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Assessing Organizational Health Literacy at an Academic Health Center: A Quantitative Research Study

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Assessing Organizational Health Literacy at an Academic Health Center:
A Quantitative Research Study

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Abstract

Inadequate health literacy is a national health problem that affects about 90 million Americans. Health literacy is the degree to which a person is able to make good health decisions based on his/her ability to read, understand, and use health information and services. Organizational Health Literacy (OHL) is the degree to which an organization considers and promotes the health literacy of patients by providing easy to read, understand, and use health information and services. Since it is difficult to determine which patients have inadequate health literacy, a recommended intervention for addressing health literacy is to use OHL practices at all patient-provider interactions. The purpose of this research study was to assess OHL practices at a large academic health center using criteria found in the ten attributes of a health literate healthcare organization (HLHO).

A survey research design was used to collect quantitative data to perform a needs assessment of OHL practices. An online survey that assesses the *Ten Attributes of a Health Literate Healthcare Organization* was distributed to current employees at the research site. A total of 463 survey responses were received over a ten-week period. On a 7-point Likert-type scale, the mean response on how well the organization considers and promotes the health literacy of patients was 4.72. Univariate analysis of variance revealed that there were no statistically significant differences at the 0.05 level of significance in employee responses to the survey questions based on health profession ($p > 0.05$), years of service ($p > 0.05$), or level of patient contact ($p > 0.05$).

Analyses of employee ratings of OHL practices based on race, gender, age, and education revealed that there were statistically significant differences in employee responses based on employees' highest education completed only. Employees with college degrees provided the

lowest ratings of OHL practices at their organization. Findings revealed that employee ratings of OHL practices indicated that the organization is not adequately considering nor promoting the health literacy of patients, and improvements are needed in all areas to become a health literate healthcare organization.

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"An intelligent heart acquires knowledge, and the ear of the wise seeks knowledge." *Proverbs 18:15*

Dedication

This dissertation is dedicated to my wonderful sons Jaylen and Ethan who have been very patient with me throughout my studies. I hope that this dissertation will inspire both of you to do great things and know that anything is possible. I also thank my family and friends for their support over the years. Most importantly, I am extremely appreciative of my Dear Mother, Marilyn Prince, who has been my inspiration and source of strength due to her hard work and unconditional love.

Table of Contents

List of Tables

List of Figures

Chapter I. Introduction

Low health literacy (LHL) is a national health problem that affects persons from all backgrounds (Baur, 2011). Health literacy is defined as the degree to which people can make appropriate health decisions based on how well they comprehend health information and healthcare services (U.S. Department of Health and Human Services [DHHS], 2014). Organizational health literacy (OHL) is an organization's ability to assist individuals with LHL by providing easy-to-use and understand health information and healthcare services (Centers for Disease Control and Prevention [CDC], 2014). OHL practices are important since a patient's health literacy is influenced not only by understanding health information but also by increasing demands to personally navigate the healthcare system (Brach et al., 2012). Since it is difficult to determine which patients struggle with health literacy, researchers believe that a better way to help patients having LHL is to use OHL practices by improving health information and healthcare services (Berwick et al., 2012; Frosch & Elwyn, 2014; Koh, Brach, Harris, & Parchman, 2013).

LHL influences a person's ability to make good health decisions. Patients' health literacy skills are often diminished due to complex health information and an ever more complicated healthcare system. Health literacy skills are further compromised by poor patient-provider communication (Brach et al., 2012). Therefore, healthcare organizations have to better assist patients who struggle to understand health information. Improving health information and healthcare services by promoting OHL practices will help address the many problems associated with LHL, such as poor health outcomes, unnecessary use of emergency services, and increased healthcare costs. While more organizations are becoming aware of the relationship between LHL, negative health outcomes, and increased healthcare spending, many organizations still

have difficulty understanding how to effectively assist those with LHL and, most importantly, determining exactly what it means to be a health-literate healthcare organization (HLHO) (Hernandez, 2012). A HLHO promotes use of health literacy practices at all times and with all patients. By promoting use of OHL practices, healthcare organizations can help to reduce the health literacy demands on patients and their families to mitigate the negative outcomes associated with LHL.

For organizations in need of assistance to improve health information and healthcare services, the Agency for Healthcare Research and Quality (AHRQ) provides guidance on assessing and promoting OHL practices through the Health Literacy Universal Precautions Toolkit (HLUPT) (Brega et al., 2015; DeWalt et al., 2010). The HLUPT was designed as a resource for assisting healthcare organizations in making systematic changes in healthcare practices that lead to development of HLHOs. The first HLUPT recommendation is to assess OHL practices and then to take steps to improve and promote consistent use of these practices. Using AHRQ's recommendations, this research study performed a needs assessment of OHL practices at an academic health center that serves patients at all health literacy levels.

Overview of the Issues

In the U.S., approximately 90 percent of Americans are affected by LHL (DHHS, 2014). LHL affects the ability to understand health information often available at community health centers or clinics, pharmacies, and hospitals; LHL also affects the ability to navigate healthcare systems, make important health decisions, and gain access to healthcare services (DHHS, 2014). A recent survey of health literacy in Arkansas shows that about 37 percent of adults are affected by LHL, with persons living in Arkansas's rural areas at greatest risk for LHL skills (Arkansas Department of Health, 2013). Taking medications improperly, not attending health screenings,

failing to follow hospital discharge instructions, and missing important medical exams are among the many poor health behaviors typically associated with LHL (Berkman, Sheridan, Donahue, Halpern, & Crotty, 2011a). In addition, patients with LHL are at greater risk for chronic diseases and are known to have a higher rate of hospital admissions (Broucksou et al., 2011; Charet, 2010; DeWalt et al., 2010; Volandes & Paasche-Orlow, 2007). Higher rates of hospital admissions can be costly to the healthcare system. For example, the AHRQ reported that in 2011 about $41.3 billion in hospital costs were associated with hospital readmissions (Hines, Barrett, Jiang, & Steiner, 2014), and LHL is a significant contributor to being readmitted to the hospital or visiting the emergency room within 30 days of hospital discharge (Mitchell, Sadikova, Jack, & Paasche-Orlow, 2012).

Only 10 percent of Americans have adequate health literacy skills; several research studies show that LHL affects the ability to effectively manage chronic health conditions and maintain a healthy lifestyle (Pleasant et al., 2013; Volandes & Paasche-Orlow, 2007; Weaver, Wray, Zellin, Gautam, & Jupka, 2012). As a result, Healthy People (HP) 2010, the national public health agenda aimed at improving health in the United States, has made improving health literacy one of its national health goals (Charet, 2010). The HP goals are revised every ten years, and health literacy remains a priority in the current HP 2020 goals (Office of Disease Prevention and Health Promotion [ODPHP], 2014). To meet the HP 2020 health literacy goal, the AHRQ encourages healthcare organizations to use OHL practices with all patients and take necessary steps to transition to HLHO's. Since it is not feasible to obtain the resources needed to make significant improvements in the health literacy skills of every patient who struggles to understand health information and healthcare services (Frosch & Elwyn, 2014), improving OHL

practices is noted to be the best intervention for assuring easy-to-understand and to use health information and services available to everyone, particularly those with LHL (Brega et al., 2015).

