4	4	6/6 = 1
Measure of Construct C: Preventive Health	4	4	4	4	3	4	6/6 = 1
Measure of Construct D: Preventive Care	4	4	4	4	3	4	6/6 = 1
Overall CVI							13.49/14 = .96

Note: EPM indicates Expert Panel Member.

The process by which content validity is determined includes determination of the instruments content validity index of CVI. The CVI is obtained from using a four-point ordinal scale, as previously stated in the VREP description from 1 (*not acceptable*) to 4 (*exceeding expectations*). These ratings are then calculated to determine the acceptable CVI. The CVI is determined by counting the number of experts that rated the item three or four with the total of this tabulation then being divided by the total number of experts (Rubio et al., 2003). As an example, if there are 5 out of 6 experts that rate the item 3 or 4, the total tabulation of 5 is then divided by 6 which is the total number of experts. The

resultant CVI would then be .83 or 83% (5/6 = .83). To be determined acceptable, the CVI of an item should not be lower than .78 when there are six or more experts according to Lynn (1986). For the PHSKQ, the CVI for the items, also known as VREP Criteria, ranged from .83 to 1.00 with three items having a CVI of .83 and twelve items having a CVI of 1.00. Each criterion had a CVI above .78 and the overall CVI of the PHSKQ was .96, thus the instrument was validated acceptable. The PHSKQ was revised to incorporate the comments and suggestions provided by expert panel participants in addition to reviewing those criteria that were rated 2 or below individually by an expert panel participant.

The initial and revised PHSKQ can be found in Appendices J and K. The PHSKQ consists of twenty nine questions that are divided into four categorical sections. The categorical sections include knowledge questions, exposure questions, study participant questions demographic questions. As a result of varying survey question types, such as demographic, multiple choice, rating, and comment, participant answers were scored accordingly. The knowledge section consists of fifteen questions and was scored by percentage correct. The number of correct answers were divided by the total number of questions to obtain a raw score. This raw score was then be multiplied by 100 to convert the score to a percentile value. The exposure section consists of four questions and was scored by rating response in percentage terms. The study participant questions consist of four questions and were scored by response percentage. Lastly, the demographic section consists of six questions and was scored by percentage. Data was extracted to ascertain age groups in the population. Other data such as sex, race, occupation, and education are

available. Participants were offered the opportunity to receive preventive health screening information at the end of the survey in the form of an educational flyer, a Healthfinder Widget and preventive health video. Permission to use this information can be found in Appendices L and M. The entire test should be taken in 30– 45 minutes.

Data Analysis

The data for this study were analyzed using the Statistical Package for the Social Sciences (SPSS). SPSS is a commonly used data entry and statistical analysis program that has the capacity to process large volumes of data (Howell, 2014). The software package was downloaded from the Walden website and data were exported from an Excel spreadsheet of study participant results from the Walden participant pool. If a population is needed from Survey Monkey, survey results can be downloaded into a SAV file that can be exported to SPSS (Survey Monkey, 2014). Data from both the Excel spreadsheet and SAV file was cross-checked with data that appear in SPSS. Any inconsistencies noted between the original data and the information downloaded to SPSS was corrected.

For the purpose of analyzing relationships, the statistical test method of analysis of variance (ANOVA) was used. Table 2 details the statistical analytic method that was performed for each research study question. The SPSS program is designed to check for assumptions of ANOVA as well as provide alternatives if the data violates an assumption. Lund & Lund (2014) state normality can be in SPSS using the Shapiro-Wilk test of normality, whereas homogeneity of variances can be tested by utilizing Levene's test for homogeneity of variances in SPSS.

Table 2

Type of Data and Statistical Test by Research Question

Research question	Type of data: independent variable	Type of data: dependent variable	Statistical analytical method
1. Is there a difference in health literacy scores, as measured by the STOFHLA, by age group (45-54, 55-64, 65-84) of older workers?	Nominal: Age groups: 45-54 55-64 65-84	Numerical: STOFHLA health literacy scores	ANOVA
2. Is there a difference in preventive health screening knowledge scores as measured by the PHSKQ, by age group (45-54, 55-64, 65-84) of older workers?	Nominal: Age groups: 45-54 55-64 65-84	Numerical: PHSKQ	ANOVA
3. Is there a difference in health literacy for older workers as measured on the PHSKQ by source of preventive health screening education exposure (television, radio, written materials, newspaper or Internet?	Nominal: Method of preventive health education: Television Radio Written material (pamphlet or flyer) Newspaper Internet	Numerical: PHSKQ	ANOVA
4. Is there a difference in perceived effectiveness among older workers, as measured on the PHSKQ by source of preventive health screening education exposure (television, radio, written materials, newspaper or Internet?	Nominal: Method of preventive health education: Television Radio Written material (pamphlet or flyer) Newspaper Internet	Numerical: PHSKQ	ANOVA

Threats to Validity

Given this study is not an experimental study, threats to internal validity will not be considered. A potential threat to external validity is the study population selected through the Walden participant pool. Babbie (2007) notes external validity addresses generalizability of the experimental results and inquires if the same effect would be actualized in a different setting. Basically, external validity refers to the ability for results from this study to be replicated in another population with equivalent characteristics. The

threat to external validity exists because participants for this study will volunteer to participate and are not drawn from a random sample. Additionally, the sample population was obtained from an online university (Walden) or an Internet based population (Survey Monkey) and the results may not be representative of the United States population or other university populations.

Ethical Procedures

There are minimal risks for harm or discomfort with this study. It is hoped study participants will not experience psychological or emotional trauma or feel annoyed from participating in this study. The area of ethical concern is anonymity and/or confidentiality. Given participants will sign up for this online study through the Walden participant pool, their anonymity is protected by their unique ID code assigned by the Participant pool. If a study population is needed from Survey Monkey, anonymity can be protected by through utilizing the collector settings for the survey. Anonymous survey responses can be collected by disabling email and IP address storage capability (Survey Monkey, 2014). . If additional information is needed, the participant was prompted at the end of the study. To ensure anonymity or confidentiality, it was the researcher's responsibility to secure all survey documentation. Survey documentation were stored in a secure, locked file drawer in the researchers' home with accessibility by the researcher. Additionally, survey documentation were maintained on an external drive device and also locked in the file drawer of the researchers' home. This material and device will be maintained under secure storage for a period of five years. If there is a data breach, study participants will be notified immediately through the Walden Participant Pool and/or

Survey Monkey of when the breach occurred and what specific information or type of breach transpired. Finally, an informed consent was provided to all study participants for the purpose of explaining all confidentiality elements and risks associated with the research study. The informed consent for this study contains procedures for taking the study with information regarding the background of the study and voluntary nature, as well as risks and benefits of participation. The informed consent for this study also discusses confidentiality and security of information and provides the researchers' information should there be questions. The informed consent for this study can be found in Appendix N.

Summary

This chapter has provided an overview of the research design of this study. The population of older workers has been defined as well as the procedures by which the required sample size for this study have been determined. The procedures for participant recruitment have been provided, detailing their participation in the online research study through the Walden Participant pool. The instrumentation for this study, the TOFHLA and the PHSKQ were discussed and the appropriateness for this study. Next, a data analysis plan has been formulated to evaluate participant results. These results were analyzed to address the research questions and hypotheses of the study. Lastly, ethical procedures have been addressed for this research study. The next chapter, Chapter 4 focuses on analyzing and interpreting results.

Chapter 4: Results

Introduction

The purpose of this quantitative study was to explore the relationship between preventive health education media and the health literacy of the older worker. Additionally, methods of health education for improving health literacy in the older worker population were also appraised by evaluating the reported frequency and type of exposure to preventive health education media. Data about the effectiveness of preventive health education media were collected through participant responses. For review, the research questions and hypotheses focused on (a) evaluating older workers' health literacy, (b) older workers' preventive health screening knowledge, and (c) ascertaining the difference in health literacy by exposure to preventive health education media in addition to determining perceived effectiveness of these preventive health education media. The STOFHLA was used first to assess participants' health literacy. Research Questions 2–4 used the PHSK Quiz to examined participants' preventive health screening knowledge, media exposure, and media effectiveness. In this study, SPSS software was used to analyze participant responses, and one-way ANOVA was used to determine statistical significance in relation to the research questions and hypotheses.

This chapter described the study's data collection method and results. The collection process and the information obtained the study sample were given as well as descriptive statistics. Next, the statistical findings were presented according to the research question and hypotheses. Lastly, a summary of findings is provided to ascertain what was learned from the resultant data.

Data Collection

The study's sample was derived through online recruitment. The study was available April 7, 2015, through May 8, 2015, on the Walden Participant Pool. Participants completed the informed consent via the Internet before beginning the study. The participants performed the study survey via online format. The response from the Walden Participant Pool was minimal with only five participants signing up for the study and three successfully completing the online study. An additional population was procured online through Survey Monkey. The Survey Monkey recruitment began April 29, 2015 and ran concurrently with the Walden Participant Pool. On April 30, 2015 the Survey Monkey study ended and yielded 172 participants. Of the 172 participants, 16 participant responses were excluded because they were retired and not working, therefore no longer considered older workers per study parameters. The Walden Participant Pool and the Survey Monkey participants together yielded a sample of 159.

The demographic portion of the PHSK Quiz provided study sample descriptive information. Data regarding age, gender, race, employment status, and educational background was collected. Two thirds of the study participants were between the ages of 45 and 64 years (78.6%) whereas the ages of 65-84 were least (21.4%). The last age group was resultant from combining two age groups 65-74 and 75-84. These groups were merged because there were only three respondents in the later age group of 75-84. There were more females (56%) than males (40%) and the majority of the study participants were White (79.2%). Additional races represented in the study (15.7%) included Black, Hispanic and Asian. There was one participant classified as Eurasian and eight

participants did not provide their race. Table 3 summarizes the study sample demographic characteristics.

Table 3

Study Sample Demographic Characteristics (N=159)

Participant Characteristics	Sample		Participant Characteristics	Sample	
	N	%		*N*	%
Age			Educational Background		
45-54	62	39.0	High School Graduate	154	96.9
55-64	63	39.6	Technical School (attended)	18	11.3
65-84	34	21.4	Technical School Graduate	14	8.8
Gender			College (attended)	82	51.6
Male	64	40.3	Bachelor's Degree	47	29.6
Female	89	56.0	Graduate School (attended)	23	14.5
Race/Ethnicity			Master's Degree	22	13.8
White/White	126	79.2	PhD Degree	3	1.9
Black/Black	15	9.4			
Hispanic or Latino	6	3.8			
Asian	3	1.9			
Other	1	0.6			
Employment Status					
Full time	107	67.3			
Part time	42	26.4			
Unemployed	9	5.7			

Note: There are not a total of 159 because of non-response to that category.

Most of the study participants were employed either full time (67.3%) or part time (26.4%) in addition to nine participants being currently unemployed (5.7%). Lastly, the majority of the study's participants completed high school (96.9%) and continued their education to attend technical school (11.3%) or college (51.6%). With respect to formal degrees, a portion of the study participants had Bachelors (29.6%), Masters (13.8%), and PhD (1.9%).

The study sample was determined based on the age range provided to the Walden Participant Pool and Survey Monkey of an older worker population per the study parameters. The study sample consists of workers 45 years and older to include males and females of diverse racial groups and job types. This study sample volunteered to participate in the study and although the majority race is White, there was still racial diversity represented. Not represented in Table 3 were specific occupations as they were diverse in the sample. The occupations were not grouped by type such as medical or business because the exact profession was preferred. A range of occupations in the study sample included caregivers, actors, chief financial officer (CFO), and sous chef. The most common occupations were teachers (4.4%) and managers (3.2%), as well as engineers, cashiers, registered nurses, business owners, and office managers (1.9% respectively). Other occupations such as paralegals, truck drivers, clerical, and retail associates were 1.3% respectively.

Results

Research Question 1

Is there a difference in health literacy scores, as measured by the STOFHLA, by age group (45-54, 55-64, 65-84) of older workers?

H_{01}: There is no statistically significant difference in health literacy scores, as measured by the STOFHLA, by age group (45-54, 55-64, 65-84) of older workers.

H_{A1}: There is a statistically significant difference in health literacy scores as measured by the STOFHLA by age group (45-54, 55-64, 65-84) of older workers.

The first research question presumes there is no difference in health literacy scores by age group for older workers. To test the hypothesis a one-way analysis of variance or ANOVA was performed. The dependent variable is STOFHLA scores. The independent variable is age group. Prior to performing the ANOVA, the health literacy of the study sample was assessed. Table 4 depicts the STOFHLA health literacy of the study sample.

Table 4

STOFHLA Health Literacy of Study Sample

	N	%
Adequate Health Literacy (23-36)	152	95.6
Marginal Health Literacy (22-17)	2	1.3
Inadequate Health Literacy (16-0)	5	3.1

According to Table 4, the majority of the study sample (95.6%) had adequate health literacy or the ability to understand health information and relate this information to their individual health status. A small percentage, less than 5% possessed marginal health literacy (1.3%) or inadequate health literacy (3.1%). Once the health literacy score of the study participants was obtained the ANOVA was performed. Table 5 depicts STOFHLA Score descriptive values from the ANOVA.

Table 5

STOFHLA Scores descriptives from the ANOVA

				95% Confidence Interval for Mean	
Age Group	*N*	M	Std. Deviation	Lower Bound	Upper Bound
45-54	62	31.8226	7.25309	29.9806	33.6645
55-64	63	34.1905	2.76998	33.4929	34.8881
65-84	34	33.3899	2.07523	34.0406	35.4888

According to Table 5 the age groups are 45-54, 55-64, and 65-84. There were 62 participants in the first age group (45-54) that scored a mean of 31.8226 on the STOFHLA with the 95% confidence interval scores ranging from 29.9806 to 33.6645. The next age group (55-64) consisting of 63 participants scored a mean of 34.1905 on the STOFHLA with 95% confidence interval scores ranging from 33.4929 to 34.8881. Lastly the oldest age group (65-84) consisting of 34 participants scored a mean of 33.3899 on the STOFHLA with 95% confidence interval scores ranging from 34.0406 to 35.4888. The second portion of the analysis for research question 1 is the ANOVA. Table 6 depicts ANOVA of STOFHLA Scores by age group for older workers.

Table 6

ANOVA of STOFHLA Scores by age group for older workers

	Sum of Squares	*df*	Mean Square	*F*	p
Between Groups	256.944	2	128.472	5.237	.006
Within Groups	3826.880	156	24.531		
Total	4083.824	158			

A one-way between-groups analysis of variance (ANOVA) was performed to evaluate if there is a difference in health literacy scores by age group. According to the ANOVA table, p = .006, which is well below the .05 significance criterion. The Post Hoc Tukey comparison resulted in a p = 0.23 between 45-54 and 55-64 age groups regarding STOFHLA scores whereas the same comparison yielded a p =.017 between 45-54 and

65-84 age groups. Stockburger (2015), suggests when the p-value is less than or equal to .05 it is concluded there is a statistically significant difference between the groups. The p value of .006 represents there is a statistically significant difference in STOFLA scores by age group for older workers, specifically between age groupings 45-54 and 65-84. Given this result, the null hypothesis (H_{01}) is rejected concluding that there is a relationship between age groupings and STOFLA scores with the youngest age grouping having the lowest score.

The effect size measures the extent to which the independent variable affected the dependent variable (Becker, 1999). To compute the effect size of this ANOVA, the sum of squares between groups was divided by the total sum of squares. For these ANOVA the sum of squares between groups is 256.944 and the total sum of squares is 4083.824. The resultant equation is 256.944/4083.824 =.063 or .06. According to Cohen (1988), .01 is a small effect, .25 is medium effect, .4 is large effect. The results of this ANOVA represent an effect greater than small but less than medium. The salient finding of this analysis is that there is a statistically significant difference in STOFHLA health literacy scores by age group (.006) with an effect of 6% (.06).

Research Question 2

Is there a difference in preventive health screening knowledge scores as measured by the Preventive Health Screening Knowledge Quiz (PHSKQ), by age group (45-54, 55-64, 65-84) of older workers?