Health literacy is known to affect virtually every aspect of healthcare delivery; therefore, researchers recommend improving OHL practices in all areas of the healthcare system and encouraging healthcare personnel who routinely interact with patients to improve all forms of patient-provider communication, both verbal and written (Coleman, 2011). The AHRQ provides several recommendations for improving OHL practices; one of those recommendations is the use of health literacy universal precautions (Barnard et al., 2015; Brega et al., 2015; DeWalt, Callahan, Hawk, Bourcksou, & Hink, 2010). The term *universal precautions* refers to providing easy-to-understand health information for all patients regardless of health literacy status. Use of universal precautions when working with patients assumes that everyone is at risk for LHL and can benefit from easy-to-understand health information (DeWalt et al., 2010). There are different levels of health literacy ranging from below basic to proficient health literacy, all having varying degrees of effect on patient health behaviors and health outcomes. Therefore, assuming that all patients struggle with health literacy at some point in his/her life, promoting OHL practices through use of health literacy universal precautions creates a healthcare environment conducive to patients of all health literacy levels (Baur, 2011; DeWalt et al., 2011; Koh et al., 2013). In addition, improving OHL practices is an important step toward strengthening health promotion and prevention efforts that can be negatively impacted by LHL.

As the U.S. population grows more diverse, healthcare organizations will be even more challenged with an increase in patients with LHL due to cultural values and language barriers (Lie, Carter-Pokroa, Braun, & Coleman, 2012). Several instruments are available to identify patients with LHL (Berkman et al., 2011b); however, administering those instruments takes time

that health professionals often do not have due to increased healthcare demands, and patients are not obligated to take health literacy assessments. Improving OHL practices and supporting use of health literacy universal precautions reduces the need to test patients' health literacy skills and assures that health information is clear and easy-to-understand for all patients regardless of health literacy status (DeWalt et al., 2011). The literature shows that all patients prefer easy-to-understand health information, even those who do not struggle with health literacy (Otal et al., 2012; Weiss et al., 2007).

Problem Statement

Lack of adequate OHL practices among medical staff contributes to LHL among patients. LHL leads to higher healthcare costs because of increased and unnecessary use of healthcare services. Vernon et al. (2007) estimated that LHL costs the United States an estimated $106 to $238 billion annually in medical costs resulting from increased use of emergency services, more hospitalizations, and poor management of chronic illnesses.

Purpose Statement

The purpose of this quantitative research study is to assess OHL practices at the Academic Health Center (AHC) by applying the criteria found in the ten attributes of a health-literate healthcare organization (Brach et al., 2012).

Research Question

To what extent do AHC employees think that their organization considers and promotes the health literacy of patients?

Hypotheses

Hypothesis 1

H_0: There are no statistically significant differences among the ratings of OHL practices at the AHC by employees' health profession.

H_1: There are statistically significant differences among the ratings of OHL practices at the AHC by employees' health profession.

Hypothesis 2

H_0: There are no statistically significant differences among the ratings of OHL practices at the AHC based on the employees' years of service.

H_1: There are statistically significant differences among the ratings of OHL practices at the AHC based on the employees' years of service.

Hypothesis 3

H_0: There are no statistically significant differences among the ratings of OHL practices at the AHC based on the employees' level of patient contact.

H_1: There are statistically significant differences among the ratings of OHL practices at the AHC based on the employees' level of patient contact.

Theoretical Framework

Systems Theory

The theoretical framework for assessing OHL practices in this research study is systems theory. Systems theory was introduced by Ludwig von Bertalanffy in 1928 and is defined as "a theory concerned with systems, wholes, and organizations" (Swanson & Holton, 2001, p. 114). Systems theory variations include general systems theory, cybernetics, chaos theory, complex adaptive systems, and futures theory. Janecka (2009) described a system as a number of

components that are engaged in ongoing relationships. Each component is fully dependent on the transfer of information from other areas within the system to maximize performance (Janecka, 2009). Since improving OHL practices is known as a systems approach to addressing LHL, systems theory is an appropriate framework for assessing OHL practices in this research study. Application of systems theory will help to assess employee perceptions of OHL practices throughout the organization that impact patient outcomes. Systems theory aims to understand organizational processes that affect the entire system and how all the parts work together through interconnected relationships. It is the framework by which organizations are viewed as a collection of interrelated parts that work together toward a shared goal (Swanson & Holton, 2001).

In this research study, systems theory was used as the framework for assessing OHL practices that promote health literacy. The AHC consists of various departments and divisions that work together to improve the health of all patients through research, education, and healthcare services. The AHC is a system of interconnected parts that work together for greater efficacy in healthcare practices. Therefore, failing to take a systems approach to addressing health literacy affects that the entire organization and may eventually have a negative effect on healthcare practices within the healthcare system. It is important to have strong working relationships and increased collaboration throughout the organization to ensure quality healthcare services. If one part of the system is not functioning well, it is likely to reflect organizational performance as a whole.

The relationships that healthcare organizations form with external entities are important for growth and development, and organizational growth and development is often linked to quality improvement initiatives. For example, healthcare organizations often collaborate with

insurance companies, drug companies, government agencies, schools, and community organizations such as churches. Internal and external relationships help to improve organizational performance and organizational performance influences health outcomes; better health outcomes help to reduce healthcare spending. The specific aim for most healthcare organizations such as the AHC is to improve health and to reduce healthcare spending (Institute for Healthcare Improvement (IHI), 2016). Since patients' health literacy is influenced by patient-provider interactions, patient-provider communication is critical to strengthen working relationships and improve productivity. For example, patients with chronic diseases and advanced treatment plans are seen in various clinics and interact with health professionals in all areas of the AHC. Insufficient health literacy practices in one clinic could interfere with patient care in other clinics. Therefore, it is important to promote use of OHL practices in all areas.

Open and Closed Systems. Organizations may be classified as open or closed systems. Open systems are more inclusive of environmental factors, whereas closed systems place more emphasis on internal operating procedures. Most systems are considered open systems (Swanson & Holton, 2001), and healthcare systems normally fall into this category. Organizations that operate as open systems are influenced by internal and external environmental factors such as federal and state policies. For this reason, healthcare organizations are typically classified as open systems. Open systems are also known to be more functional due to the level of involvement of all parts of the system. Another important characteristic of an open system is communication, which is especially important for open systems to be fully functional. Janecka (2009) stated that "communication within healthcare and its external environment is greatly handicapped by existing gaps in health literacy" (p. 10).

Open systems are comprised of various departments and divisions within the organization. While there are several departments at the AHC, each is unique and provides a range of services, yet it is important for all departments to promote use of OHL practices. The success of the healthcare systems is highly dependent on the ability to anticipate and adjust to environmental changes (Swanson & Holton, 2001), such as the need for promoting OHL practices to address public health problems associated with LHL. Systems theory provides the framework for understanding ongoing environmental changes that affect an organization's capacity for adjusting to change and, thus, to enhance performance. Healthcare organizations must be willing to make systematic changes in the delivery of healthcare practices when needed to meet public health needs. Improving patient health outcomes by focusing on health literacy is a current public health agenda in which healthcare organizations can add significant contributions by changing communication practices through systemwide use of OHL practices at all times and in all patient-provider interactions.

Ten Attributes of Health-Literate Healthcare Organizations

In addition to systems theory, the *Ten Attributes of Health-Literate Healthcare Organizations* (Brach et al., 2012) were used as a guide for assessing the extent to which the AHC considers and promotes the health literacy of patients. They are applicable to the organizational performance of the entire organization and recommend making systemic changes that improve performance in all areas of the organization. Healthcare organizations that conform to these attributes create an environment that considers and promotes the use of OHL practices in all areas of patient care (Brach et al., 2012). The ten attributes of a HLHO are as follows:

1. Has leadership that makes health literacy integral to its mission, structure, and operations.

2. Integrates health literacy into planning, evaluation measures, patient safety, and quality improvement.
3. Prepares the workforce to be health-literate and monitors progress.
4. Includes populations served in the design, implementation, and evaluation of health information and services.
5. Meets the needs of populations with a range of health literacy skills while avoiding stigmatization.
6. Uses health literacy strategies in interpersonal communications and confirms understanding at all points-of-contact.
7. Provides easy access to health information and services and navigation assistance.
8. Designs and distributes print, audiovisual, and social media content that is easy to understand and act on.
9. Addresses health literacy in high-risk situations, including care transitions and communications about medicines.
10. Communicates clearly what health plans cover and what individuals will have to pay for services. (Brach et al., 2012, p. 3)

Needs Assessment

A needs assessment of OHL practices using employee feedback on use of the ten attributes of health-literate organizations at their place of employment was used to assess the extent to which the AHC considers and promotes the health literacy of patients. A needs assessment is a systematic approach to evaluating organizational policies, procedures, and outcomes (Altschuld & Witkin, 2000). There are four types of needs assessments: strategic needs assessment, competency-based needs assessment, job and task analysis, and training needs

assessments (Gupta, 1999). Strategic needs assessments are used to increase collaboration throughout the organization and facilitate continuous performance improvement (Gupta, 1999). Strategic needs assessments are also useful for assessing organizational performance based on the organization's mission.

Before performing a needs assessment, it is important to determine the type of assessment needed to obtain the desired outcomes, also known as the pre-assessment phase of the needs assessment. For this research study, a brief strategic needs assessment was used to assess OHL practices in a healthcare environment. Organizations use competency-based assessments to evaluate employee job performance, such as the knowledge, skills, and attitudes needed for optimal job performance. Job and task analyses assess specific job tasks to develop or revise job descriptions, whereas training needs assessments determine where additional training is needed to improve performance based on job descriptions and specific tasks.

Strategic Needs Assessments

A strategic needs assessment was the best approach for performing the assessment of OHL practices in this research study for many reasons. Strategic needs assessments examine organizational performance and are useful for identifying strengths and weaknesses in healthcare practices (Gupta, 1999). Data are collected through interviews, focus groups, questionnaires, and/or observations. For this study, a questionnaire was used as the data collection instrument due to time constraints and the availability of a reliable and validated questionnaire that is aligned with the purpose of the study, i.e., to assess OHL practices at an academic health center. The Agency for Healthcare Research and Quality recommends performing a strategic needs assessment prior to developing a performance improvement plan for addressing health literacy (Brega et al., 2015).

Since data was used to assess OHL practices in all departments at the AHC, a strategic needs assessment was the most appropriate type of assessment for this study. According to Gupta (1999), it is beneficial to use a strategic needs assessment when the goal of the assessment is to link performance improvement to the overall organizational strategy and mission. An assessment of OHL practices was needed to ensure that the study site is considering and promoting the health literacy of all patients. A needs assessment was used in this research study because planned organizational development processes are normally derived from needs assessments or analyses of current organizational practices (Borkowski, 2011). Identifying strengths and weaknesses in OHL practices will help to facilitate systemic changes that may lead to organizational development and improvements in health information and healthcare services.

Methods

This research project used a three-way factorial ANOVA design with the three factors being 1) the HLHO-10 questions, 2) specific employee demographics related to workplace status, and 3) general demographics such as age, race, gender, and education. The HLHO-10 questions were adapted from a recent survey titled the Health-Literate Healthcare Organization 10 Item Questionnaire (Kowalski et al., 2015). Kowalski et al. (2015) used AHRQ's *Ten Attributes of Health-Literate Healthcare Organizations* to develop a validated questionnaire that assesses organizational health literacy. The ten questions from the Health-Literate Healthcare Organization Questionnaire (HLHO-10) (Kowalski et al., 2015) were used to assess employee's perception of OHL practices at the AHC. The HLHO-10 survey has only ten questions and requires only a few minutes for participants to read and rate their organization. There were also be a few demographic questions to explore relationships between specific employee

characteristics, making the entire questionnaire a total of 18 questions and no more than 10 minutes to complete.

The HLHO-10 was tested for reliability and validity in 51 German hospitals. The survey was mailed to hospital directors at each of the study sites. Researchers found the instrument to have good psychometric properties for assessing the extent to which the hospitals were implementing OHL practices based on Brach et al.'s (2012) ten attributes of HLHO's. Kowalski et al. (2015) concluded that the HLHO-10 is a useful tool for making self-assessments of OHL practices that consider the health literacy of patients. Therefore, the HLHO-10 was administered to AHC employees to gain an overall assessment of OHL practices at the project site (Research Question). Responses from the OHL assessment were also used to evaluate differences in employees' perception of health literacy practices by health profession, years of service, and level of patient contact (Hypotheses 1-3).

Data Collection

Participants were be emailed an invitation to participate in the study. The email included the online survey link and a brief explanation of the research study. The online survey began with a brief overview of the survey content, followed by the statement of informed consent. Consent was implied when participants clicked on the link to access the survey questions. Participation was strictly voluntary, and all survey responses were confidential. To encourage participation, employees were made aware of the implications of LHL and the importance of promoting health literacy by developing a health-literate healthcare environment. At the end of data collection, all data were downloaded and stored on a secure, password-protected USB drive.