H_{02}: There is no statistically significant difference in preventive health screening knowledge scores, as measured by the PHSKQ, by age group (45-54, 55-64, 65-84) of older workers.

H_{A2}: There is a statistically significant difference in preventive health screening knowledge scores as measured by the PHSKQ, by age group (45-54, 55-64, 65-84) of older workers.

The second research question presumes there is no difference in health screening knowledge scores by age group for older workers. To test the hypothesis a one-way analysis of variance or ANOVA was performed. The dependent variable is PHSKQ scores. The independent variable is age group. Prior to performing the ANOVA, the preventive health screening knowledge of the study sample was assessed. Table 7 depicts the PHSKQ Preventive Health Screening Knowledge of the study sample.

Table 7

PHSKQ Preventive Health Screening Knowledge of the study sample

Knowledge Level	*N*	%
Adequate Health Knowledge (75-100)	37	23.3
Marginal Health Knowledge (50-74)	99	62.3
Below Marginal Health Knowledge (25-49)	20	12.6
Inadequate Health Knowledge (0-24)	3	1.8

Table 7 demonstrates the majority of the study participants had adequate (23.3%) or marginal (62.3%) preventive health screening knowledge. These results represent the participants correctly answered the preventive health screening examination questions pertaining to maintaining health. A small percentage (14.4%) possessed below marginal

health knowledge (12.6%) or inadequate health knowledge (1.8%). After the preventive health screening knowledge of the study sample was obtained, the ANOVA was performed. Table 8 depicts PHSKQ Scores descriptives from the ANOVA.

Table 8

PHSKQ Scores descriptives

Age Group				95% Confidence Interval for Mean	
	N	M	Std. Deviation	Lower Bound	Upper Bound
45-54	62	9.2742	2.48385	8.6434	9.9050
55-64	63	9.9841	2.18124	9.4348	10.5335
65-84	34	10.2059	2.02678	9.4987	10.9131

According to Table 8 the age groups are 45-54, 55-64, and 65-84. There were 62 participants in the first age group (45-54) that scored a mean of 9.2742 on the PHSKQ with scores ranging from 8.6434 to 9.9050. The next age group (55-64) consisting of 63 participants scored a mean of 9.9841 on the PHSKQ with scores ranging from 9.4348 to 10.5335. Lastly the oldest age group (65-84) consisting of 34 participants scored a mean of 10.2059 on the PHSKQ with scores ranging from 9.4987 to 10.9131. The second portion of the analysis for research question 2 is the ANOVA. Table 9 depicts ANOVA of PHSKQ Scores by age group for older workers.

Table 9

ANOVA of PHSKQ Scores by age group for older workers

	Sum of Squares	*df*	Mean Square	*F*	p
Between Groups	24.552	2	12.276	2.373	.097
Within Groups	806.882	156	5.172		
Total	831.434	158			

A one-way between groups analysis of variance (ANOVA) was performed to evaluate if there is a difference in preventive health screening knowledge scores by age group. According to the ANOVA table, the p value is .097. The post hoc Tukey comparison demonstrates no significant difference. Given the p value is greater than .05 it is concluded there is no statistically significant difference between the groups. The p value of .097 indicates that there is no statistically significant difference in PHSKQ scores by age group for older workers. Given this result, the null hypothesis (H_{01}) would be accepted. The salient finding of this analysis is there is no statistically significant difference in PHSKQ preventive health screening knowledge scores by age group ($p = .097$).

Research Question 3

Is there a difference in health literacy for older workers, as measured by the Preventive Health Screening Knowledge Quiz (PHSKQ), by source of preventive health education exposure (television, radio, pamphlet/flyer, newspaper or Internet?

> H_{03}: There is no statistically significant difference in health literacy for older workers, as measured on the PHSKQ by source of preventive health screening education (television, radio, written materials, newspaper or Internet.
>
> H_{A3}: There is a statistically significant difference in health literacy for older workers, as measured on the PHSKQ by source of preventive health screening education (television, radio, written materials, newspaper or Internet.

The third research question presumes there is no difference in health literacy for older workers by source of preventive health education exposure. To test the hypothesis a one-way analysis of variance or ANOVA was performed. The dependent variable is media effectiveness in improving health literacy. The independent variable is media exposure (television, radio, pamphlet/flyer, newspaper or Internet). Prior to performing the ANOVA, the media exposure of the study sample was assessed. Also, the effectiveness in improving health literacy was evaluated. Table 10 and Table 11 respectively depict media exposure and media effectiveness in improving health literacy from the study sample.

Table 10 demonstrates the study sample's media exposure with relation to preventive health education. These results represent that participants had been exposed to the five media specified at varying degrees. For television, approximately half (47.8%) had been exposed to preventive health education via this media, whereas half (50.9%) had not. For radio (24.5%), pamphlet/flyer (25.8), and newspaper (26.4) approximately a fourth had been exposed, however for the same media radio (71.7%), pamphlet/flyer (71.1%), and newspaper (69.2%) three fourths had not been exposed. Lastly, for Internet almost half (39.6%) were exposed while more than half (57.9%) where not. The salient findings demonstrate television had the highest rate of exposure followed by the Internet. Other media such as newspaper, pamphlet/flyer and radio had equal rates of exposure. Table 10 depicts media exposure.

Table 10

Media Exposure of the Study Sample

	Television		Radio		Pamphlet/flyer		Newspaper		Internet	
	N	%	*N*	%	*N*	%	*N*	%	*N*	%
Yes	76	47.8	39	24.5	41	25.8	42	26.4	63	39.6
No	81	50.9	114	71.7	113	71.1	110	69.2	92	57.9
Missing	2	1.3	6	3.8	5	3.1	7	4.4	4	2.5

Note: Missing represents participants that did not answer the questions.

After the media exposure was determined, the effectiveness of this media exposure was assessed. Table 11 demonstrates the study sample's evaluation of media effectiveness in improving health literacy. These results represent participant's rating of media effectiveness from very effective to ineffective. For the category of very effective the media ranked as follows: Internet (25.2%), television (21.4%), pamphlet/flyer (11.9%), radio (3.8%), and newspaper (1.9%). Conversely for the category of ineffective, the media ranked as follows: newspaper (18.2%), radio (16.4%), Internet (14.5%), pamphlet/flyer (6.9%) and television (5.7%). These findings demonstrate the most effective media for improving health literacy are television, the Internet and pamphlet/flyer, while the least effective media are radio and newspaper. After media exposure and media effectiveness in improving health literacy from the study sample was obtained, the ANOVA was performed for each type media (television, radio, pamphlet/flyer, newspaper and Internet). The specific inquiry answers were these methods effective in improving preventive health screening literacy (knowledge about preventive health).Table 11 depicts media effectiveness in improving health literacy from the study sample.

Table 11

Media Effectiveness in Improving Health Literacy Responses by the Study Sample

Media	Ineffective		Slightly Effective		Neither Ineffective or Effective		Effective		Very Effective	
	N	%	*N*	%	*N*	%	*N*	%	*N*	%
Television	9	5.7	26	16.4	8	5.0	42	26.4	34	21.4
Missing	40	25.2								
Radio	26	16.4	26	16.4	32	20.1	15	9.4	6	3.8
Missing	54	34.0								
Pamphlet/flyer	11	6.9	19	11.9	30	18.9	30	18.9	19	11.9
Missing	50	31.4								
Newspaper	29	18.2	29	18.2	28	17.6	18	11.3	3	1.9
Missing	52	32.7								
Internet	23	14.5	12	7.5	28	17.6	31	19.5	40	25.2
Missing	25	15.7								

Note: Scoring for effectiveness is as follows: 1=Ineffective; 2=Slightly Effective; 3=Neither Ineffective or Effective; 4=Effective, 5=Very Effective. Missing represents participants who did not answer the question.

Next, the descriptive statistics by exposure category in response to the question, were these methods effective in improving preventive health screening literacy (knowledge about preventive health) was analyzed. According to Table 12 the media are television, radio, pamphlet or flyer, newspaper, and Internet. For television, 56 participants were exposed to this media scored a mean of 4.0536 on the PHSKQ with 95% confidence interval scores ranging from 3.7370 to 4.3701. For the same media, 61 participants were not exposed to this media scored a mean of 3.1639 on the PHSKQ with 95% confidence interval scores ranging from 2.8428 to 3.4851. The next media radio, 27 participants were exposed to this media scored a mean of 3.1111 on the PHSKQ with 95% confidence

interval scores ranging from 2.6287 to 3.5935. For the same media, 77 participants were not exposed to this media scored a mean of 2.3117 on the PHSKQ with 95% confidence interval scores ranging from 2.0613 to 2.5621. For pamphlet/flyer, 24 participants were exposed to this media scored a mean of 3.2083 on the PHSKQ with 95% confidence interval scores ranging from 2.6287 to 3.5935. For the same media, 84 participants were not exposed to this media scored a mean of 3.2738 on the PHSKQ with 95% confidence interval scores ranging from 3.006 to 3.5440. From the media newspaper, 23 participants were exposed to this media scored a mean of 2.6087 on the PHSKQ with 95% confidence interval scores ranging from 2.2460 to 2.9714. For the same media, 81 participants were not exposed to this media scored a mean of 2.3580 on the PHSKQ with 95% confidence interval scores ranging from 2.0888 to 2.6273. Lastly for Internet, 54 participants were exposed to this media scored a mean of 3.5000 on the PHSKQ with 95% confidence interval scores ranging from 3.1149 to 3.8851. For the same media, 79 participants were not exposed to this media scored a mean of 3.3165 on the PHSKQ with 95% confidence interval scores ranging from 2.9886 to 3.6443. Table 12 depicts descriptive statistics by exposure category. Table 12 depicts media exposure descriptives from the ANOVA.

Table 12

Descriptive Statistics by exposure category in response to the question-Were these methods effective in improving preventive health screening literacy (knowledge about preventive health)?

Media				95% Confidence Interval for Mean	
	N	M	Std. Deviation	Lower Bound	Upper Bound
Television					
Yes	56	4.0536	1.18198	3.7370	4.3701
No	61	3.1639	1.25406	2.8428	3.4851
Radio					
Yes	27	3.1111	1.21950	2.6287	3.5935
No	77	2.3117	1.10334	2.0613	2.5621
Pamphlet/flyer					
Yes	24	3.2083	1.17877	2.7106	3.7061
No	84	3.2738	1.24524	3.0036	3.5440
Newspaper					
Yes	23	2.6087	.83878	2.2460	2.9714
No	81	2.3580	1.21767	2.0888	2.6273
Internet					
Yes	54	3.5000	1.41087	3.1149	3.8851
No	79	3.3165	1.46361	2.9886	3.6443

The second portion of the analysis for Research Question 3 is the ANOVA. A one-way between groups analysis of variance (ANOVA) was performed to evaluate if there is a difference in media effectiveness in improving health literacy by media exposure (television, radio, pamphlet/flyer, newspaper or Internet). An ANOVA was performed for each media type individually. According to the ANOVA table for television, the p= .000 which is well below the .05 significance criterion. The Tukey

comparison was not performed because there were fewer than three groups. The p value of .000 represents there is a statistically significant difference in media effectiveness in improving health literacy by media exposure (television). Given this result, the null hypothesis (H_{01}) is rejected concluding that there is a relationship between media effectiveness in improving health literacy by media exposure (television). To compute the effect size of this ANOVA, the sum of squares between groups was divided by the total sum of squares. For this ANOVA the sum of squares between groups is 23.108 and the total sum of squares is 194.308. The resultant equation is 23.108/194.308 =.118 or .12. According to Cohen (1988), .01 is a small effect, .25 is medium effect, .4 is large effect. The results of this ANOVA represent an effect greater than small but less than medium.

According to the ANOVA table for radio, the p= .002 which is well below the .05 significance criterion. The Post Hoc Tukey comparison was not performed because there were fewer than three groups. The p value of .002 represents there is a statistically significant difference in media effectiveness in improving health literacy by media exposure (radio). Given this result, the null hypothesis (H_{01}) is rejected. The conclusion is that there is a relationship between media effectiveness in improving health literacy by media exposure (radio). To compute the effect size of this ANOVA, the sum of squares between groups was divided by the total sum of squares. For this ANOVA the sum of squares between groups is 12.775 and the total sum of squares is 143.962. The resultant equation is 12.775/143.962 =.088 or .09. According to Cohen (1988), .01 is a small effect, .25 is medium effect, .4 is large effect. The results of this ANOVA represent an effect greater than small but less than medium.

According to the ANOVA table for pamphlet/flyer, the *p*= .819 which is above the .05 significance criterion. The Post Hoc Tukey comparison was not performed because there were fewer than three groups. The p value of .819 represents there is no statistically significant difference in media effectiveness in improving health literacy by media exposure (pamphlet/flyer). Given this result, the null hypothesis (H_{01}) is accepted concluding that there is no relationship between media effectiveness in improving health literacy by media exposure (pamphlet/flyer).

According to the ANOVA table for newspaper, the *p*= .357 which is above the .05 significance criterion. The Post Hoc Tukey comparison was not performed because there were fewer than three groups. The p value of .357 represents there is no statistically significant difference in media effectiveness in improving health literacy by media exposure (newspaper). Given this result, the null hypothesis (H_{01}) is accepted concluding that there is no relationship between media effectiveness in improving health literacy by media exposure (newspaper).

According to the ANOVA table for Internet, the *p*= .472 which is above the .05 significance criterion. The Post Hoc Tukey comparison was not performed because there were fewer than three groups. The p value of .472 represents there is no statistically significant difference in media effectiveness in improving health literacy by media exposure (Internet). Given this result, the null hypothesis (H_{01}) is accepted concluding that there is no relationship between media effectiveness in improving health literacy by media exposure (Internet).

The salient findings of this analysis revealed two media types, television (p= .000) and radio (p= .002) resulted in a p value that represented a statistically significant difference in media effectiveness in improving health literacy by media exposure. The null hypothesis (H_{01}) is rejected concluding that there is a relationship between media effectiveness in improving health literacy by media exposure to include television and radio. Conversely, three media types, pamphlet/flyer (p= .819), newspaper (p= .357), and Internet (p= .472) resulted in a p value that represented no statistically significant difference in media effectiveness in improving health literacy by media exposure. The null hypothesis (H_{01}) is accepted concluding that there is no relationship between media effectiveness in improving health literacy by media exposure to include pamphlet/flyer, newspaper, and Internet. Table 13 depicts ANOVA of Media Effectiveness in Improving Health Literacy by Exposure Category.

Table 13

ANOVA of Media Effectiveness in Improving Health Literacy by Exposure Category

Media	Sum of Squares	*df*	Mean Square	*F*	*p*
Television					
Between Groups	23.108	1	23.108	15.522	.000
Within Groups	171.200	115	1.489		
Total	194.308	116			
Radio					
Between Groups	12.775	1	12.775	9.933	.002
Within Groups	131.186	102	1.286		
Total	143.962	103			
Pamphlet/flyer					
Between Groups	.080	1	.080	.053	.819
Within Groups	160.661	106	1.516		
Total	160.741	107			
Newspaper					
Between Groups	1.126	1	1.126	.856	.357
Within Groups	134.096	102	1.315		
Total	135.221	103			
Internet					
Between Groups	1.081	1	1.081	.519	.472
Within Groups	272.589	131	2.081		
Total	273.669	132			

Research Question 4

Is there a difference in perceived effectiveness among older workers, as measured by the Preventive Health Screening Knowledge Quiz (PHSKQ) by types of media (television, radio, pamphlet/flyer, newspaper, or Internet) for preventive health education?

H_{04}: There is no statistically significant difference in perceived effectiveness among older workers, as measured by participant response on the PHSKQ between types of media (television, radio, written materials, newspaper or Internet for preventive health education.

H_{A4} : There is a statistically significant difference in perceived effectiveness among older workers, as measured by participant response on the PHSKQ between types of media (television, radio, written materials, newspaper or Internet for preventive health education.