Data Analysis

Data was analyzed using SPSS statistical software. Descriptive statistics displaying characteristics of the sample population are in Table 1. Descriptive statistics also show employee ratings from the HLHO-10 survey questions (Research Question). In addition, analysis of variance (ANOVA) is the statistical procedure used to perform an analysis of survey responses by health profession (registered nurse, staff physician, administration, etc.), years of service (less than 1 year, between 1 and 5, 6 to 10, 11 to 15, 16 to 20, or more than 21 years of service), and the level of patient contact (0-10%, 11-50%, more than 51%). Demographic factors including questions regarding race, gender, age, and level of education were also considered when reviewing and analyzing the data. Demographic questions were used when making comparisons of employee ratings of OHL practices at their current workplace.

Setting and Sample

The research site for the study was a major academic health center that is referred to as the AHC in this research project. The mission of the AHC is to improve the health and well-being of all Arkansans. The AHC not only provides healthcare services but also educates future health professionals and conducts ongoing research. The organization has regional centers throughout the state and many of these centers serve rural underserved populations who have limited access to healthcare. Arkansans living in rural areas are also more likely to have LHL skills (Arkansas Department of Health (ADH), 2013). The ADH (2013) reported that at least 25% of the population in each county in Arkansas has LHL. To improve health literacy, the AHC began exploring ways to better assist patients to improve health outcomes, decrease unnecessary use of healthcare services, and decrease healthcare spending. In 2012, the AHC developed a health literacy program to assist with addressing LHL to improve healthcare services and patient

health outcomes. The health literacy program has assessed health literacy practices in regional centers located throughout Arkansas and provided health literacy training to health professionals working in these areas (AHRQ, 2014).

In 2014, the AHC expanded its health literacy program and established a health literacy department. The mission of the health literacy department is to improve the health of all Arkansans by making health information easier to understand and use for all patients regardless of health literacy skills (Center for Health Literacy, 2015). The health literacy department increased its efforts to address LHL by promoting OHL practices throughout the AHC as well as the state. So far, the health literacy department has been successful at administering health literacy trainings to health professionals and students at the AHC as well as other state agencies. The center performs readability assessments on health materials and makes edits based on plain language best practices to help patients better understand written health material. The health literacy department also encourages health professionals to improve communication with patients through use of health literacy techniques found in the HLUPT, such as teach-back. Efforts to include health literacy curriculum in health professions programs are currently underway. The department's assistance with promoting OHL practices at the ACH is helping to increase the awareness of LHL and its impact on patient health outcomes and healthcare costs.

In addition to promoting use of OHL practices, the health literacy department collects health literacy data on patients who visit regional centers. When patients visit the centers for routine physician appointments, they are asked a brief health literacy screening question that assesses their level of health literacy. This health literacy data will be useful for population health initiatives and conducting future health literacy research. The health literacy department provides ongoing support for improving OHL practices throughout the organization. A needs

assessment of OHL practices will assist the department in continuing ongoing efforts to promote a health-literate healthcare environment at the AHC.

The AHC has more than ten thousand employees in all health professions. Nonprobability purposive sampling was used to recruit employees from areas of the organization. This sampling technique ensured all employees had an equal chance of being selected and prevented the opportunity for bias in survey results. Including all employees in the recruitment process was necessary to collect responses from employees at all levels of employment and from all departments, particularly those with extensive knowledge of organizational policies and operating procedures regarding patient care. Participation of employees who have direct contact with patients and those with knowledge of current AHC practices was important for ensuring a representative sample generalizable to the entire AHC employee population. To compare survey responses across multiple health professions, it was also necessary to recruit participants from various departments and colleges, i.e., colleges of medicine and pharmacy, the nursing department, hospital administration, etc. According to the AHC's website, there are currently 10,300 employees (AHC, 2016). Using a 95 percent confidence level, the targeted sample size to complete the OHL assessment was 371 employees.

Operational Definitions

Department. The specific departments and/or sub-departments at the Academic Health Center identified as the employee's home department. The answer options were derived from the departments listed on the organizations' website.

General Systems Theory. A theory whose primary focus is the level of interaction that occurs between the parts of the system; systems inputs, outputs, and ongoing feedback are especially important (McLean, 2006).

Health Literacy. The ability to obtain, process, and understand health information and healthcare services to make informed health decisions (DeWalt et al., 2010).

Health-Literate Healthcare Organization (HLHO-10) Questionnaire. A 10-item questionnaire that assesses organizational health literacy using the ten attributes of a health-literate healthcare organization.

Health Professional. Any person employed in a staff position at the AHC (e.g. doctors, nurses, patient care technicians, administration, front desk staff, etc.).

Level of Patient Contact. The amount of contact that the employee has with patients using the following answer choices: 0-10%, 11-50%, or more than 51% direct patient contact.

Needs Assessment. The process of assessing organizational practices and identifying areas in need of improvement to enhance organizational performance. There are various types of needs assessments. These include strategic needs assessments, competency-based needs assessments, job and task analyses, and training needs assessments (Gupta, 1999).

Organizational Health Literacy. An organization's ability to assist individuals in low health literacy by promoting health-literate healthcare services (CDC, 2014).

Strategic Needs Assessment. A needs assessment that specifically evaluates organizational performance needs in relationship to business strategies and the overall mission of the organization (Gupta, 1999).

Systems Theory. A theory introduced by Ludwig von Bertalanffy where the organization is viewed as interconnected parts that make-up a whole; each part of the system has influence on organizational development and improvement throughout the entire system (Swanson & Holton, 2001). The types of systems theories are general systems theory, chaos theory, complex adaptive systems, cybernetics, and futures theory.

Years of Service. The number of years the employee has worked at the AHC. The answer choices are less than one year, 1-5 years, 6-10 years, 11-15 years, 16-20 years, or more than 21 years of service.

Other Definitions

Health Literacy Assessment. A tool used by health professionals to assess patients' health literacy. Although there are several patient health literacy assessment tools, three popular tools discussed in the literature review are the Newest Vital Sign (NVS), the Rapid Estimate of Adult Literacy in Medicine (REALM), and 3) the Test of Functional Health Literacy in Adults (TOFHLA).

Health Literacy Universal Precautions Toolkit (HLUPT). Developed by the Agency for Research and Quality to promote health-literate healthcare practices. The HLUPT contains tools and other important recommendations for improving health literacy practices in all healthcare settings (Brega et al., 2015; DeWalt et al., 2010).

Health-Literate Care Model. A model that integrates health literacy strategies into the Chronic Care Model to improve patient health outcomes and quality of care through use of health literacy best practices and universal precautions (Koh, Brach, Harris, & Parchman, 2013).

Healthy People 2010. National health goals and objectives created by the federal government that are aimed at improving the health of Americans. The goals are assessed and developed every ten years. The revised health objectives and goals are titled Healthy People 2020.

National Action Plan to Improve Health Literacy. A national plan to encourage organizations to take action in improving or adopting health literacy best practices.

Teach-Back. A method of confirming that patients understand the information communicated by health professionals by asking the patient to explain or teach back in their own words (Brega et al., 2015).

Universal Precautions. Taking specific actions to provide health-literate healthcare services and materials to everyone when it is unclear which patients have low health literacy (DeWalt et al., 2010).

Significance of the Study

The AHC is a large academic healthcare organization with patients throughout the entire state. Assessing OHL practices at the AHC is significant for many reasons:

1. Results from this research study may serve as a model for assessing health literacy practices at other AHCs.
2. An assessment of OHL practices reveals health literacy strengths as well as areas in need of improvement. By improving OHL practices, healthcare organizations can help to address the national health problems associated with LHL and better assist patients in making informed health decisions.
3. This project's assessment of OHL practices can also benefit health professionals and patients by possibly improving patient-provider communications through the identification of health literacy practices that work well.

The long-term goal is to become strategically aligned with the *Ten Attributes of a Health-Literate Healthcare Organizations* to improve healthcare services at the AHC to better assist all patients, regardless of health literacy status. Promoting health literacy best practices improves patients' understanding, which in return improves health outcomes (Abrams et al., 2014; Brach et al., 2012; Charet, 2010; DeWalt et al., 2011; Frosch & Elwyn, 2014). Improvements in OHL

practices will potentially lead to improved organizational performance to reduce healthcare costs at the AHC.

Innovative Aspects of the Study

This research study is innovative in its use of the HLHO-10 questionnaire to assess OHL practices at the AHC. The 10-item questionnaire was developed in Germany and published in 2015 (Kowalski et al., 2015). Kowalski et al. (2015) surveyed hospital directors only. In this study, employees in all staff positions with various levels of patient contact were included in the targeted population. Prior to performing this study, a review of the literature revealed that there were no other research studies in the U.S. to date that assessed OHL practices using the HLHO-10 questionnaire. Surveys that have been used to assess OHL practices are the Enliven Organisational Health Literacy Assessment (Thomacos & Zazryn, 2013), the Primary Care Health Literacy Assessment found in the Health Literacy Universal Precautions Toolkit (DeWalt et al., 2010), and other lengthy health literacy assessments. Berkman et al. (2011b) reviewed several research studies that used health literacy screening tools as interventions for assessing and improving health literacy and stated that while there is an enormous amount of research on health literacy screening tools and patient outcomes, there is very little research on the relationship between the use of OHL practices and improvements in health literacy.

Limitations of the Study

This research study involved an assessment of OHL practices using employee feedback, and participation was limited to employees of the AHC only. As expected, it was difficult to encourage participation from busy health professionals; therefore, purposive sampling was used so that all employees would be included to increase participation. The only exclusion was non-health center employees. Another limitation is that this research study can only describe OHL

practices at this particular healthcare organization since the targeted population was health center employees only. Healthcare organizations typically have different policies and operating procedures; therefore, assessing OHL practices at another healthcare center will most likely reveal different results. Finally, time is also a study limitation. Since this is student research, the time allowed to collect, analyze, and write a detailed account of study findings is limited. The project must be performed in accordance with policies in the graduate student handbook.

Delimitations of the Study

Quantitative research methods were used to assess OHL practices in this study. Previous research studies assessed organizational health literacy using the Primary Care Health Literacy Assessment (PCHLA) and other lengthy OHL assessments (Kripalani et al., 2013; Weaver et al., 2012). While the PCHLA can be used to assess OHL practices in large healthcare facilities, the survey contains 49 questions and takes about 30 minutes to complete. The HLHO-10 was the best instrument for assessing organizational health literacy in this study because like other surveys designed to assess health literacy practices, it assesses all attributes of a health-literate healthcare organization using only ten questions. Since healthcare professionals tend to have a limited amount of time to devote to taking surveys, the HLHO-10 was the most appropriate instrument for increasing the response rate from busy health professionals.

An alternative research design for this study was to use a mixed-methods approach with quantitative surveys administered during Phase I and follow-up interviews during Phase II. Due to time constraints and the challenge of recruiting health professionals to participate in follow-up interviews, administering the HLHO-10 seemed to be the best approach. Although conducting qualitative interviews would help to obtain more in-depth information regarding health literacy

best practices at the AHC, the chosen instrument for assessing OHL practices is most feasible for use with busy health professionals.

Health literacy is a term that was introduced many years ago, and there have been numerous research studies on the impact of health literacy practices and patient health outcomes. While the research dates back many years, the literature review for this research study reflects only the most recent research and resources on health literacy practices and outcomes. Since there is very little research on assessing OHL practices, the literature search was limited to health literacy research that was published within the last few years that was most relevant to assessing OHL practices.

Summary

Low health literacy affects persons from all backgrounds and influences the ability to make good health decisions. A recommended intervention for assisting persons with LHL is to promote us of organizational health literacy practices throughout the organization. Improving healthcare practices by addressing health literacy is important because it is difficult to determine which patients struggle with health literacy and patients' health literacy skills are often diminished due to difficult to understand health information and the demands of the healthcare system. Promoting use of OHL practices will help to improve health outcomes, reduce unnecessary use of healthcare services, and decrease healthcare costs. A HLHO promotes use of health literacy practices at all times and with all patients. By promoting use of OHL practices, healthcare organizations can help to reduce the health literacy demands on patients and their families to mitigate the negative outcomes associated with LHL. Using the ten attributes of a HLHO and feedback from employees, this research study assessed OHL practices that influence

health literacy to determine the extent to which the organization is addressing health literacy in everyday healthcare practices.

Chapter II. Literature Review

The Arkansas Department of Health (2013) reported that low health literacy (LHL) is one of the three biggest health problems in Arkansas, especially in older adults and minorities (Safeer & Keenan, 2005; Weiss, 2014), with 50 percent of persons from these two groups classified as having LHL skills (Kutner , Greenberg, Jin, Paulsen, & White, 2006). The high rate of LHL means that physicians commonly see patients who have trouble understanding health information and difficulty navigating the healthcare system (Weiss, 2014). The large number of patients with LHL makes solving the national problems associated with LHL ever more essential. While there are several health literacy screening tools to identify patients with LHL, research has shown that a promising intervention for improving patients' health literacy is to reduce demands on patients by promoting health-literate healthcare practices in all areas of the organization (DeWalt, Callahan, Hawk, Broucksou, & Hink, 2010; Paasche-Orlow & Wolf, 2007; U.S. Department of Health and Human Services [DHHS], 2014).