The fourth research question presumes there is no difference in perceived effectiveness by types of media in providing preventive health education. To test the hypothesis a one-way analysis of variance or ANOVA was performed. The dependent variable is media effectiveness in providing health education. The independent variable is media exposure (television, radio, pamphlet/flyer, newspaper, or Internet). Prior to performing the ANOVA, the media exposure of the study sample was assessed. Also, the media effectiveness in providing health education was evaluated. Table 14 and Table 15 respectively depict media effectiveness in providing health education and media exposure descriptives from the study sample.

The media effectiveness in providing health education was assessed. Table 14 demonstrates the study sample's evaluation of media effectiveness in providing health education. These results represent participant's rating of media effectiveness from very effective to ineffective. For the category of very effective the media ranked as follows: Internet (15.7%), television (13.8%), pamphlet/flyer (13.8%), newspaper (10.7%), and

radio (5.0%). Conversely for the category of ineffective, the media ranked as follows: radio (13.2%), newspaper (8.2%), television (7.4%), pamphlet/flyer (5.7%) and Internet (4.4%), These findings demonstrate the most effective media for providing health education are the Internet, television and pamphlet/flyer, while the least effective media are radio and newspaper. The specific inquiry answers were these media effective in providing health education. Table 14 depicts media effectiveness in providing health education from the study sample.

Table 14

Media Effectiveness in Providing Health Education from the Study Sample

	Ineffective		Slightly Effective		Neither Ineffective or Effective		Effective		Very Effective	
Media Category	*N*	%	*N*	%	*N*	%	*N*	%	*N*	%
Television	12	7.5	30	18.9	38	23.9	56	35.2	22	13.8
Missing	1	.6								
Radio	21	13.2	33	20.8	55	34.6	39	24.5	8	5.0
Missing	3	1.9								
Pamphlet/flyer	9	5.7	27	17.0	39	24.5	59	37.1	22	13.8
Missing	3	1.9								
Newspaper	13	8.2	30	18.9	55	34.6	42	26.4	17	10.7
Missing	2	1.3								
Internet	7	4.4	23	14.5	42	26.4	61	38.4	25	15.7
Missing	1	.6								

Note: Missing represents participants that did not answer the questions.

Next, media exposure descriptives were analyzed in response to the question, how effective do you perceive each of the following methods in providing preventive health education?. According to Table 15 the media are television, radio, pamphlet or flyer,

newspaper, and Internet. For television, 76 participants were exposed to this media scored a mean of 3.5921 on the PHSKQ with 95% confidence interval scores ranging from 3.3124 to 3.8718. For the same media, 80 participants were not exposed to this media scored a mean of 3.0500 on the PHSKQ with 95% confidence interval scores ranging from 2.8292 to 3.2708. The next media radio, 39 participants were exposed to this media scored a mean of 3.3333on the PHSKQ with 95% confidence interval scores ranging from 2.9445 to 3.7221. For the same media, 113 participants were not exposed to this media scored a mean of 2.7434 on the PHSKQ with 95% confidence interval scores ranging from 2.5624 to 2.9243. For pamphlet/flyer, 41 participants were exposed to this media scored a mean of 3.6341 on the PHSKQ with 95% confidence interval scores ranging from 3.2760 to 3.9923. For the same media, 112 participants were not exposed to this media scored a mean of 3.2589 on the PHSKQ with 95% confidence interval scores ranging from 3.0598 to 3.4580. From the media newspaper, 42 participants were exposed to this media scored a mean of 3.5714 on the PHSKQ with 95% confidence interval scores ranging from 3.1693 to 3.9736. For the same media, 109 participants were not exposed to this media scored a mean of 2.9541 on the PHSKQ with 95% confidence interval scores ranging from 2.7782 to 3.1301. Lastly for Internet, 63 participants were exposed to this media scored a mean of 3.7460 on the PHSKQ with 95% confidence interval scores ranging from 3.4673 to 4.0248. For the same media, 92 participants were not exposed to this media scored a mean of 3.2391 on the PHSKQ with 95% confidence interval scores ranging from 3.0369 to 3.4413. Table 15 depicts media exposure descriptives by exposure category.

Table 15

Media Exposure Descriptives-How effective do you perceive each of the following methods in providing preventive health education?

				95% Confidence Interval for Mean	
Media Category	*N*	M	Std. Deviation	Lower Bound	Upper Bound
Television					
Yes	76	3.5921	1.22396	3.3124	3.8718
No	80	3.0500	.99238	2.8292	3.2708
Radio					
Yes	39	3.3333	1.19942	2.9445	3.7221
No	113	2.7434	.97081	2.5624	2.9243
Pamphlet/flyer					
Yes	41	3.6341	1.13481	3.2760	3.9923
No	112	3.2589	1.06327	3.0598	3.4580
Newspaper					
Yes	42	3.5714	1.29054	3.1693	3.9736
No	109	2.9541	.92682	2.7782	3.1301
Internet					
Yes	63	3.7460	1.10670	3.4673	4.0248
No	92	3.2391	.97631	3.0369	3.4413

The second portion of the analysis for research question 4 is the ANOVA. A one-way between groups analysis of variance (ANOVA) was performed to evaluate if there is a difference in perceived effectiveness by types of media (television, radio, pamphlet/flyer, newspaper, or Internet) in providing preventive health education. An ANOVA was performed for each media type individually. According to the ANOVA table for television, the $p = .003$ which is well below the .05 significance criterion. The

Post Hoc Tukey comparison was not performed because there were fewer than three groups. The p value of .003 represents there is a statistically significant difference in perceived effectiveness by type of media (television) in providing preventive health education. Given this result, the null hypothesis (H_{01}) is rejected concluding that there is a relationship between perceived effectiveness by type of media (television) in providing preventive health education. To compute the effect size of this ANOVA, the sum of squares between groups was divided by the total sum of squares. For this ANOVA the sum of squares between groups is 11.454 and the total sum of squares is 201.609. The resultant equation is 11.454/201.609 =.056 or .06. According to Cohen (1988), .01 is a small effect, .25 is medium effect, .4 is large effect. The results of this ANOVA represent an effect greater than small but less than medium.

According to the ANOVA table for radio, the p= .003 which is well below the .05 significance criterion. The Post Hoc Tukey comparison was not performed because there were fewer than three groups. The p value of .003 represents there is a statistically significant difference in perceived effectiveness by type of media (radio) in providing preventive health education. Given this result, the null hypothesis (H_{01}) is rejected concluding that there is a relationship between perceived effectiveness by type of media (radio) in providing preventive health education. To compute the effect size of this ANOVA, the sum of squares between groups was divided by the total sum of squares. For this ANOVA the sum of squares between groups is 10.092 and the total sum of squares is 170.316. The resultant equation is 10.092/170.316 =.059 or .06. According to

Cohen (1988), .01 is a small effect, .25 is medium effect, .4 is large effect. The results of this ANOVA represent an effect greater than small but less than medium.

According to the ANOVA table for pamphlet/flyer, the *p*= .060 which is above the .05 significance criterion. The Post Hoc Tukey comparison was not performed because there were fewer than three groups. The p value of .060 represents there is no statistically significant difference in perceived effectiveness by type of media (pamphlet/flyer) in providing preventive health education. Given this result, the null hypothesis (H_{01}) is accepted concluding that there is no relationship between perceived effectiveness by type of media (pamphlet/flyer) in providing preventive health education.

According to the ANOVA table for newspaper, the *p*= .001 which is well below the .05 significance criterion. The Post Hoc Tukey comparison was not performed because there were fewer than three groups. The p value of .001 represents there is a statistically significant difference in perceived effectiveness by type of media (newspaper) in providing preventive health education. Given this result, the null hypothesis (H_{01}) is rejected concluding that there is a relationship between perceived effectiveness by type of media (newspaper) in providing preventive health education. To compute the effect size of this ANOVA, the sum of squares between groups was divided by the total sum of squares. For this ANOVA the sum of squares between groups is 11.553 and the total sum of squares is 172.609. The resultant equation is 11.553/172.609 =.067 or .07. According to Cohen (1988), .01 is a small effect, .25 is medium effect, .4 is large effect. The results of this ANOVA represent an effect greater than small but less than medium.

According to the ANOVA table for Internet, the *p*= .003 which is well below the .05 significance criterion. The Post Hoc Tukey comparison was not performed because there were fewer than three groups. The p value of .003 represents there is a statistically significant difference in perceived effectiveness by type of media (Internet) in providing preventive health education. Given this result, the null hypothesis (H_{01}) is rejected concluding that there is a relationship between perceived effectiveness by type of media (Internet) in providing preventive health education. To compute the effect size of this ANOVA, the sum of squares between groups was divided by the total sum of squares. For this ANOVA the sum of squares between groups is 9.608 and the total sum of squares is 172.284. The resultant equation is 9.608/172.284=.056 or .06. According to Cohen (1988), .01 is a small effect, .25 is medium effect, .4 is large effect. The results of this ANOVA represent an effect greater than small but less than medium.

The salient findings of this analysis revealed four media types, television (*p*= .003), radio (*p*= .003), newspaper (*p*= .001), and Internet (*p*= .003) resulted in a *p* value that represented a statistically significant difference in perceived effectiveness by type of media in providing preventive health education. The null hypothesis (H_{01}) is rejected concluding that there is a relationship between perceived effectiveness by type of media (television, radio, newspaper and Internet) in providing preventive health education. Conversely, one media type, pamphlet/flyer (*p*= .060) resulted in a *p* value that represented no statistically significant difference in perceived effectiveness by type of media in providing preventive health education. The null hypothesis (H_{01}) is accepted concluding that there is no relationship between perceived effectiveness by type of media

(pamphlet/flyer) in providing preventive health education. Table 16 depicts ANOVA of Media Effectiveness in Providing Health Education by Exposure Category.

Table 16

ANOVA of Media Effectiveness in Providing Health Education

	Sum of Squares	*df*	Mean Square	*F*	*p*
Television					
Between Groups	11.454	1	11.454	9.276	.003
Within Groups	190.155	154	1.235		
Total	201.609	155			
Radio					
Between Groups	10.092	1	10.092	9.448	.003
Within Groups	160.224	150	1.068		
Total	170.31	151			
Pamphlet/flyer					
Between Groups	4.225	1	4.225	3.605	.060
Within Groups	177.003	151	1.172		
Total	181.229	152			
Newspaper					
Between Groups	11.553	1	11.553	10.688	.001
Within Groups	161.056	149	1.081		
Total	172.609	150			
Internet					
Between Groups	9.608	1	9.608	9.037	.003
Within Groups	162.676	153	1.063		
Total	172.284	154			

Study Participant Questions

There were three questions asked at the end of the study to ascertain study participant views about the information they received. These questions focused on what they planned to do with the information they received, with whom they planned on sharing the information received and if the study participant desired to receive preventive health screening information. The study participants were not limited in the number of responses for each question and could answer multiple prompts or none at all. Table 17 depicts what participants planned to do with information received. Table 18 depicts who participants planned to share the information received with and Table 19 depicts if the study participant would like to receive preventive health screening information.

Table 17 inquired if study participants would get preventive health screening, make an appointment for a check-up, ask their physician what preventive health screening should be obtained or all of the previous three. There was also a response for nothing that represented they planned to do nothing with the information received. The responses ranked as followed: all of the above (40.3%), nothing (35.8%), make an appointment for a check-up and ask your physician what preventive health screening should be obtain (13.2% each), and get preventive health screening (9.4%). Table 17 depicts responses to what participants planned to do with information received.

Table 17

What do you plan to do with this information?

	N	%
Get preventive health screening	15	9.4
Make an appointment for a check-up	21	13.2
Ask your physician what preventive health screening you should obtain	21	13.2
All of the above	64	40.3
Nothing	57	35.8

Table 18 inquired if study participants planned to share the information received with their personal physician, family, friends, or all of the previous three. There was also a response for no one that represented they planned to share with no one the information received. The responses ranked as followed: no one (39.6%), personal physician (33.3%), family (23.9%), all of the above (20.1%) and friends (8.8%). Table 18 depicts responses to who participants planned to share information received with.

Table 18

Who do you plan to share this information with?

	N	%
Personal Physician	53	33.3
Family	38	23.9
Friends	14	8.8
All of the above	32	20.1
No one	63	39.6

Table 19 inquired if study participants would like to receive preventive health screening education. Participants could select pamphlet/flyer for men, pamphlet/flyer for

women, an interactive tool/Healthfinder widget, educational video for men, or educational video for women. There was also a response to receive no preventive health screening education. The responses ranked as followed: no preventive health screening education (62.9%), pamphlet/flyer for men (17.6%), pamphlet/flyer for women (17%), interactive tool/Healthfinder widget (9.4%), educational video for men (8.2%), and educational video for women (7.5%). Table 19 depicts if the study participant would like to receive preventive health screening information.

Table 19

Would you like to receive preventive health screening education?

	N	%
Pamphlet/Flyer by AHRQ: Stay Healthy at 50+ for Men	28	17.6
Pamphlet/Flyer by AHRQ: Stay Healthy at 50+ for Women	27	17
Interactive tool via NHIC: My Healthfinder Widget	15	9.4
Educational video by Monkeysee.com: Men's Health Check-Ups & Preventive Screenings	13	8.2
Educational video by Monkeysee.com: Preventive Screenings for Women	12	7.5
I do not wish to receive preventive health screening education	100	62.9

Summary of Findings

The analyses performed in this chapter supported Research Questions 1 through 4. With regards to research question 1 there is a relationship between age groups and STOFHLA scores with the youngest age grouping (45-54) having the lowest scores. Conversely, research question 2 demonstrated no relationship between PHSKQ scores by age group for older workers. Next, research question 3 revealed two types of media, television and radio, that represented a statistically significant difference in media

effectiveness in improving health literacy by media exposure. Lastly, four types of media, television, radio, newspaper, and Internet demonstrated a statistically significant difference in perceived effectiveness by type of media in providing preventive health education.

Chapter 5 provides a synopsis of this study and hypotheses results. It also provides interpretation of findings and evaluates if these results are consistent with the current body of knowledge. Additionally, limitations of the study and suggestions for future research will be provided. The social change implications of this study will be assessed and concluding recommendations given.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

This quantitative study was conducted to evaluate the health literacy levels of older workers and their knowledge of preventive health screening. Specifically, the purpose was to explore the relationship between preventive health education media and the health literacy of the older worker. The type and frequency of preventive health education media was also assessed to ascertain methods of health education to improve older worker health literacy in addition to participants' perception of the effectiveness of the methods used. The following tools were used:

1. Short Form Test of Functional Health Literacy in Adults (STOFHLA) to assess older worker health literacy.
2. Preventive Health Screening Knowledge Quiz (PHSKQ) to assess older worker preventive health screening knowledge.
3. Preventive Health Screening Knowledge Quiz (PHSKQ) to assess frequency and exposure to preventive health education media as well as perceived effectiveness of the specific methods used (television, radio, pamphlet/flyer, newspaper or Internet).

The participant responses from both surveys were analyzed using SPSS software. One-way ANOVA was used to determine the statistical significance in relation to the research questions and hypotheses. The study sought to answer the four research questions:

Research Question 1: Is there a difference in health literacy scores, as measured by the STOFHLA, by age group (45-54, 55-64, 65-84) of older workers?

Research Question 2: Is there a difference in preventive health screening knowledge scores as measured by the Preventive Health Screening Knowledge Quiz (PHSKQ), by age group (45-54, 55-64, 65-84) of older workers?

Research Question 3: Is there a difference in health literacy for older workers, as measured by the Preventive Health Screening Knowledge Quiz (PHSKQ), by source of preventive health education exposure (television, radio, pamphlet/flyer, newspaper or Internet?

Research Question 4: Is there a difference in perceived effectiveness among older workers, as measured by the Preventive Health Screening Knowledge Quiz (PHSKQ) by types of media (television, radio, pamphlet/flyer, newspaper, or Internet) for preventive health education?

The salient findings from this study provided varying responses to the research questions and hypotheses presented. The analysis for research question 1 confirmed a relationship between age groups and STOFHLA scores. The p value of .006 represents there is a statistically significant difference in STOFLA scores by age group for older workers, specifically between age groupings 45-54 and 65-84.