Health information can be very complicated, especially for patients with LHL. Research studies show that many people, even those with adequate health literacy skills, struggle to understand routine health information such as medication labels, self-care and discharge instructions, and especially health insurance benefits (Aboumatar, Carson, Beach, Roter, & Cooper, 2013; Kountz, 2009; Kutner et al., 2006). Understanding health information involves a variety of skills such as reading, writing, listening, verbally communicating, and even math skills (Arkansas Department of Health [ADH], 2013; Kountz, 2009). However, health literacy is influenced not only by patient's skills and the ability to understand health information but also by how well healthcare providers communicate with patients and by the demands of the healthcare system to understand and act on complicated health information (ADH, 2013). It has been reported

that the health literacy demands of healthcare organizations have more of an impact on the ability to comprehend health information and make informed decisions than the patient's own level of health literacy (Kaphingst, Weaver, Wray, Brown, Buskirk, & Kreuter, 2014). As a result, it is recommended that organizations develop health-literate healthcare environments to address health literacy and help patients to better understand health information. Creating a health-literate healthcare environment will also assist in helping patients to become more actively engaged in making informed health decisions regarding their health.

LHL leads to poor health outcomes, unnecessary and increased use of emergency services, underutilization of preventive health services, and increased healthcare spending. The estimated annual healthcare costs for patients with LHL are four times as high as costs for patients with adequate health literacy skills (National Patient Safety Foundation [NPSF], 2011). Adults with LHL are also more likely to take medications improperly, are hospitalized more frequently, use emergency services when not needed, have higher rates of mortality, and typically have overall poorer health due to the inability to comply with complicated medical treatments (Berkman et al., 2011a; Cloonan, Wood, & Riley, 2013; Lenahan, McCarthy, Davis, Curtis, Serper, & Wolf, 2013; NPSF, 2011). To improve health outcomes and reduce healthcare spending, it is imperative that healthcare organizations find ways to address health literacy and mitigate the negative outcomes often directly attributed to LHL.

Health literacy interventions that promote use of organizational health literacy (OHL) practices are important for many reasons. First, use of OHL practices is known to improve patient-provider interactions; improvements in patient-provider interactions can potentially lead to improved health outcomes and decrease healthcare spending. OHL practices can be improved by making sure that health professionals with first-hand contact with patients and caregivers have

access to the tools and training needed to improve patient-provider interactions. Second, all patients benefit from having access to easy-to-read and understand health information and services; therefore, it is especially important for healthcare organizations to make sure that all patients have access to user-friendly health information and healthcare services. Improving OHL practices requires collaborative efforts of the entire healthcare organization as well as of patients, insurance providers, and other community partners (Brach, Dreyer, & Schillinger, 2013).

Researchers have established that there is often a mismatch between the patients' ability to understand health information and the demands placed upon them by the healthcare system (ADH, 2013; DHHS, 2005). For this reason, healthcare organizations should take more initiative in improving health literacy by promoting use of OHL practices in all health professions and patient-provider interactions and incorporating health literacy competencies into current healthcare curricula (Coleman & Appy, 2012). In addition to promoting health literacy in the health profession, staff training, low literacy health materials, and supportive systems for patients with LHL skills are other important action steps toward improving health literacy. For the last few years, the federal government's National Action Plan to Improve Health Literacy has been encouraging healthcare organizations to take immediate action in addressing LHL by improving OHL practices (Brach, Dreyer, & Schillinger, 2013). Many organizations are already using health literacy best practices, yet improvements are needed to ensure that patients are receiving easy-to-read, -understand, and -use health information and healthcare services at every encounter with health providers.

The Agency for Healthcare Research and Quality (AHRQ) supports improving OHL practices by encouraging organizations to use the tools found in the *Health Literacy Universal Precautions Toolkit* (HLUPT) to develop health-literate healthcare environments (Brega et al., 2015; DeWalt et al., 2010). One of AHRQ's recommendations is use of health literacy universal

precautions in all healthcare settings and in all areas of the organization (DeWalt et al., 2010). By creating a health-literate healthcare environment based on AHRQ's ten attributes of a health-literate healthcare organization (HLHO), healthcare organizations can begin to bridge the gap between patients' level of health literacy and complex healthcare systems (Brega et al., 2015; DHHS, 2010a; DeWalt et al., 2010; Egbert & Nanna, 2009).

Historical Developments

In 1974, health literacy was first introduced as a public health problem affecting the healthcare system (Ratzan, 2001). In the early 1990s, awareness of the link between patients' health literacy, health outcomes, and healthcare costs continued to increase (Rudd, 2015). The National Assessment of Adult Literacy (NAAL) was the first national survey to measure and report on the status of health literacy in U.S. adults (Berkman, Davis, & McCormack, 2010; Kutner et al., 2007). According to Rudd (2015), health literacy became known as an important determinant of health within the last decade, and today the link between LHL and health outcomes is documented in several research studies (Aboumatar et al., 2013; Berkman et al., 2011a; Callahan et al., 2013; Charet, 2010; Eichler, Wieser, & Brugger, 2009; Kaphingst et al., 2014). Much of the research on health literacy has focused on patients' skills and abilities with less focus on OHL practices that influence patients' health literacy. In a recent commentary, Rudd (2015) suggested revising the definition of health literacy to focus more on OHL practices and the capacity of health professionals and healthcare organizations to support improving health literacy skills. While there is very little research on the link between OHL practices and patients' health literacy, researchers are beginning to recognize the importance of improving OHL practices to improve health literacy, mitigate negative health outcomes, and reduce unnecessary use of healthcare services. Published research outcomes from health literacy studies that assessed

OHL practices and the influence on patients' health outcomes found that improvements in OHL practices not only improved health outcomes but also increased patients' satisfaction with health providers (Brach et al., 2012; Groene & Rudd, 2011; Jukkala, Deupree, & Graham, 2009, Weaver et al., 2012; Wynia & Oborne, 2010). More research is needed to support the implementation of HLHO's and to increase the need for promoting OHL practices to improve health outcomes and reduce healthcare costs.

Interventions for Addressing Low Health Literacy

Organizational Health Literacy (OHL) Practices

A recommended intervention for addressing patients' health literacy is to improve OHL practices and develop health-literate healthcare organizations (HLHO). Improved healthcare access, increased healthcare knowledge, and positive health behaviors are all characteristics of HLHO's that routinely promote use of OHL practices in all patient-provider encounters (DeWalt et al., 2010). Organizations interested in becoming health-literate in everyday practices have resources available to assist in identifying, implementing, and sustaining system-wide health literacy best practices. For example, *Building Health-Literate Organizations: A Guidebook to Achieving Organizational Change* is an online resource that contains tools, training, and other value resources for improving OHL practices (Abrams, Kurtz-Rossi, Riffenburgh, & Savage, 2014). In addition to this valuable resource, the AHRQ published systematic guidelines on improving organizational health literacy in both editions of the Health Literacy Universal Precautions Toolkit (HLUPT) (Brega et al., 2015; DeWalt et al., 2010). These resources use the ten attributes of HLHO as the framework for improving OHL practices in healthcare settings. According to Abrams et al. (2014), in order for an organization to become an HLHO, it must demonstrate effective and consistent use

of each attribute. The ten attributes of an HLHO were used to organize the first section of this literature review and are listed as follows:

1. Leadership support,
2. Quality improvement initiatives,
3. Workforce development,
4. Patient engagement,
5. A shame-free healthcare environment,
6. Patient-provider communication,
7. Patient education materials,
8. Accessible health information and services,
9. High-risk situations, and
10. Health insurance literacy.

Leadership Support. The first attribute of an HLHO is gaining support from leaders (Brach et al., 2012). Leadership support is especially important for ensuring the organization's mission and core values promote use of OHL practices (Abrams et al., 2014). Leaders can help employees cope with change, set and work toward achieving goals, and inspire them to share the organization's vision for becoming an HLHO (Borkowski, 2011). Brach, Dreyer, and Schillinger (2013) discussed the role of leaders in improving OHL practices and listed three important reasons for gaining leadership buy-in:

1. Leaders are actively involved in decision-making;
2. Leaders make excellent health literacy champions and are needed to promote user-friendly, easily accessible health information and services; and

3. Due to leaders level of influence, gaining their support is necessary for implementing change and achieving goals targeting improved OHL practices.

Health literacy experts also agree that leadership buy-in is critical for implementing and sustaining OHL practices (Abrams et al., 2014; Brach et al., 2012; Parnell et al., 2014). According to Willis et al. (2014), healthcare organizations are in a much better position to implement health literacy initiatives and sustain health literacy best practices if they have ongoing support from those serving in leadership roles. In Parnell et al.'s (2014) discussion paper on the importance of improving health literacy to improve patient outcomes, gaining leadership support was highly recommended. Making OHL practices a priority "requires that senior organizational leadership enhances its efforts to promote, sustain, and advance an environment that supports principles of health literacy" (Parnell et al., 2014, p. 1). As evidenced in the literature, strong leadership support is a necessity when promoting OHL practices to improve health literacy (Abrams et al., 2014; Brach, Dreyer, & Schillinger, 2013; Brach et al., 2012; Parnell et al., 2014; Willis et al., 2014).

DeWalt et al. (2010) also encouraged gaining strong leadership support to reduce the possibility of resistance to change when considering the implementation of health literacy interventions that have widespread impact on organizational practices. "Whether planned or unplanned, changes within an organization [are almost always met with resistance]" (Borkowski, 2011, p. 373). Resistance to change can be a major obstacle to overcome when making system-wide changes that affect longstanding or traditional healthcare practices. Borkowski (2011) stated that resistance is not always limited to clinical or support staff. Managers, supervisors, and others in leadership roles may resist change as well. Strong leadership support is needed to encourage employee engagement in decision-making. Employee engagement may reduce

resistance to change and help employees to develop and maintain a positive outlook on transitioning to an HLHO. In addition, employee engagement may assist in sustaining effective use of OHL practices, thereby addressing the issues attributed to LHL.

Resistance to change is a common barrier when making systemic changes due to fear of the unknown (Borkowski, 2011); therefore, leadership buy-in and effective communication are especially important for mitigating resistance to change when performance improvement benefits the organization as well as patients. In a qualitative research study on implementing a quality improvement program in primary care clinics, resistance to change was one of the major themes that emerged (Arar et al., 2011). In this study, semi-structured interviews were used to assess employee perceptions of benefits and challenges of implementing quality improvement initiatives in clinical settings. Major themes were enhanced patient care, a more family-oriented care environment, improved patient education, and self-care management. Of all the challenges identified, most participants believed that resistance to change would be the most problematic for changing standard clinic practices. Because internal and external barriers often hinder organizational development, researchers recommended gaining strong leadership support when considering strategies for improving OHL practices in healthcare settings.

Quality Improvement Initiatives. Another attribute of an HLHO is the integration of OHL practices into quality improvement initiatives (Brach et al., 2012). Promoting OHL practices should be at the forefront of ongoing quality improvement initiatives in healthcare organizations (Koh, Brach, Harris, & Parchman, 2013). When planning quality improvement initiatives, it is recommended that organizations make improving OHL practices “an essential core component of their mission [and core values]” (Parnell, McCulloch, Mieres, & Edwards, 2014, p. 3). These recommendations are also supported by federal agencies such as the Arkansas

Department of Health, AHRQ, CDC, and DHHS (ADH, 2013; Brega et al., 2015; CDC, 2014; DHHS, 2014). In a research study on implementing quality improvement programs in 16 small primary care clinics in Texas, the majority of clinic members who participated in the study agreed that the motivating force behind successful practice improvement strategies was having a clear and shared vision for performance improvement (Arar et al., 2011). This supports Parnell et al.'s (2014) recommendation that integrating health literacy best practices into quality improvement initiatives, along with a clear and shared vision for improving health literacy, is an important step in the direction of improving and sustaining OHL practices.

Another important recommendation for integrating health literacy into ongoing quality improvement initiatives is establishing a health literacy department to assist in promoting OHL practices (Parnell et al., 2014). In Abrams et al.'s (2014) publication on building a health-literate healthcare organization, "integrating health literacy into organizational initiatives, policies, and procedures" to improve and sustain OHL practices was one of the recommendations for improving healthcare practices (p. 14). Since health literacy has such a profound impact on health outcomes and healthcare spending, the federal initiative called the National Action Plan to Improve Health Literacy was developed to assist organizations in setting goals to improve health literacy and taking necessary action steps to ensure success in ongoing use of OHL practices (Baur, 2011). Baur (2011) published findings from a research study that confirmed the benefits of having a shared vision when planning and implementing quality improvement initiatives to improve OHL practices and concluded that having a clear and shared vision helped to facilitate a smooth transition to becoming an HLHO.

Workforce Development. HLHO's support health literacy training and education for all health professionals (Brach et al., 2012). It is common for patients with chronic diseases to

receive treatment from various clinics and interact with physicians from different specialties in the same day throughout the course of their treatment. Therefore, it is important for all health professionals in all areas of the organization to have the knowledge and skills needed to effectively assist patients of all health literacy levels. Educating health professionals about health literacy, making them aware of the link between LHL and patient health outcomes, and introducing ways that health professionals can assist in improving health literacy is important for gaining support for use of OHL practices. Promoting health literacy in the health professions not only increases the chances of improving patient's understanding of health information but also greatly improves patient-provider interactions. Positive patient-provider interactions are known to improve patient health outcomes because patients who are satisfied with their health provider are more likely to adhere to treatment plans and are more actively engaged in improving their health (Adams, 2010; Oetzel et al., 2015). Improved patient outcomes will in return reduce unnecessary use of healthcare services, thus reducing healthcare costs (American Colleges of Physicians [ACP], 2009; Eichler, Wieser, & Brugger, 2009).