Analysis of Research Question 2 confirmed that there was no relationship between age groups and PHSKQ scores. The p value of .097 indicated that there was no statistically significant difference in PHSKQ scores by age group for older workers. These results corresponded to the first two research questions. Additional analyses

demonstrated that two of the five media were effective in improving health literacy through exposure, thereby addressing Research Question 3. The two types of media, television (p= .000) and radio (p= .002) resulted in a p value that represented a statistically significant difference in media effectiveness in improving health literacy by media exposure. Conversely, the analyses representing Research Question 4 demonstrated four of the five media were effective in providing preventive health education. The four types of media, television (p= .003), radio (p= .003), newspaper (p= .001), and Internet (p= .003) resulted in a p value that represented a statistically significant difference in perceived effectiveness by type of media in providing preventive health education. Further interpretation of findings will be presented in the next section.

Interpretation of the Findings

The theory utilized for this study was the health belief model or HBM. As previously stated, the theory focuses on an individual's ability to take action against a specific threat based upon perceived susceptibility and severity. Lashgarara et al., (2012) state the health belief model (HBM) is often used for disease prevention and evaluating interventions associated with individual health behavior. The health belief model (HBM) is a theory associated with patient education as well as health literacy. Syx (2008) notes a patient may not be receptive to instruction if the individual does not believe there is a threat and will benefit from a proposed intervention. For this study, participant perceptions regarding effective media for health literacy as well as preventive health screening education are assessed utilizing the HBM approach. These perceptions

integrate the projected threat of illness or disease with the media found effective to educate participants and improve health literacy.

The findings of this research study were interpreted by research question. The individual results per research question address what was found. Additionally, the findings of this study are compared to what had been found in peer-reviewed literature from Chapter 2 to evaluate similarities or contrasts. Lastly, salient findings and observations from this study are presented, starting with Research Question 1.

Research Question 1

Is there a difference in health literacy scores, as measured by the STOFHLA, by age group (45-54, 55-64, 65-84) of older workers?

Health literacy is the ability to comprehend and utilize health information to select appropriate care for medical and health needs (NIH, 2008). Health literacy is relevant because having knowledge about health information and understanding this information influences how health decisions are made. The test used to measure health literacy for this study was the Short Form Test of Functional Health Literacy in Adults or STOFHLA. As previously mentioned, a study by Wolf (2005), was used was used to survey participants and ascertain literacy levels. Lower literacy scores were correlated with poor health outcomes in the study conducted by Wolf (2005).

For this study, the STOFHLA was also used to ascertain participant literacy levels. There were 152 participants (95.6%) who demonstrated adequate health literacy from STOFHLA results. The scoring of adequate health literacy is the highest level of outcome on the STOFHLA. The study by Wolf (2005) correlated low literacy scores with

poor health outcomes, however based on the higher scores of this study population, better health outcomes can be anticipated. Additionally, this study's health literacy levels differed by age group. It was found there was a significant difference (p=.006) between age groupings with the youngest age grouping (45-64) having the lowest scores (M=31.8226). It can be inferred that the younger age group (45-64) could benefit from additional preventive health education to improve health literacy. STOFHLA scores increased with age as represented on Table 5, thereby postulating health literacy for the study sample population improved with age. Based on these results, the research question hypothesis was rejected and concluded there is a relationship between age groupings and STOFHLA scores.

Research Question 2

Is there a difference in preventive health screening knowledge scores as measured by the Preventive Health Screening Knowledge Quiz (PHSKQ), by age group (45-54, 55-64, 65-84) of older workers?

Preventive health screening encompasses medical tests or procedures performed early to detect disease or illness (NIH, 2011). Vaccinations and physical examinations are also included in preventive health screening. In an aforementioned study by Thomsen (2006), the effects of preventive health screenings was assessed. The resultant findings noted a decrease in hospitalizations as a result of preventive health screening.

The research question related to preventive health screening inquired if there was a difference in preventive health screening knowledge by age. The Preventive Health Screening Knowledge Quiz or PHSKQ was developed to ascertain study participant

preventive health screening knowledge levels. There were 37 participants (23.3%) that demonstrated adequate health knowledge and 99 participants (62.3%) that demonstrated marginal health knowledge from PHSKQ results. In essence, these participants were knowledgeable of preventive health screenings and able to correctly answer questions relating to this subject matter. Based on this information, the participants in this study would likely experience decreased hospitalization rates related to their knowledge of preventive health screening as proposed in the study conducted by Thomsen (2006). It was found there was not a significant difference (p=.097) between age group scores on the PHSKQ. It can be inferred that all age groups (45-84) possessed comparable preventive health screening knowledge. Based on these results, the research question hypothesis was accepted and concluded there is no relationship between age groups and PHSKQ scores.

Research Question 3

Is there a difference in health literacy for older workers, as measured by the Preventive Health Screening Knowledge Quiz (PHSKQ), by source of preventive health education exposure (television, radio, pamphlet/flyer, newspaper or Internet?

Preventive health education is the route by which health information and concepts are conveyed. WHO (2012) suggests health education is the process of improving knowledge concerning health and influencing individual perception through the use of multiple instructional methods. The previously mentioned study by Chu (2009) revealed adult learners utilized the Internet to retrieve online health information. This method of preventive health education had positive outcomes as stated by the Chu's study.

For this study, health literacy and preventive health education collaborate to foster learning and integration of health information through media exposure such as television, radio, pamphlet/flyer, newspaper or Internet. Research Question 3 inquires if there is a difference in health literacy of older workers by source of preventive health education media exposure. The results of this study found television (47.8%), followed by the Internet (39.6%) were the highest preventive health education media to which participants were exposed. Additionally, the data obtained on effectiveness of media exposure in improving health literacy was based on participant response. The most effective media for improving health literacy are the Internet (25.2%), television (21.4%), and pamphlet/flyer (11.9%) per study results. These results are consistent with the study conducted by Chu (2009) whereas the Internet is an effective method for providing preventive health education.

The findings concluded there was a significant difference for two media types, television (p= .000) and radio (p= .002) related to media effectiveness in improving health literacy by media exposure. Media mean (M) values increased in relation to specific media as represented on Table 12, thereby validating the preferred preventive health education media. Based on these results, the research question hypothesis was rejected and concluded there is a relationship between media effectiveness in improving health literacy by media exposure to include television and radio. Conversely, three media types, pamphlet/flyer (p= .819), newspaper (p= .357), and Internet (p= .472) resulted in a p value that represented no statistically significant difference in media effectiveness in improving health literacy by media exposure. For these media, research

question hypothesis is accepted concluding that there is no relationship between media effectiveness in improving health literacy by media exposure to include pamphlet/flyer, newspaper, and Internet. In conclusion, although television and the Internet was the common preventive health media participants were exposed to and perceived effective, actually television and radio were most significant per ANOVA in improving health literacy by media exposure.

Research Question 4

Is there a difference in perceived effectiveness among older workers, as measured by the Preventive Health Screening Knowledge Quiz (PHSKQ) by types of media (television, radio, pamphlet/flyer, newspaper, or Internet) for preventive health education?

As previously mentioned, preventive health education facilitates the transmission of knowledge about health. Preventive health education should be presented in a format that encourages learning by using singular concepts that are simple and clear (Rigdon, 2010). The media of this study (television, radio, pamphlet/flyer, newspaper, or Internet) should be perceived by participants as a format that is easily understood and conveys preventive health education clearly. Research question 4 inquires if there is a difference in perceived effectiveness among older workers by source of preventive health education media exposure to include television, radio, pamphlet/flyer, newspaper or Internet. The results of this study determined which media was most effective in providing health education from the study sample. The most effective media for providing health education are the Internet (15.7%), television (13.8%), and pamphlet/flyer (13.8%) per

study results. These results are also consistent with the study conducted by Chu (2009) whereas the Internet is an effective method for providing preventive health education.

The findings concluded there was a significant difference for four media types, television (p= .003), radio (p= .003), newspaper (p= .001), and Internet (p= .003) resulted in a p value that represented a statistically significant difference in perceived effectiveness by type of media in providing preventive health education. Media mean (M) values consistent in relation to television, radio, newspaper, and Internet as represented on Table 15, thereby supporting the preferred preventive health education media. Based on these results, the research question hypothesis was rejected and concluded there is a relationship between media effectiveness in improving preventive health education by media exposure to include television, radio, newspaper, and Internet. Conversely, one media type, pamphlet/flyer (p= .060) resulted in a p value that represented no statistically significant difference in perceived effectiveness in providing preventive health education. The research question hypothesis is accepted concludes that there is no relationship between perceived effectiveness by type of media (pamphlet/flyer) in providing preventive health education. For this study, pamphlet/flyer was perceived not effective in improving health education. However, television, radio, newspaper, and Internet were the common preventive health media participants were exposed to and perceived effective in improving health education.

Limitations of the Study

There were limitations associated with this study. The generalizability of this study is a limitation. Generalizability may not be applied to another general population as the

study sample produced limited diversity regarding race/ethnicity. The study sample volunteered for the study and therefore was not randomly selected. As a result of this factor, the majority of the study participants were White (79.2%). Additional races represented in the study (15.7%) included Black, Hispanic and Asian. Consequently, the results of this study cannot be applied to a general population as diverse race/ethnicities would not be congruent. Another limitation would be socioeconomic factors. The study sample's socioeconomic conditions may have affected understanding of the questions provided and participant response as well. The study sample may have socioeconomic conditions that limit or prevent access to preventive health screenings, thereby affecting the responses on this study. As discussed in Chapter 1, an online study was also a limitation. There was no face-to-face or telephone contact with participants, therefore there was no opportunity to answer participant questions regarding the survey questions. The study sample responses may have differed if there was an opportunity for clarification of questions that participants may have wanted to ask.

Recommendations

This was a quantitative, cross-sectional study. This study recruited participants for an online study through two mechanisms, the Walden Participant Pool and Survey Monkey. It is recommended this study be replicated in the same conditions to determine if the outcome will be similar. The cross sectional approach only addressed the study sample population at the time they were surveyed. A longitudinal study with the same study sample population over a period of time would produce comparative data to measure this study's outcomes. Additionally, this study should be conducted in a

population of diverse race/ethnicities to observe if findings are similar or different. The same suggestion could also be applied to singular race/ethnicities. The findings from these studies could identify which groups require additional preventive health screening education to improve health literacy. Additionally, effective methods via effective media exposure can be obtained. Again, longitudinal studies would capture if health literacy regarding preventive health screening media changed over time.

This was an online study. Participants completed the study via the Internet with no interaction with the researcher. It is recommended this study should be replicated by two methods, quantitatively through the group administered approach and qualitatively through interview. The first method, a quantitative group administered approach, would facilitate clarification of questions by participants. Additionally, group race/ethnicities as well as population demographics such as age, gender, employment status, and educational background, could be targeted. Next, this study should be conducted qualitatively. A qualitative approach via interview would facilitate personal responses and opinions regarding the questions. The interview would also directly assess participant knowledge and feelings regarding preventive health screening and effective media to convey this information.

Finally, effective methods of preventive health screening media exposure for older workers resultant from this study included multiple media approaches. To improve health literacy, television and radio were recommended media exposure methods. On the other hand, television, radio, newspaper, and Internet were recommended media exposure methods for providing preventive health education. Based on the HBM, cues to action are

specific stimuli needed to activate certain health behavior (Gatewood et al., 2008). It is recommended the effective methods of media identified should be used to disseminate information regarding preventive health screening. These targeted informational messages sent via television, radio, newspaper, and Internet will promote awareness and encourage preventive health screening for the older worker population.

Implications

The potential impact for positive social change from this study will be discussed on an individual, family, and social level. On an individual level, participants were asked questions to ascertain personal views and what they planned to do with the information received. Out of 159 participants, 40.3% stated they would use the information to get preventive health screening, make an appointment for a check-up, and ask their physician what preventive health screening they should obtain. Additionally, 13.2% stated they would only make an appointment for a check-up and ask their physician what preventive health screening they should obtain (two out of the three options). Lastly, 9.4% stated they would get preventive health screening. These results infer older worker study participant's awareness of preventive health screening was positively impacted in such a way it influenced them to make beneficial changes to improve their health. Adoption of the preventive health screening strategies from this study allows study participants to activate the self-efficacy portion of the HBM. Self-efficacy is representative of an individual's confidence in his or her ability to perform the health behavior as well as adoption of behavior that will be preventative in nature (Bellamy, 2004). As a result of their responses, the study participants for this age group will take action in their

individual preventive health screening and possibly improve their health literacy as a result of this study. Additionally, the social impact of these findings also represent the study participants will improve their health statuses as a result of preventive health screening measures.

On a family level, participants were asked questions to ascertain with whom they planned to share the information. The responses were as follows: personal physician (33.3%), family (23.9%), all of the above-physician, family and friends (20.1%) and friends (8.8%). The social impact from these findings suggests study participants would disseminate preventive health screening information from this study by word of mouth. This action would encourage others to obtain not only the preventative screenings but also education about preventive health. The social impact of circulating this information among their family and friends could improve health literacy and preventive health screening for diverse age groups and populations.

Finally, the implication for social change on a societal level addresses recommendations for practice and future research. The recommendations for practice resulting from this study could be used by individual medical offices as well as health organizations. The information gathered from this research study can be used to develop health education programs that utilize the media that is most effective in educating the older worker population regarding preventive health screening. It is hoped this research will contribute to the existing knowledge on this topic and provide further insight on how to effectively educate the older worker through media exposure deemed beneficial. Lastly, future research should elicit direct response from the older worker population.

The information received through interview from older workers should combine both recommendations and feedback from participants to ascertain exactly how the older worker comprehends preventive health screening education. Basically, future research should focus not only on the effective media for educating this population, but also why this media is effective.

Conclusion

This study was conducted to evaluate the relationship between preventive health education media and health literacy of the older worker. Additionally, this study sought to determine methods of preventive health education for improving health literacy within the older worker population by evaluating the frequency and type of exposure to preventive health education media. The study population identified included 45 years and older, of diverse race/ethnicities, and job types. This study population was targeted as there are a steadily increasing number of workers over the 45 remaining in the workforce. The specific gap in the literature identified the need for age specific methods to educate older workers. According to Naumanen (2006), the area regarding age specific health promotion practices dedicated primarily for the older worker population are limited. To address this gap in the literature, the study investigated older workers' frequency of exposure to preventive health education media to determine which methods of education are most effective. The theoretical foundation selected for this study was the Health Belief Model or HBM as this theory engages an individual to take action to improve health outcomes. The results of this study supported the research questions and hypotheses proposed.

The conclusions reached because of this research study are significant. Firstly, older worker health literacy levels and preventive health screening knowledge were found to be acceptable with improvements needed for health literacy in the age category of (45-54). This study was also able to provide effective methods via media (television, radio, newspaper, and Internet) to convey preventive health screening education and thereby improve health literacy.

Lastly, positive social change can be impacted three ways, individually, through family relations, and societal. The most significant positive social change from this study involves influence on individual health as well as potential impact on societal health that could reduce morbidity and mortality from preventable diseases. Most importantly, future practice could be geared toward utilizing approaches obtained from this study to educate the older worker population regarding preventive health screening education, thereby improving health literacy and self-efficacy within this population.

References

Agency for Healthcare Research and Quality (2011).Women: Stay Healthy at 50+. Retrieved from http://www.ahrq.gov/patientsconsumers/prevention/lifestyle/women-over-50.html

Agency for Healthcare Research and Quality (2012). Healthy Men: Healthy Men Quiz. Retrieved from http://www.ahrq.gov/patients-consumers /patient involvement /healthymen /quiz.html

Agency for Healthcare Research and Quality () (2011).Men: Stay Healthy at 50+. Retrieved from http://www.ahrq.gov/patients-consumers/patient-involvement/healthy-men /men-over-50.html

Ahluwalia, I., Bolen, J., & Garvin, B. (2007). Health insurance coverage and use of selective preventive services by working women BRFSS. *Journal of Women's Health* 16 (7), 935-940.

Arras, R., Ogletree, R., & Welshimer, K. (2006). Health-Promoting behaviors in men age 45 and above. *International Journal of Men's Health, 5*(1), 65-79.

Babbie, E. (2007). *The Practice of Social Research (11th).* Belmont, CA: Wadsworth.

Bagwell, M., & Bush, H. (2000). Improving health promotion for blue-collar workers. *Journal of Nursing Care Quality, 14*(4), 65-71.

Bass, L. (2005). Health Literacy: Implications for teaching the adult patient. *Journal of Infusion Nursing, 28*(1), 5-22.

Becker, L. (1999). Measures of Effect Size (Strength of Association). Retrieved from http://www.uccs.edu/lbecker/glm_effectsize.html

Bellamy, R. (2004). An introduction to patient education: theory and practice. *Medical Teacher, 26*(4), 359-365.

Bennett, I., Chen, J., Soroui, J., & White, S. (2009). The contribution of health literacy to disparities in self-rated health status and preventive health behaviors in older adults. *Annals of Family Medicine*(7), 204-211.

Berkman, N., DeWalt, D. Pignone, M. et al., (2004). *Literacy and Health Outcomes Summary, Evidence Report/Technology Assessment No. 87.* Prepared by RTI International-University of North Carolina Evidence-Based Practice Center under Contract No. 290-02-0016. Rockville, MD: Agency for Healthcare Research: AHRQ No. 04-E007-1.

Centers for Disease Control and Prevention (2013). About the Behavioral Risk Factor Surveillance System. Retrieved from http://www.cdc.gov/PHSKQ/about/about_PHSKQ.htm

Centers for Disease Control and Prevention (2011). 2011 Behavioral Risk Factor Surveillance System Questionnaire. Retrieved from http://www.cdc.gov/brfss/questionnaires/pdf-ques/2011brfss.pdf

Centers for Disease Control and Prevention. (2003). Public health and aging: Trends in aging-United States and Worldwide. *MMWR, 52*(6), 101-106.

Centers for Disease Control and Prevention. (2009). Prevalence and most common causes of disability among adults-United States, 2005. *MMWR, 58*(16), 421-426.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences (2nd ed.).* Hillsdale, NJ: Lawrence Earlbaum Associates.

Cornett, S. (2009). Assessing and addressing health literacy. *Online Journal of Issues in Nursing, 14*(3), 1.

Costa, G., & DiMilia, L. (2008). Aging and shift work: A complex problem to face. *Chronobiology International, 25*(2&3), 165-181.

Davis, T., Dolan, N., Ferreira, M., Tomori, C., Green, K., & Sipler, A. (2001). The role of inadequate health literacy skills in colorectal cancer screening. *Cancer Investigation, 19*(2), 193-200.

Egbert, N., & Nanna, K. (2009). Health literacy: Challenges and strategies. *Online Journal of Issues in Nursing, 14*(3), 5.

Faul, F., Erdfelder, E., Lang, A.G., & Buchner, A. (2007). G*Power 3: A flexible statistical Power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*(2), 175-191.

Finfgeld, D., Wongyatunyu, S., Conn, V., Grando, V., & Russell, C. (2003). Health Belief Model and reversal theory: A comparative analysis. *Journal of Advanced Nursing, 43*(3), 288-297.

Friis, R., Sellers, T. (2004). *Epidemiology for Public health practice.* Sudbury, Massachusetts: Jones and Bartlett.

Gatewood, J., Litchfield, R., Geadelmann, J., Pendergast, J., & Ullom, K. (2008). Perceived barriers to community-based health promotion program participation. *American Journal of Health Behavior, 32*(3), 260-271.

Gazmararian, J., Baker, D., & Williams, M., (1999). Health literacy among medicare enrollees in a managed care organization. *Journal of American Medical Association (JAMA), 281*(6), 545-551.

Goulding, M., Rogers, M., & Smith, S. (2003). Public health and aging: Trends in aging-United States and Worldwide. *MMWR, 52*(6), 101-106.

Grandjean, C., McMullen, P., Miller, K., Howie, W., Ryan, K., Myers, A., & Dutton, R. (2006). Severe occupational injuries among older workers: Demographic factors, time of injury, place and mechanism of injury, length of stay and cost data. *Nursing & Health Sciences, 8*(2), 103-107.

Harris, N., & Grootjans, J. (2006). The potential role of ecological health promotion in progressing healthy ageing. *Ageing International, 31*(4), 276-282.

Hart, K. (2007). The aging workforce: Implications for health care organizations. *Nursing Economics, 25*(2), 101-102.

Hartley, D., & Riddle, E. (2001). Will risks to older workers change in the 21st century? *Human & Ecological Risk Assessment, 7*(7), 1885-1894.

Health Belief Model (HBM), 2012 In *Current Nursing.com*. Retrieved from http://currentnursing.com/nursing_theory/health_belief_model.html

Howell, D. (2014). Chapter 1: Introduction to SPSS. Retrieved from http://www.uvm.edu/~dhowell/fundamentals7/SPSSManual/SPSSLongerManual/SPSSChapter1.pdf

Katz, D & Ather, A. (2009*).* Preventive Medicine, Integrative Medicine & the Health of the Public. Retrieved from http://iom.nationalacademies.org/~/media/Files/Activity%20Files/Quality/IntegrativeMed/Preventive%20Medicine%20Integrative%20Medicine%20and%20the%20Health%20of%20the%20Public.pdf

Lund, A. & Lund M. (2013). One-way ANOVA in SPSS. Retrieved from https://statistics.laerd.com/spss-tutorials/one-way-anova-using-spss-statistics.php

Mackey, M., Maher, C., Wong, T., & Collins, K. (2007). Study protocol: The effects of work-site exercise on the physical fitness and work-ability of older workers. *BMC Musculoskeletal Disorders, 89*(5), 1-5.

Marshall, V., & Altpeter, M. (2005). Cultivating social work leadership in health promotion and aging: Strategies for active aging interventions. *Health & Social Work, 30*(2), 135-144.

Mayer, G., & Villaire, M. (2009). Enhancing written communications to address health literacy. *Online Journal of Issues in Nursing, 14*(3), 4.

McCray, A. (2005). Application of information technology-Promoting health literacy. *Journal of the American Informatics Association, 12*(2), 152-163.

Naumanen, P. (2006). Opinions of ageing workers on relative importance of health promotion. *Internation Journal of Nursing Practice, 12*(6), 352-358.

Naumanen, P. (2006). The health promotion model as assessed by ageing workers. *Journal of Clinical Nursing, 15*(2), 219-226.

Naumanen, P. (2006). The health promotion of older workers from the perspective of occupational health professionals. *Public Health Nursing, 23*(1), 37-45.

Nielsen, K., Dyhr, L., Lauritzen, T., & Malterud, K. (2009). "Couldn't you have done just as well without the screening?" A qualitative study of benefits from screening as perceived by people without a high cardiovascular risk score. *Scandinavian Journal of Primary Health Care, 27*(2), 111-116.

Nurss, J., Parker, R., Williams, M., & Baker, D. (2004). *TOFHLA*. Retrieved from http://www.peppercornbooks.com/catalog/information.php?info_id=5

Padula R., Comper M., Moraes S., Sabbagh C., Pagliato J., & Perracini M (2013). The work ability index and functional capacity among older workers. *Brazilian Journal of Physical Therapy*, 17(4), 382-391.

Painter, J., Borba, C., Hynes, M., Mays, D. & Glanz, K. (2008). The use of theory in health behavior research from 2000 to 2005: A systematic review. *Annals of Behavioral Medicine, 35*(3), 358-362.

Parker, R., Wolf, M., & Kirsch, I. (2008). Preparing for an epidemic of limited health literacy: Weathering the perfect storm. *Journal of General Internal Medicine, 23*(8), 1273-1276.

Pender, N., Murdaugh, C., & Parsons, M. (2006). *Health promotion in nursing practice, 5th ed.* Upper Saddle River, NJ: Prentice-Hall Health, Inc.

Rigdon, A. (2010). Development of patient education for older adults receiving chemotherapy. *Clinical Journal of Oncology Nursing,* 14(4), 433-441.

Robson, S., Hansson, R., Abalos, A., & Booth, M. (2006). Successful aging: Criteria for aging well in the workplace. *Journal of Career Development, 33*(2), 156-177.

Roth, C. (2010). Who is the older worker? *EHS Today.* Retrieved from http://ehstoday.com/health/wellness/older_worker

Schneider, L., Coun, R., & Zamer, L. (2006). Finished at 40 or second wind? *Journal of Jewish Communal Service, 81*(3/4), 219-229.Shanahan, M. (2010). Cross-Sectional Design. *Encyclopedia of Case Study Research* 267-269. Thousand Oaks, CA: SAGE Publications, Inc. doi: http://dx.doi.org.ezp.

Simon, M. K. (2011). Assumptions, Limitations, and Delimitations. Retrieved from http://dissertationrecipes.com/wpcontent/uploads/2011/04 /AssumptionslimitationsdelimitationsX.pdf

Singleton, K., & Krause, E. (2009). Understanding cultural and linguistic barriers to health literacy. *Online Journal of Issues in Nursing, 14*(3), 2.

Singleton, R., & Straits, B. (2005). *Approaches to Social Research.* New York, NY: Oxford University Press.

Social Security Administration. (2009, October). Retirement age background. Retrieved from http://www.ssa.gov/pubs/background.htm

Speros, C. (2009). More than words: Promoting health literacy in older sdults. *Online Journal of Issues in Nursing, 14*(3), 6.

Stockburger, D. (2015). Introductory Statistics: Concepts, Models and Applications. Retrieved from http://www.psychstat.missouristate.edu/introbook/sbk27.htm

Survey Monkey (2014) Analyzing Results-Sharing & Exporting: SPSS. Retrieved from http://help.surveymonkey.com/categories/analyzing-results/sharing-exporting/spss

Survey Monkey (2014) Are my survey responses anonymous and secure? Retrieved from http://help.surveymonkey.com/articles/en_US/kb /Are-my-survey-responses-anonymous-and-secure

Syx, R. (2008). The practice of patient education: The rheoretical perspective. *Orthopaedic Nursing, 27*(1), 50-56.

Thomasen, J., Karlsmose, B., & Parner, E. (2006). Secondary healthcare contacts after multiphasic preventive health screening: A randomized trial. *Scandinavian Journal of Public Health* (34), 254-261.

Tucker, J. (2005). Cross-Sectional Design. *Encyclopedia of Evaluation.* 97. Thousand Oaks, CA: SAGE Publications, Inc. doi: http://dx.doi.org.ezp.

U.S. Department of Health & Human Services (HHS) (2012). Administration on Aging-A Profile of Older Americans: 2012. Retrieved from http://www.aoa.gov/AoARoot/(S(2ch3qw55k1qylo45dbihar2u))/Aging_Statistics /Profile/2012/2.aspx

U.S. Department of Health & Human Services (HHS) (2014). Preventive Care. Retrieved from http://www.hhs.gov/healthcare/rights/preventive-care/index.html

U.S. Department of Health & Human Services (HHS) (2012). Quick Guide to Health Literacy and Older Adults. Retrieved from http://www.health.gov/communication/literacy/olderadults/literacy.htm

U.S. Equal Employment Opportunity Commission (EEOC) (2014). The Age Discrimination in Employment Act of 1967 (ADEA). Retrieved from http://www.eeoc.gov/laws/statutes/adea.cfm

U.S. National Library of Medicine and National Institutes of Health (NLM/NIH). (2008, July). Medline plus-Health literacy. Retrieved from http://www.nlm.nih.gov/medlineplus/healthliteracy.html

U.S. National Library of Medicine and National Institutes of Health (NLM/NIH). (2011, August). *Medline plus-Health screening.* Retrieved from http://vsearch.nlm.nih.gov/vivisimo/cgi-bin /query-meta?query=health+screening&v%3Aproject=nlm-main-website

U.S. National Library of Medicine and National Institutes of Health (NLM/NIH). (2012, March). *Medline plus-Preventive health care.* Retrieved from http://www.nlm.nih.gov/medlineplus/ency/article/001921.htm

Watts, G., Donahue, R., Eddy, J., & Wallace, E. . (2001). Use of an ecological approach to worksite health promotion. *American Journal of Health Studies, 17*(3), 144-148.

White S,. Chen, J., & Atchison, R. (2008). Relationship of preventive health practices and health literacy: A National Study. *American Journal of Health Behavior, 32*(3), 227-242.

Wood, M. (2008). Theoretical framework to study exercise motivation for breast cancer risk reduction. *Oncology Nursing Forum, 35*(1), 89-95.

World Health Organization (WHO). (2012). Health topics-Health education. Retrieved from http://www.who.int/topics/health_education/en/

World Health Organization (WHO). (2012). Health topics-Health promotion. Retrieved from http://www.who.int/topics/health_promotion/en/

Appendix A: Permission to use Health Belief Model Diagram

Original E-mail

From : Lori Williams-Johnson [lori.williamsjohnson.3@facebook.com]
Date : 04/14/2013 12:43 PM
To : Lori Williams-Johnson [lmwmsj@aol.com], lori.williams-johnson@waldenu.edu
Subject : Conversation with Lori Williams-Johnson

Permission to use Health Belief Model by June Kaminski
---------- Forwarded message ----------
On April 3, 2012 10:23:17 AM PDT, Lori Williams-Johnson wrote:

Hello,
I would like to know how to get in touch with Dr. June Kaminski to request using her Health Belief Model diagram in my dissertation. Please let me know where to send this request. Thank you.

Respectfully,
Lori Williams-Johnson (lmwmsj@aol.com)
On April 10, 2012 6:10:54 AM PDT, Nursing Informatics Learning Center wrote:

Hi Lori, Sorry I meant to respond to your email - yes, that is fine to use the image as long as it is credited. Good luck with your study! I would love to read it when it is finished. All the best, June
On April 12, 2012 4:43:13 AM PDT, Lori Williams-Johnson wrote:

Thank you. I will definitely provide a copy for you to read.
Lori Williams-Johnson
On April 25, 2012 11:54:17 AM PDT, Nursing Informatics Learning Center wrote:

Great, thanks!

Appendix B: TOFHLA Permission

PEPPERCORN BOOKS & PRESS INC

TOFHLA
TEST OF FUNCTIONAL HEALTH LITERACY IN ADULTS

LICENSE TO REPRODUCE THE TOFHLA FOR USE IN TESTING OR RESEARCH

Permission is granted to:

Lori Williams-Johnson, Silver Spring, MD

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Appendix C: STOFHLA Tool and Answer Key

Test of Functional Health Literacy in Adults

Short Test of Functional Health Literacy in Adults (STOFHLA)

STOFHLA
Large Print Version
English, 14 point font

Short Test of Functional Literacy in Adults
STOFHLA
READING COMPREHENSION

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

PREFACE THE READING COMPREHENSION EXERCISE WITH:

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

STOP AT THE END OF 7 MINUTES

PASSAGE A: X-RAY PREPARATION

PASSAGE B: MEDICAID RIGHTS AND RESPONSIBILITIES

PASSAGE A

Your doctor has sent you to have a _____ X-ray.
a. stomach
b. diabetes
c. stitches
d. germs

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

a. asthma	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
b. broth
c. attack
d. nausea

a. toes
b. throat
c. toast
d. thigh

with coffee or tea.

After _____ , you must not _____ or drink

a. minute,
b. midnight,
c. during,
d. before,

a. easy
b. ate
c. drank
d. eat

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

a. ill
b. all
c. each
d. any

a. are
b. has
c. had
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,
b. drink,
c. dress,
d. dose,

a. heart.
b. breath.
c. water.
d. cancer.

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

a. answers,
b. exercises,
c. tracts,
d. questions,

a. Department
b. Sprain
c. Pharmacy
d. Toothache

PASSAGE B

I agree to give correct information to _____ if I can receive Medicaid.
a. hair
b. salt
c. see
d. ache

I _____ to provide the county information to _____ any
a. agree
b. probe
c. send
d. gain
a. hide
b. risk
c. discharge
d. prove

statements given in this _____ and hereby give permission to
a. emphysema
b. application
c. gallbladder
d. relationship

the _____ to get such proof. I _____ that for
a. inflammation
b. religion
c. iron
d. county
a. investigate
b. entertain
c. understand
d. establish

Medicaid I must report any _____ in my circumstances
a. changes
b. hormones
c. antacids
d. charges

within _____ (10) days of becoming _____ of the change.
a. three
b. one
c. five
d. ten
a. award
b. aware
c. away
d. await

I understand _____ if I DO NOT like the _____ made on my
a. thus
b. this
c. that
d. than
a. marital
b. occupation
c. adult
d. decision

case, I have the _____ to a fair hearing. I can _____ a
a. bright
b. left
c. wrong
d. right
a. request
b. refuse
c. fail
d. mend

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

If you _____ TANF for any family _____ , you will have to
a. wash
b. want
c. cover
d. tape
a. member,
b. history,
c. weight,
d. seatbelt,

_____ a different application form. _____ , we will use

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

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

the _____ on this form to determine your _____ .

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

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

Short Test of Functional Health Literacy in Adults (STOFHLA)

Joanne R. Nurss, Ph.D., Ruth M. Parker, M.D., Mark V. Williams, M.D., & David W. Baker, M.D., M.P.H.

TOFHLA is a measure of the patient's ability to read and understand health care information, their functional health literacy. TOFHLA Numeracy assesses their understanding of prescription labels, appointment slips, and glucose monitoring. TOFHLA Reading Comprehension assesses their understanding of health care texts such as preparation for a diagnostic procedure and Medicare Rights & Responsibilities.

Date ____/____/____

Name _____ ___ M ___ F

Birthdate ____/____/____ Age ____ SSN or ID# _____

Hospital or Health-care Setting _____

City, State _____

Short Form Administered: ___English ___Spanish

STOFHLA - Score

TOFHLA Total Score:
Reading Comprehension Raw Score (0-36) | |

Functional Health Literacy Level:

0 - 16 -- Inadequate Functional Health Literacy

17 - 22 -- Marginal Functional Health Literacy

23 - 36 -- Adequate Functional Health Literacy | |

July 1995

STOFHLA: Reading Comprehension
Scoring Key

14 Point Font

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

Appendix D: BFRSS Questionnaire

Original E-mail

From : "Kneifl, Joan (CDC/OSELS/EAPO) (CTR)" [ijw7@cdc.gov]
Date : 05/29/2013 09:12 AM
To : "lori.williams-johnson@waldenu.edu" [lori.williams-johnson@waldenu.edu], "lmwmsj@aol.com" [lmwmsj@aol.com]

CC: cdcinfo@cdc.gov
Subject : FW: RESPONSE NEEDED [ref:_00DU0YCBU._500U07dD45:ref]

Thank you for your question about use of BRFSS Questionnaire.
From the BRFFS Frequently Asked Questions (FAQs):
http://www.cdc.gov/brfss/about/brfss_faq.htm

14. Do I need to obtain permission to use the BRFSS questionnaire or portions of the questionnaire for my own work? Do I need to obtain permission when publishing or otherwise disseminating graphs and tables based on BRFSS data?

Generally, data and materials produced by federal agencies are in the public domain and may be reproduced without permission. However, we do ask that any published material derived from the data acknowledge CDC's BRFSS as the original source.

Joan Kneifl
Northrop Grumman Contractor
CDC/OSELS/EAPO/MMWR
Administrative Assistant
404-498-2223 (phone)
404-498-2389 (fax)

Free electronic subscriptions

-----Original Message-----
From: MMWR Questions (CDC)
Sent: Tuesday, May 28, 2013 2:19 PM
To: Kneifl, Joan (CDC/OSELS/EAPO) (CTR)
Subject: FW: RESPONSE NEEDED [ref:_00DU0YCBU._500U07dD45:ref]

Being forwarded from the MMWR-Questions mailbox…

-----Original Message-----

---------- Original Message ----------

From: [emailforms@cdc.gov]
Sent: 5/20/2013 11:17 AM
To: cdcinfo@cdc.gov
Subject: CDC-INFO: Inquiry
Subject: Request Permission to use BRFSS in research study
Other: [othersubject]
From: General Public
Email Address: lori.williams-johnson@waldenu.edu; lmwmsj@aol.com

Your Question: Dear Sir or Madam,
I am a doctoral student working on my dissertation in the Public Health-Community Health Promotion & Education program at Walden University. My study will examine the influence of preventive health screening education on health literacy. I would like to request permission to use the BFRSS questionnaire for this study.
Please let me know if this request can be approved. Thank you.

Optional Information

Contact: Lori Williams-Johnson, Registered Nurse/PhD Student, [company organization]
ref:_00DU0YCBU._500U07dD45:ref

Appendix E: Permission to use AHRQ Materials

-----Original Message-----
From: Lewin, David (AHRQ) <David.Lewin@ahrq.hhs.gov>
To: Lori Williams-Johnson <lori.williams-johnson@waldenu.edu>; Lori Williams-Johnson <lmwmsj@aol.com>
Cc: Siegel, Randie A. (AHRQ) <Randie.Siegel@ahrq.hhs.gov>; Cummings, Sandra K. (AHRQ) <Sandra.Cummings@ahrq.hhs.gov>
Sent: Fri, Feb 25, 2011 3:33 pm
Subject: Permission to use health education materials in your research

Dear Ms. Williams-Johnson:

I am responding to your request on behalf of Randie Siegel, AHRQ's associate
director for publishing and electronic dissemination. All of the materials that you would like to use in your dissertation research are in the public domain, and you are free to use them. We do, however, ask that you give source credit for these documents. The citations that you give below are usable, except for the first, which would be better listed as:

"Staying Healthy: Do You Know What It Takes?." AHRQ Healthy Men Web site (Ad
Council campaign). Agency for Healthcare Research and Quality, Rockville, MD.
http://www.ahrq.gov/healthymen/quiz.htm

Sincerely,

David I. Lewin, MPhil
Health Communications Specialist
Office of Communications and Knowledge Transfer
Agency for Healthcare Research and Quality
(301) 427-1895 voice
(301) 427-1873 fax
Note e-mail address:
David.Lewin@ahrq.hhs.gov

==========
From: Lori Williams-Johnson [mailto:lori.williams-johnson@waldenu.edu]
Sent: Thursday, February 17, 2011 02:11 PM
To: Siegel, Randie A. (AHRQ)
Cc: Lori Williams-Johnson <lori.williams-johnson@waldenu.edu>; lmwmsj@aol.com
<lmwmsj@aol.com>
Subject: Request for Permission to use/reproduce materials provided on the AHRQ
Web site

Dear Sir or Madam,
I am a doctoral student working on my dissertation in the Public

Health-Community Health Promotion & Education program at Walden University. My study will examine the influence of preventive health screening education on health literacy. I would like to request permission to use the following materials from AHRQ:

Healthy Men Quiz. AHRQ website. Agency for Healthcare Research and Quality, Rockville, MD. http://www.ahrq.gov/healthymen/quiz.htm

Women: Stay Healthy at Any Age. AHRQ Publication No. 10-IP002-A, September 2010. Agency for Healthcare Research and Quality, Rockville, MD. http://www.ahrq.gov/ppip/healthywom.htm

Men: Stay Healthy at Any Age. AHRQ Publication No. 10-IP004-A, September 2010. Agency for Healthcare Research and Quality, Rockville, MD. http://www.ahrq.gov/ppip/healthymen.htm

Women: Stay Healthy at 50+-Checklists for Your Health. AHRQ Publication No. 08-IP001, May 2008. Agency for Healthcare Research and Quality, Rockville, MD. http://www.ahrq.gov/ppip/women50.htm

Men: Stay Healthy at 50+-Checklists for Your Health. AHRQ Publication No. 08-IP002, May 2008. Agency for Healthcare Research and Quality, Rockville, MD. http://www.ahrq.gov/ppip/men50.htm

I understand that these materials may have copyright holders and would appreciate referral to those sources to obtain permission if necessary. Thank you in advance for your attention and response to this request.

Respectfully submitted,

Lori M. Williams-Johnson RN, BSN, MSA, COHN-S/CM
PhD Public Health-Community Health Promotion & Education
Silver Spring, MD (EST)
Cell#: (301)613-0165; Email: lori.williams-johnson@waldenu.edu<mailto:lori.williams-johnson@waldenu.edu>; lmwmsj@aol.com

Appendix F: Email requesting use of VREP

Original E-mail

From : "Marilyn K. Simon, Ph.D." [marilyn.simon@waldenu.edu]
Date : 07/03/2013 02:29 PM
To : 'Lori Williams-Johnson' [lori.williams-johnson@waldenu.edu]
CC : cj.schumaker@waldenu.edu
Subject : RE: Permission to use the VREP tool

Thanks Lori! Wishing you continued success!
Marilyn K. Simon, Ph.D.
Faculty Richard W. Riley
College of Education and Leadership
NCATE
100 Washington Avenue South
Suite 900
Minneapolis, MN 55401
858-259-0345

From: Lori Williams-Johnson [mailto:lori.williams-johnson@waldenu.edu]
Sent: Wednesday, July 03, 2013 12:11 PM
To: Marilyn K. Simon Ph.D.; 'Lori Williams-Johnson'
Cc: cj.schumaker@waldenu.edu
Subject: Re: Permission to use the VREP tool

Dr. Simon,
I have signed and attached the permission sheet to use the VREP tool. Thank you for granting permission to use this tool for my study.
Lori M. Williams-Johnson RN, BSN, MSA, COHN-S/CM
Walden ID #A00058192
PhD Public Health-Community Health Promotion & Education
Silver Spring, MD (EST)
Cell#: (301)613-0165; Email: lmwmsj@aol.com

Original E-mail

From : "Marilyn K. Simon, Ph.D." [marilyn.simon@waldenu.edu]
Date : 07/02/2013 02:46 PM
To : 'Lori Williams-Johnson' [lori.williams-johnson@waldenu.edu]
CC : cj.schumaker@waldenu.edu
Subject : RE: Permission to use the VREP tool

Please see attached. Please note we have open-access documents to assist you with every stage of your study at www.dissertationrecipes.com
Wishing you continued success!
Marilyn K. Simon, Ph.D.

Faculty Richard W. Riley
College of Education and Leadership
NCATE
100 Washington Avenue South
Suite 900
Minneapolis, MN 55401
858-259-0345

From: Lori Williams-Johnson [mailto:lori.williams-johnson@waldenu.edu]
Sent: Tuesday, July 02, 2013 12:26 PM
To: marilyn.simon@waldenu.edu
Cc: cj.schumaker@waldenu.edu; lori.williams-johnson@waldenu.edu
Subject: Permission to use the VREP tool

Dr. Simon,

I would like to request permission to use the Validation Rubric for Expert Panel (VREP) tool for the expert panel that will be reviewing the survey tool for my Dissertation. This tool was one of a couple recommended by my Chair-Dr. Clarence Schumaker. Please let me know if this request can be approved. Thank you in advance for your attention and response to this request.

Lori M. Williams-Johnson RN, BSN, MSA, COHN-S/CM
Walden ID #A00058192
PhD Public Health-Community Health Promotion & Education
Silver Spring, MD (EST)
Cell#: (301)613-0165; Email: lmwmsj@aol.com

Appendix G: Permission to Use VREP

PERMISSION TO USE AN EXISTING VALIDATION RUBRIC FOR EXPERT PANEL (VREP)

07-02-2013

To: Lori M. Williams-Johnson

Thank you for your request for permission to use VREP in your research study. I am willing to allow you to reproduce the instrument as outlined in your letter at no charge with the following understanding:

- You will use this survey only for your research study and will not sell or use it with any compensated management/curriculum development activities.
- You will include the copyright statement on all copies of the instrument.
- You will send your research study and one copy of reports, articles, and the like that make use of this survey data promptly to our attention.

If these are acceptable terms and conditions, please indicate so by signing one copy of this letter and returning it to me.

Best wishes with your study.

Sincerely,

Marilyn K. Simon, Ph.D

Marilyn K. Simon, Ph.D 07/02/13

Signature

I understand these conditions and agree to abide by these terms and conditions.

Signed Lori M. Williams-Johnson **Date** 7-3-13

Expected date of completion Spring 2014

Appendix H: VREP Tool

Survey/Interview Validation Rubric for Expert Panel - VREP©
By Marilyn K. Simon with input from Jacquelyn White

Criteria	Operational Definitions	Score 1=Not Acceptable (major modifications needed) 2=Below Expectations (some modifications needed) 3=Meets Expectations (no modifications needed but could be improved with minor changes) 4=Exceeds Expectations (no modifications needed)				Questions NOT meeting standard (List page and question number) and need to be revised. *Please use the comments and suggestions section to recommend revisions.*
		1	2	3	4	
Clarity	• The questions are direct and specific. • Only one question is asked at a time. • The participants can understand what was asked. • There are no *double-barreled* questions (two questions in one).					
Wordiness	• Questions are concise. • There are no unnecessary words					
Negative Wording	• Questions are asked using the affirmative (e.g., Instead of asking, "Which methods are not used?", the researcher asks, "Which methods *are* used?")					
Overlapping Responses	• No response covers more than one choice. • All possibilities are considered.					

	• There are no ambiguous questions.					
Balance	• The questions are unbiased and do not lead the participants to a response. The questions are asked using a neutral tone.					
Use of Jargon	• The terms used are understandable by the target population. • There are no clichés or hyperbole in the wording of the questions.					
Appropriateness of Responses Listed	• The choices listed allow participants to respond appropriately. • The responses apply to all situations or offer a way for those to respond with unique situations.					
Use of Technical Language	• The use of technical language is minimal and appropriate. • All acronyms are defined.					
Application to Praxis	• The questions asked relate to the daily practices or expertise of the potential participants.					
Relationship to Problem	• The questions are sufficient to resolve the problem in the study • The questions are sufficient to answer the research questions. • The questions are sufficient to obtain the purpose of the study.					
Measure of Construct: A: Health Education	The survey adequately measures this construct. *Health education*: The process of improving knowledge concerning health as well as influencing the perception of an individual or community through the use of multiple instructional methods (WHO, 2012).					
Measure of Construct:	The survey adequately measures this construct.					

B: Health Screening	*Health screening*: Medical tests, procedures, or examinations performed for early detection of disease or illnesses (NIH, 2011).					
Measure of Construct: C: Preventive Health	The survey adequately measures this construct. *Preventive health:* Perceiving changes in health status that deviate from an established pattern of functioning and seeking medical treatment in response to the recognized change before progression of the status occurs (NLM/NIH, 2012).					
Measure of Construct: D: Preventive Care	The survey adequately measures this construct. *Preventive care:* Medical care or treatment performed through actions and measures to prevent disease and illness as well as maintenance of optimum health. (Farlex Inc, 2012).					

* The operational definition should include the domains and constructs that are being investigated. You need to assign meaning to a variable by specifying the activities and operations necessary to measure, categorize, or manipulate the variable For example, to measure the construct *successful aging* the following domains could be included: degree of physical disability (low number); prevalence of physical performance (high number), and degree of cognitive impairment (low number). If you were to measure creativity, this construct is generally recognized to consist of flexibility, originality, elaboration, and other concepts. Prior studies can be helpful in establishing the domains of a construct.

Comments and Suggestions

Types of Validity

VREP is designed to measure face validity, construct validity, and content validity. To establish criterion validity would require further research.

Face validity is concerned with how a measure or procedure appears. Does it seem like a reasonable way to gain the information the researchers are attempting to obtain? Does it seem well designed? Does it seem as though it will work reliably? Face validity is independent of established theories for support (Fink, 1995).

Construct validity seeks agreement between a theoretical concept and a specific measuring device or procedure. This requires operational definitions of all constructs being measured.

Content Validity is based on the extent to which a measurement reflects the specific intended domain of content (Carmines & Zeller, 1991, p.20). Experts in the field can determine if an instrument satisfies this requirement. Content validity requires the researcher to define the domains they are attempting to study. Construct and content validity should be demonstrated from a variety of perspectives.

Criterion related validity, also referred to as instrumental validity, is used to demonstrate the accuracy of a measure or procedure by comparing it with another measure or procedure which has been demonstrated to be valid. If after an extensive search of the literature, such an instrument is *not* found, then the instrument that meets the other measures of validity are used to provide criterion related validity for future instruments.

Operationalization is the process of defining a concept or construct that could have a variety of meanings to make the term measurable and distinguishable from similar concepts. Operationalizing enables the concept or construct to be expressed in terms of empirical observations. Operationalizing includes describing what is, and what is not, part of that concept or construct.

References

Carmines, E. G. & Zeller, R.A. (1991). *Reliability and validity assessment*. Newbury Park: Sage Publications.

Fink, A., ed. (1995). *How to measure survey reliability and validity v. 7*. Thousand Oaks, CA: Sage.

Appendix I: Expert Panel Comments/Suggestions from VREP

Expert Panel Member	Comments/Suggestions
1	Question 4: Coronary artery disease also could be considered an answer. Question 8: AAA, although you did not state family history, this would change the recommend screening age (no family history age 65-75, family history 55-75). Just a consideration for those with a family history. Question 9: If you state "should you get" the audience may think this is the time to receive this immunization. You may consider word choice/options should receive and delete the following: answer "c" whooping cough not recommended/unless not documented consider listing "Tetanus every 10 years." Shingles is recommended after the age 60-1dose. You may consider other options; MMR if lack of documentation or Hepatitis (CDC.gov, 2013)
2	Question 12: The terminology "fracture risk equal or greater than that of a 65 year old woman with no additional risk factors" may not be understood by all education levels of the target population. I would consider revising.
3	Question 10: Is that 30 minutes per day or 30 minutes per week?
4	I thought the assessment tool was well written. It caused me to reflect on my own wellness and if there was an area I needed to focus upon. Good selection. Best of luck in the next phase of your research.
5	Question1: It may seem simple but some don't know that screening was to have it "checked." Question 3: Same as #1-say "What age should you start checking for colorectal cancer." Question 4&7: Good Question 5: Which of the following help to maintain a healthy lifestyle? Answer c)-I don't like this meds part b/c most people attribute taking meds with being sick already. Question 6: Depression includes which of the following symptoms? (revised question) Question 8: Not sure you need to say anything about the site of the blood vessel. Question 10: Too wordy. Should be 2 different questions—How many times/wk? How many minutes or how long per day. Question 11: You should ask your health care provider for HIV screening (if which apply to you –this part is not needed). Question 13: Women between the ages of 21 to 65 years old who are sexually active should have a pap smear to screen for cervical cancer how often? (revised question) Question 15: This part is awkward-Your health care provider should be consulted regarding screening for sexually transmitted diseases (STDs). Question 16: Did your awareness regarding preventive health screening improve after taking this survey? (Revised question—leave out receiving preventive health education).
6	Excellent survey. Suggest changes to 3 questions/answers: Question 4: Most appropriate answer in my opinion is a) Coronary artery disease Question 5: b) May suggest to some that moderate alcohol consumption (1-2 drinks/day) is advised to maintain a healthy lifestyle—perhaps reword to state "No more than moderate alcohol consumption (1-2 drinks/day)" or left out completely. Question 10: Clarify that answer d. is 30 minutes/day, not 30 minutes/week.

Appendix J: Preventive Health Screening Knowledge Quiz (PHSKQ) Initial Draft

Demographic questions:

1. What is your age? _____

2. What is your gender?
☐a. Male ☐b. Female

3. What is your race?
☐a. White
☐b. Black or Black
☐c. Hispanic or Latino
☐d. Asian
☐e. American Indian or Alaska Native
☐f. Native Hawaiian or Other Pacific Islander
☐g. Other

4. What is your highest level of education?
☐a. Elementary/Middle school (Grade 1 through 8)
☐b. High School (Grade 9 through 11)
☐c. High School Graduate (Grade 12 or GED)
☐d. College or Technical School (1 to 4 years of College/Technical Training)
☐e. Graduate school (4+ years or more of College)
☐f. None

5. What is your occupation? _____

Preventive Health Screening Knowledge questions:

1. What is the age regular screening of cholesterol levels should begin?
☐a. 55 ☐b. 35 ☐ c. 50 ☐d. 65
Answer: B. 35

2. What is considered high blood pressure?
☐a. 130/80 ☐b. 120/70 ☐c. 140/90 ☐d. 135/85
Answer: c. 140/90

3. The screening for colorectal cancer should begin at what age?
☐a. 50 ☐b. 40 ☐c. 60 ☐d. 21
Answer: a. 50

4. High blood pressure and high cholesterol are associated with which other disease?
☐a. Coronary artery disease ☐b. Diabetes ☐c. Glaucoma ☐d. Hepatitis

Answer: b. Diabetes

5. What things can be done to maintain a healthy lifestyle?
☐a. Eat a nutritious diet, be physically active through regular exercise, and maintain a healthy weight
☐b. Consume alcohol in moderation (1-2 drinks per day) and avoid tobacco use
☐c. Obtain preventive screening testing as advised and take prescribed medications as recommended
☐d. All of the above
Answer: d. All of the above

6. Screening for depression includes which symptoms:
☐a. Lack of energy and inability to concentrate
☐b. Feelings of sadness, hopelessness, or despondent
☐c. Lack of interest or pleasure in performing activities
☐d. All of the above
Answer: d. All of the above

7. What test is used to screen for obesity?
☐a. Basal Metabolic Rate (BMR)
☐b. Body Mass Index (BMI)
☐c. Exercise Stress Test
☐d. None of the above
Answer: b. Body Mass Index (BMI)

8. Abdominal Aortic Aneurysm is a bulging of the abdominal aorta artery, the largest blood vessel in the body. This condition can be life threatening if the artery ruptures. At what ages should a male be screened for Abdominal Aortic Aneurysm if they have previously smoked 100 cigarettes or more within their life?
☐a. 45 to 55 years old
☐b. 55 to 65 years old
☐c. 65 to 75 years old
☐d. 75 years and older
Answer: c. 65 to 75

9. Which immunizations should you get after age 50?
☐a. Flu shot
☐b. Pneumonia and Zoster (Shingles)
☐c. Tetanus and Pertussis (Whooping cough)
☐d. All of the above
Answer: d. All of the above

10. How long (in minutes) should you engage in moderate physical activity on a routine basis during the week?
☐a. 5 minutes ☐b. 10 minutes ☐c. 20 minutes ☐d. 30 minutes
Answer: d. 30 minutes

11. You should ask your health care provider for HIV screening if which apply to you?
☐a. You have been treated for an STD
☐b. You have had unprotected sex with multiple partners
☐c. You or your partner have injected drugs or had bisexual relations
☐d. All of the above
Answer: d. All of the above

12. When should women be screened for Osteoporosis (bone thinning)?
☐a. Women age 40
☐b. Women age 65
☐c. Women with a fracture risk equal to or greater than that of a 65 year old woman with no additional risk factors
☐d. B & C
Answer: d. B & C

13. Women between the ages of 21 to 65 years old that are sexually active should have a pap smear to screen for cervical cancer how often?
☐a. Every 1 to 2 years
☐b. Every 2 years
☐c. Every 1 to 3 years
☐d. Every year
Answer: c. Every 1 to 3 years

14. What test is used to screen for breast cancer?
☐a. DEXA Scan ☐b. CT Scan ☐c. MRI ☐d. Mammogram
Answer: d. Mammogram

15. Your health care provider should be consulted regarding screening for sexually transmitted diseases (STDs). Which sexually transmitted disease (STD) can cause heart disease, brain and spinal cord damage, blindness and death?
☐a. HIV ☐b. Chlamydia ☐c. Syphilis ☐d. Gonorrhea
Answer: c. Syphilis

Survey feedback questions:

16. Did your awareness regarding preventive health screening improve after receiving preventive health education?

☐a. Yes ☐b. Somewhat ☐b. No ☐b. Not applicable

17. What do you plan to do with this information (Check all that apply)?
☐a. Get preventive health screening
☐b. Make an appointment for a check-up
☐c. Nothing
☐d. Not applicable

18. Who do you plan to share this information with (Check all that apply)?
☐a. Personal Physician ☐b. Family ☐c. Friends ☐b. No one

19. If you have any comments, please provide feedback regarding quiz below.

References:

Agency for Healthcare Research and Quality (AHRQ) (2011).Women: Stay Healthy at 50+. Retrieved from http://www.ahrq.gov/patientsconsumers/prevention/lifestyle/women-over-50.html

Agency for Healthcare Research and Quality (AHRQ) (2011).Men: Stay Healthy at 50+. Retrieved from http://www.ahrq.gov/patients-consumers/patient-involvement/healthy-men/men-over-50.html

Agency for Healthcare Research and Quality (AHRQ) (2012). Healthy Men: Healthy Men Quiz. Retrieved from http://www.ahrq.gov/patients-consumers/patient-involvement/healthy-men/quiz.html

Centers for Disease Control and Prevention (CDC) (2011). 2011 Behavioral Risk Factor Surveillance System (BRFSS) Questionnaire. Retrieved from http://www.cdc.gov/brfss/questionnaires/pdf-ques/2011brfss.pdf

Appendix K:Preventive Health Screening Knowledge Quiz (PHSKQ) Revision

STOFHLA & PHSKQ

This study is being conducted by researcher Lori M. Williams-Johnson, a doctoral student at Walden University. The purpose of this study is to explore the relationship between preventive health education media and health literacy of the older worker. The responses from this survey will be used to analyze this relationship and provide preventive health education recommendations for the older worker population. The survey should take approximately one hour and your responses are anonymous. Please answer all questions. The specific instructions for completing this survey will be provided in the Informed Consent section.

Your participation in this study is greatly appreciated.

1

STOFHLA & PHSKQ

INFORMED CONSENT FORM

You are invited to take part in a research study to explore older worker health literacy and the educational media that is effective in providing preventive health education. The researcher is inviting older workers 45 years and older of diverse racial groups and job types to be in the study. This form is part of a process called "informed consent" to allow you to understand this study before deciding whether to take part.

This study is being conducted by a researcher named Lori M. Williams-Johnson, who is a doctoral student Walden University.

Background Information:

The purpose of this study is to explore the relationship between preventive health education media and health literacy of the older worker. The subject for this study was selected because there exists a gap regarding age specific methods for educating the older worker concerning preventive health.

Procedures:
If you agree to be in this study, you will be asked to:
Complete an online survey consisting of two tests. The first test will ask questions about basic health information and should be completed in seven minutes. The second test will ask questions about preventive health screening for adults. The overall survey process should take no more than 1 hour to complete.

Voluntary Nature of the Study:
This study is voluntary. Everyone will respect your decision of whether or not you choose to be in the study. No one at Walden University will treat you differently if you decide not to be in the study. If you decide to join the study now, you can still change your mind later. You may stop at any time.

Risks and Benefits of Being in the Study:
This study would not pose risk to your safety or wellbeing. The study's potential benefit is to offer recommendations that will address the preventive health educational needs for the older worker population.

Payment:
The study participant audience obtained through Survey Monkey, will be compensated directly by Survey Monkey.

STOFHLA & PHSKQ

Privacy:
Any information you provide will be kept confidential. The researcher will not use your personal information for any purposes outside of this research project. Data will be kept secure by storage in a secure, locked location with accessibility by only the researcher. Data will be kept for a period of at least 5 years, as required by the university.

Contacts and Questions:
You may ask any questions you have now. Or if you have questions later, you may contact the researcher via the researcher's email address: lori.williams-johnson@waldenu.edu. The researcher has no professional or personal relationships, positions, or circumstances that could contribute to a conflict of interest with any participants of this study. If you want to talk privately about your rights as a participant, you can call a Walden University representative who can discuss this with you. The contact information is (USA number 001-612-312-1210 or email address irb@waldenu.edu). Walden University's approval number for this study is IRB#02-04-15-0058192 and it expires on February 3, 2016.

Statement of Consent:
I have read the above information and I feel I understand the study well enough to make a decision about my involvement. By clicking the link below, I understand that I am agreeing to the terms described above.

INFORMED CONSENT

Statement of Consent:

I have read the above information and I feel I understand the study well enough to make a decision about my involvement. By clicking the link below, I understand that I am agreeing to the terms described above.

Please select "agree" or "do not agree" and enter the date.

☐ I agree to the terms described above. ☐ I do not agree to the terms described above.

☐ DATE (MM/DD/YYYY)

STOFHLA & PHSKQ

STOFHLA INSTRUCTIONS

Here are some other medical instructions that you or anybody might see around the hospital. These instructions are in sentences that have some of the words missing. Where a word is missing, a blank line is drawn, and 4 possible words that could go in the blank appear just below it. I want you to figure out which of those 4 words should go in the blank, which word makes the sentence make sense. When you think you know which one it is, select the letter in front of that word, and go on to the next one. Complete Passage A and Passage B.

Passage A: X-RAY PREPARATION
Passage B: MEDICAID RIGHTS AND RESPONSIBILITIES

PASSAGE A: X-RAY PREPARATION

1. Your doctor has sent you to have a _____X-ray.
   - O a. stomach
   - O b. diabetes
   - O c. stitches
   - O d. germs

2. You must have an _____stomach when come for _____.
   (Please select one answer for each column)

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

3. The X-ray will _____from 1 to 3_____ to do.
   (Please select one answer for each column)

O a. take	O a. beds
O b. view	O b. brains
O c. talk	O c. hours

○ d. look	○ d. diets

4. For supper have only a _____ snack of fruit, _____ and jelly, with coffee or tea.

(Please select one answer for each column)

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

5. After _____, you must not _____ or drink.

(Please select one answer for each column)

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

6. Anything at _____ until after you have _____ the X-ray.

(Please select one answer for each column)

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

7. Do not eat _____. Do not _____, even _____.

(Please select one answer for each column)

○ a. appointment	○ a. drive	○ a. heart
○ b. walk-in	○ b. drink	○ b. breath
○ c. breakfast	○ c. dress	○ c. water
○ d. clinic	○ d. dose	○ d. cancer

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

(Please select one answer for each column)

O a. answers	O a. department
O b. exercises	O b. sprain
O c. tracts	O c. pharmacy
O d. questions	O d. toothache

PASSAGE B: MEDICAID RIGHTS AND RESPONSIBILITIES

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

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

10. I _____ to provide the county information to _____ any statement given in this _____ and hereby give permission to

(Please select one answer for each column)

O a. agree	O a. hide	O a. emphysema
O b. probe	O b. risk	O b. application
O c. send	O c. discharge	O c. gallbladder
O d. gain	O d. prove	O d. relationship

11. The _____ to get such proof. I _____ that for Medicaid I must report any _____ in my circumstances.

(Please select one answer for each column)

O a. inflammation	O a. investigate	O a. changes
O b. religion	O b. entertain	O b. hormones
O c. iron	O c. understand	O c. antacids
O d. county	O d. establish	O d. charges

STOFHLA & PHSKQ

12. Within _____ (10) days of becoming _____ of the change.

(Please select one answer for each column)

O a. three	O a. award
O b. one	O b. aware
O c. five	O c. away
O d. ten	O d. await

13. I understand _____ if I do not like the _____made on my

(Please select one answer for each column)

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

14. Case, I have the _____ to fair hearing. I can _____ a hearing by writing or _____ the county where I applied.

(Please select one answer for each column)

O a. bright	O a. request	O a. counting
O b. left	O b. refuse	O b. reading
O c. wrong	O c. fail	O c. calling
O d. right	O d. mend	O d. smelling

15. If you _____ TANF for any family _____, you will have to _____ a different application form.

(Please select one answer for each column)

O a. wash	O a. member	O a. relax
O b. want	O b. history	O b. break
O c. cover	O c. weight	O c. inhale
O d. tape	O d. seatbelt	O d. sign

16. _____, we will use the _____ on this form to determine your _____.

(Please select one answer for each column)

O a. Since	O a. lung	O a. hypoglycemia
O b. Whether	O b. date	O b. eligibility
O c. However	O c. meal	O c. osteoporosis
O d. Because	O d. pelvic	O d. schizophrenia

STOFHLA & PHSKQ

PHSKQ

KNOWLEDGE QUESTIONS

This section is to obtain participant preventive health screening knowledge information.

1. What is the age should yearly testing of cholesterol levels begin?
   - ○ a. 55
   - ○ b. 35
   - ○ c. 50
   - ○ d. 65

2. What is considered high blood pressure?
   - ○ a. 130/80
   - ○ b. 120/70
   - ○ c. 140/90
   - ○ d. 135/85

3. The testing for colorectal cancer should begin at what age?
   - ○ a. 50
   - ○ b. 40
   - ○ c. 60
   - ○ d. 21

4. High blood pressure and high cholesterol are associated with which other diseases?
   - ○ a. Coronary artery disease
   - ○ b. Diabetes
   - ○ c. Glaucoma
   - ○ d. Hepatitis
   - ○ e. a & b
   - ○ f. b & c
   - ○ g. All of the above

STOFHLA & PHSKQ

5. What things can be done to maintain a healthy lifestyle?
   - ○ a. Eat a nutritious diet, be physically active through regular exercise, and maintain a healthy weight
   - ○ b. No alcohol consumption. IF alcohol is consumed, no more than 1-2 drinks per day.
   - ○ c. Avoid tobacco use
   - ○ d. Obtain preventive screening testing as advised and take prescribed medications as recommended.
   - ○ e. All of the above
6. Screening for depression includes which symptoms:
   - ○ a. Lack of energy and inability to concentrate
   - ○ b. Feelings of sadness, hopelessness, or despondent
   - ○ c. Lack of interest or pleasure in performing activities
   - ○ d. All of the above
7. What test is used to screen for obesity?
   - ○ a. Basal Metabolic Rate (BMR)
   - ○ b. Body Mass Index (BMI)
   - ○ c. Exercise Stress Test
   - ○ d. None of the above
8. Abdominal Aortic Aneurysm is a bulging of the abdominal aorta artery, the largest blood vessel in the body. This condition can be life threatening if the artery ruptures. At what ages should a male with no family history of this condition be screened for Abdominal Aortic Aneurysm if they have previously smoked 100 cigarettes or more within their life?
   - ○ a. 45 to 55 years old
   - ○ b. 55 to 65 years old
   - ○ c. 65 to 75 years old
   - ○ d. 75 years and older
   - ○ e. Not applicable (not male)
9. Which immunizations should you receive after age 50?
   - ○ a. Flu shot
   - ○ b. Pneumonia and Zoster (Shingles)
   - ○ c. Tetanus and Pertussis

○ d. All of the above

10. How long and how often should an individual engage in moderate physical activity on a routine basis during the week?
    - ○ a. 5 minutes, 7 days per week
    - ○ b. 10 minutes, 5-6 days per week
    - ○ c. 20 minutes, 1-3 days per week
    - ○ d. 30 minutes, 3-5 days per week

11. You should ask your health care provider for HIV screening if which apply to you?
    - ○ a. You have been treated for an STD
    - ○ b. You have had unprotected sex with multiple partners
    - ○ c. You or your partner have injected drugs or had bisexual relations
    - ○ d. All of the above

12. When should women be screened for Osteoporosis (bone thinning)?
    - ○ a. Women age 40
    - ○ b. Women age 65
    - ○ c. Women with a risk for breaking a bone equal to or greater than that of a 65 year old woman with no additional risk factors
    - ○ d. B & C
    - ○ e. Not applicable (not female)

13. Women between the ages of 21 to 65 years old that are sexually active should have a pap smear to screen for cervical cancer how often?
    - ○ a. Every 1 to 2 years
    - ○ b. Every 2 years
    - ○ c. Every 1 to 3 years
    - ○ d. Every year
    - ○ e. Not applicable (not female)

STOFHLA & PHSKQ

14. What test is used to screen for breast cancer?
    - ○ a. Dexa Scan
    - ○ b. CT Scan
    - ○ c. MRI
    - ○ d. Mammogram
    - ○ e. Not applicable (not female)

15. Your health care provider should be consulted regarding screening for sexually transmitted diseases (STDs). Which sexually transmitted disease (STD) can cause heart disease, brain and spinal cord damage, blindness and death?
    - ○ a. HIV
    - ○ b. Chlamydia
    - ○ c. Syphilis
    - ○ d. Gonorrhea

STOFHLA & PHSKQ

PHSKQ

EXPOSURE QUESTIONS

This section is to obtain participant preventive health screening education exposure information.

1. What methods of preventive health education have you been exposed to in the last 30 days? How many times were you exposed to preventive health education in the last 30 days?

	Have you been exposed to this method?	Number of times exposed?
a. Television	☐	☐
b. Radio	☐	☐
c. Pamphlet or Flyer	☐	☐
d. Newspaper	☐	☐
e. Internet	☐	☐

2. How effective was exposure to preventive health education in the last 30 days on improving your awareness regarding preventive health screening?

○ a. Ineffective

○ b. Slightly effective

○ c. Neither ineffective or effective

○ d. Effective

○ e. Very effective

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3. How effective do you perceive each of the following methods in providing preventive health education?

	Ineffective	Slightly effective	Neither ineffective or effective	Effective	Very effective
a. Television	○	○	○	○	○
b. Radio	○	○	○	○	○
c. Pamphlet or Flyer	○	○	○	○	○
d. Newspaper	○	○	○	○	○
e. Internet	○	○	○	○	○

4. Where these methods effective in improving preventive health screening literacy (knowledge about preventive health)?

	Ineffective	Slightly effective	Neither ineffective or effective	Effective	Very effective
a. Television	○	○	○	○	○
b. Radio	○	○	○	○	○
c. Pamphlet or Flyer	○	○	○	○	○
d. Newspaper	○	○	○	○	○
e. Internet	○	○	○	○	○

PHSKQ

STUDY PARTICIPANT QUESTIONS
This section is to obtain study participant information.

1. What do you plan to do with this information (Check all that apply)?
   - ○ a. Get preventive health screening
   - ○ b. Make an appointment for a check-up
   - ○ c. Ask your physician what preventive health screening you should obtain
   - ○ d. All of the above
   - ○ e. Nothing
2. Who do you plan to share this information with (Check all that apply)?
   - ○ a. Personal Physician
   - ○ b. Family
   - ○ c. Friends
   - ○ d. All of the above
   - ○ e. No one
3. Would you like to receive preventive health screening education? Please select the preventive health screening education desired (more than one selection can be made), then select "click here" to be directed to the specific website for this information.
   - ○ Pamphlet/Flyer by AHRQ: Stay Healthy at 50+ for Men click here
   - ○ Pamphlet/Flyer by AHRQ: Stay Healthy at 50+ for Women click here
   - ○ Interactive tool via NHIC: My Healthfinder Widget click here
   - ○ Educational video by Monkeysee.com: Men's Health Check-Ups & Preventive Screenings click here
   - ○ Educational video by Monkeysee.com: Preventive Screenings for Women click here
   - ○ I do not wish to receive preventive health screening education

STOFHLA & PHSKQ

4. If you have any comments, feedback or suggestions regarding this quiz, please provide below. Enter none if you have no feedback.

This quiz was designed using the following resources with permission:
Agency for Healthcare Research and Quality (AHRQ)
(2011).Women: Stay Healthy at 50+. Agency for Healthcare
Research and Quality (AHRQ) (2011).Men: Stay Healthy at 50+.
Agency for Healthcare Research and Quality (AHRQ) (2012). Healthy Men: Healthy Men Quiz.
Centers for Disease Control and Prevention (CDC) (2011). 2011 Behavioral Risk Factor Surveillance System (BRFSS) Questionnaire.

Thank you for participating in this study.

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PHSKQ

DEMOGRAPHIC QUESTIONS
This section is to obtain participant background information.

1. What is your age?
   - ○ a. 45-54
   - ○ b. 55-64
   - ○ c. 65-74
   - ○ d. 75-84
   - ○ e. 85-94
   - ○ f. 95+

2. What is your gender?
   - ○ a. Male
   - ○ b. Female

3. What is your race?
   - ○ a. White/Caucasian
   - ○ b. Black/African American
   - ○ c. Hispanic or Latino
   - ○ d. Asian
   - ○ e. Other

STOFHLA & PHSKQ

4. What is your highest level of education? Select the highest level attained using the drop down box. The second column should be completed if you have attended a technical school or college but did not complete a specific course of study.
(Example: one year of cosmetology school; one year of college)

	Grade (Grades 1 through 12)	Number of Yrs Attended Tech School or College
O a. Elementary	_____	_____
O b. Middle School	_____	_____
O c. High School Graduate	_____	_____
O d. Technical School (attended)	_____	_____
O e. Technical School Graduate	_____	_____
O f. College	_____	_____
O g. Bachelor's Degree	_____	_____
O h. Graduate School (attended)	_____	_____
O i. Master's Degree	_____	_____
O j. PhD Degree	_____	_____

5. What is your occupation?

_____

6. What is your employment status?
O a. Full time
O b. Part time
O c. Unemployed
O d. Other

Appendix L: Permission to use Healthfinder Widget

-----Original Message-----
From: National Health Information Center <info@nhic.org>
To: lmwmsj <lmwmsj@aol.com>
Sent: Tue, May 29, 2012 2:27 pm
Subject: RE: Offline Survey from the Support queue on dev.healthfinder.gov - 5/29/2012 11:57:02 AM (5/29/2012 3:57:02 PM - GMT)

Dear Ms. Johnson,

Thank you for visiting Web chat on healthfinder.gov. healthfinder is a government Web site featuring prevention and wellness information and tools to help you and those you care about stay healthy. At healthfinder.gov, you will find:

- interactive tools like menu planners and health calculators
- online checkups
- printable information that you can share with a family member or take to the doctor.

healthfinder.gov is coordinated by the Office of Disease Prevention and Health Promotion (ODPHP), U.S. Department of Health and Human Services and the National Health Information Center (NHIC). NHIC links people to organizations that provide reliable health information.

Since healthfinder.gov is in the public domain (with the exception of anything that is noted to be copyrighted), permission is granted to use the myhealthfinder widget at: http://www.healthfinder.gov/widgets/.

Sincerely,

Racine Freeman
Information Specialist
healthfinder.gov/NHIC
P.O. Box 1133
Washington, DC 20013-1133
healthfinder@nhic.org or info@nhic.org
301-565-4167

healthfinder.gov and NHIC are information and referral services only. We do not give medical advice or recommend health care products or services.

healthfinder.gov has now incorporated many of the preventive services covered by the Affordable Care Act (ACA) into our *Quick Guide to Healthy Living*. Start with the myhealthfinder tool to get personalized health information and see what preventive services you may need.

From: lmwmsj@aol.com [mailto:lmwmsj@aol.com]
Sent: Tuesday, May 29, 2012 11:57 AM
To: info@nhic.org
Subject: Offline Survey from the Support queue on dev.healthfinder.gov - 5/29/2012 11:57:02 AM (5/29/2012 3:57:02 PM - GMT)

Offline Survey

Your Name:
Lori Williams-Johnson
Email Address:
lmwmsj@aol.com
Subject:
Need to request permission to use Healthfinder Widget for research
Message:
I am a graduate student working on my PhD dissertation and would like to find out how to request to use the Health finder widget in my research. (301)613-0165
Email Address, Subject, and Message are required so we can respond to your request when our operators are back online

Appendix M: Permission to use Monkeysee Videos

-----Original Message-----
From: Support <Support@knowlera.com>
To: lmwmsj <lmwmsj@aol.com>
Sent: Fri, Mar 2, 2012 3:01 pm
Subject: Re: Monkeysee.com Contact Inquiry

Yes, it is approved.

Sincerely,
MonkeySee Support

From: <lmwmsj@aol.com>
Date: Fri, 2 Mar 2012 13:20:28 -0500
To: William Jerro <Support@knowlera.com>
Subject: Re: Monkeysee.com Contact Inquiry

Hello,

Is this request approved? Please let me know. Thank you.

Lori Williams-Johnson

-----Original Message-----
From: Support <Support@knowlera.com>
To: lmwmsj <lmwmsj@aol.com>
Sent: Fri, Mar 2, 2012 12:31 pm
Subject: Re: Monkeysee.com Contact Inquiry

That's fine

From: <lmwmsj@aol.com>
Date: Fri, 2 Mar 2012 12:06:57 -0500
To: William Jerro <Support@knowlera.com>
Subject: Re: Monkeysee.com Contact Inquiry

Hello,

I would like to the videos for both--link to them and reference material. Please let me know if permission can be granted. I am a PhD student at Walden University and can supply information if needed. Thank you.
Lori Williams-Johnson

-----Original Message-----
From: Support <Support@knowlera.com>
To: lmwmsj <lmwmsj@aol.com>

Sent: Fri, Mar 2, 2012 12:02 pm
Subject: Re: Monkeysee.com Contact Inquiry

Hi Lori,

Please let us know specifically how you would like to use the videos (i.e.
Link to them, reference material from them, etc.) Thank you

On 3/1/12 3:54 PM, "lmwmsj@aol.com" <lmwmsj@aol.com> wrote:

>You have a new Monkeysee.com Contact Inquiry:
>First Name / Last Name: Lori Williams Johnson
>Email Address: lmwmsj@aol.com
>Phone: 301-613-0165
>Business Name: N/a
>Comments: I would like to use 2 preventive health videos as a part of my
>PhD dissertation research. The videos are Men's Health-Check-Ups and
>Preventive Screenings and Preventive Health Screenings for Women. Please
>let me know how to be granted permission. Thank you.

Appendix N: Informed Consent

INFORMED CONSENT FORM

You are invited to take part in a research study to explore older worker health literacy and the educational media that is effective in providing preventive health education. The researcher is inviting older workers 45 years and older of diverse racial groups and job types to be in the study. This form is part of a process called "informed consent" to allow you to understand this study before deciding whether to take part.

This study was conducted by a researcher named Lori M. Williams-Johnson, who is a doctoral student Walden University.

Background Information:
The purpose of this study was to explore the relationship between preventive health screening education media and health literacy of the older worker.

Procedures:
If you agree to be in this study, you will be asked to:

- Complete acknowledgement of informed consent. This will take 5 minutes.
- Access the surveys for this study through an online link to the Survey Monkey application.
- Take the short form Test of Functional Health Literacy in Adults (STOFHLA) survey. This test will take 7 minutes.
- Take the Preventive Health Screening Knowledge (PHSK) quiz. This test will take 30-45 minutes.

The overall survey process should take no more than 1 hour to complete.

Here are some sample questions:

STOFHLA: Your doctor has sent you to have a _____X-ray.
Select one of the following to fill in the blank:

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

PHSK Quiz: What is the age should yearly testing of cholesterol levels should begin?
Select one of the following:

(a) 55
(b) 35
(c) 50
(d) 65

Voluntary Nature of the Study:
This study is voluntary. Everyone will respect your decision of whether or not you choose to be in the study. No one at Walden University will treat you differently if you decide not to be in the study. If you decide to join the study now, you can still change your mind later. You may stop at any time.

Risks and Benefits of Being in the Study:
This study will pose minimal risk to your safety or wellbeing. The study's potential benefit was to offer recommendations that will address the preventive health educational needs for the older worker population.

Payment:
Participants will not be paid by the researcher. If the study participant audience is obtained through Survey Monkey, the associated costs will be paid directly to Survey Monkey.

Privacy:
Any information you provide will be kept confidential. The researcher will not use your personal information for any purposes outside of this research project. Also, the researcher will not include your name or anything else that could identify you in the study reports. Data will be kept secure by storage in a secure, locked location with accessibility by only the researcher. Data will be kept for a period of at least 5 years, as required by the university.

Contacts and Questions:
You may ask any questions you have now. Or if you have questions later, you may contact the researcher via the researcher's email address: lori.williams-johnson@waldenu.edu. If you want to talk privately about your rights as a participant, you can call Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number is 612-312-1210 (for US based participants. Walden University's approval number for this study is **IRB will enter approval number here** and it expires on **IRB will enter expiration date.**

Please print or save this consent form for your records. (for online research)

Statement of Consent:
I have read the above information and I feel I understand the study well enough to make a decision about my involvement. By clicking the link below, I understand that I am agreeing to the terms described above.
❍ I agree to the terms described above.
❍ I do not agree to the terms described above.

Date of consent: 00/00/0000