Health literacy research shows that health professionals often lack the knowledge and skills needed to effectively communicate with patients with LHL (Coleman & Appy, 2012; Cormier & Kotrlik, 2009). It is imperative that health professionals "possess the skills to communicate effectively, motivate, and lead diverse groups of people within [the large, complex healthcare system]" (Borkowski, 2011, p. 4). To improve patient-provider communication, health literacy experts recommend incorporating health literacy competencies with specific emphasis on improving patient-provider communication in current healthcare curricula across all health professions (Coleman & Appy, 2012). In a consensus study on the importance of health literacy competencies for health professionals, researchers concluded that use of health literacy competencies in medical

school curricula was an important step toward achieving the National Action Plan to Improve Health Literacy's workforce objective of improving health literacy (Coleman, Hudson, & Maine, 2013), i.e., improving communication skills for all health professionals (DHHS, 2010b).

Health literacy training in medical education programs is important because medical students often have limited knowledge of health literacy and have trouble identifying patients with LHL as well (Cormier & Kotrlik, 2009). In a study involving nursing students at eight healthcare institutions, several students commonly under-identified patients who struggled with health literacy (Cormier & Kotrlik, 2009). These results are alarming since nurses often have significant contact with patients. Many doctors' offices and health centers have a nurses' line available to patients 24 hours a day. Nurses are often the first and last point of contact with patients who visit hospitals or clinics. In addition, nurses are often responsible for following up with patients after visiting with the doctor. Nurses have many opportunities to teach and explain health information to patients. Due to the high level of contact between nurses and patients, it is important for nurses to have the skills needed to assist patients with LHL. McCleary-Jones (2016) published a systematic review on improving nursing student's knowledge of health literacy through education and training and revealed that introducing health literacy content into nursing curricula was effective in enhancing health literacy awareness, knowledge, and skills in the nursing profession. Although health literacy skills are important for nurses and physicians, Abrams et al. (2014) recommended preparing all staff to use health literacy best practices through training and education and putting measures in place to monitor progress.

Healthcare professionals have a key role in addressing health literacy and helping to bridge the gap between LHL and health-related outcomes (Andrulis & Brach, 2007; Wynia & Osborn, 2011), yet many health professionals are not fully aware of the impact of LHL on health

outcomes. Weaver et al. (2012) assessed health literacy at a large healthcare organization and found that many of the staff had limited knowledge of the term "health literacy." For this reason, Coleman and Appy (2012) recommend teaching health literacy concepts in all health professions and introducing health literacy competencies early in program curricula with ongoing training such as opportunities for obtaining continuing education credits while working in their health profession. Coleman and Fromer (2015) found that attending mandatory health literacy training led to significant improvements in health professionals' knowledge, skills, and behaviors about health literacy. To sustain a health-literate healthcare environment, training and educating health professionals in all disciplines on the use of health literacy best practices is highly recommended (Brega et al., 2015).

Jukkala, Deupree, and Graham (2009) also assessed health professionals' knowledge of health literacy and found that 16 percent of participants from various health professions had never heard of health literacy. Surprisingly, the group of health professionals in this sample with the least knowledge of health literacy was nurses. In addition, researchers found that many staff and students had little knowledge of the impact of LHL on patient health and several (12 percent) were not aware that LHL had an impact on healthcare costs. In a similar research study on health literacy knowledge in health professionals, several health professionals (16 percent) who participated in the study had little or no knowledge of health literacy, and 10 percent were not aware of the negative outcomes associated with LHL (Weaver et al., 2012). These studies confirm that health literacy training, education, and awareness are still lacking in many healthcare facilities. Increasing the awareness of the importance of promoting health literacy through use of OHL practices is beneficial for all health professions. In fact, health literacy

training and education is important for anyone who has contact with patients including front desk staff, patient account representatives, and other administrative support staff (Brega et al., 2015).

Patient Engagement. Another important attribute of an HLHO is increasing patient engagement in matters involving their health (Brach et al., 2012). Increasing patient engagement is so important that Healthy People 2020 developed an objective specifically related to improving patient engagement, i.e., "increase the proportion of persons who report that their healthcare providers always involve them in decisions about their healthcare" (Office of Disease Prevention and Health Promotion (ODPHP), 2014, para. 3). It is reported that highly engaged patients are more likely to make informed health decisions and take appropriate actions to properly manage chronic health conditions (Kaphingst et al., 2014); after all, it is the patient's responsibility for adopting healthy behaviors and managing their own health (DeWalt et al., 2010). Highly engaged patients are more likely to follow-up with physician recommendations and adhere to treatment plans. Health literacy research confirms that increased patient engagement is especially important for improving health outcomes, particularly in patients with LHL skills (Hibbard, Green, & Overton, 2013; Kaphingst et al., 2014; Smith, Curtis, Wardle, von Wagner, & Wolf, 2013).

Kaphingst et al. (2014) assessed the relationship between patient engagement and health outcomes and hypothesized that patients who were more actively engaged in healthcare decisions made better choices regarding their health. Results revealed that patients who came to their doctor's appointment with a list of questions were more satisfied with their visit and made better choices regarding their health following the visit. The authors concluded that a more engaged patient is a better-informed patient. Hibbard, Green, and Overton (2013) also assessed the benefits of patient

engagement in healthcare settings and found that actively engaged patients benefit from gaining the skills, knowledge, and confidence needed to make good health decisions.

An important recommendation for improving patient engagement is to provide more opportunity for shared decision-making (Frosch & Elwyn, 2014). The literature shows that both patients and organizations benefit from the active involvement of patients in making informed decisions regarding their health (Koh et al., 2013). "As organizations establish strategies to help improve the health of the nation overall, success will depend on their efforts in building trusted [relationships with patients to encourage engagement in decisions regarding] their health and well-being" (Parnell et al.,2014, p. 4).

The Health-Literate Care Model was developed to improve patient engagement by promoting patient-centered care (Koh et al., 2013). Koh et al. (2013) described the health-literate care model as a systems approach to improving patient engagement. The health-literate care model's primary focus is on improving patient health outcomes through patient-centered care. Koh et al. (2013) stated that use of "the Care Model with integrated health literacy approaches could ultimately serve to reduce duplication and inefficiency while improving patients' understanding of and engagement in health care" (p. 359). Frosch and Elwyn (2014) examined strategies for transforming health systems to address the issues surrounding LHL, and one of those strategies was patient engagement. In their research study, one of the biggest challenges of increasing patient engagement was changing the organizational culture to be more health-literate (Frosch & Elwyn, 2014); more specifically, changing how providers interact with patients by promoting ongoing use of OHL practices in every patient-provider encounter. When considering strategies for increasing patient engagement, Frosch and Elwyn (2014) recommended that health

systems "implement solutions that recognize that it is not patients who are deficient, but rather the systems of care that do not serve them well" (p. 13).

A Shame-Free Healthcare Environment. Patients with LHL are often embarrassed to admit that they do not understand and are less likely to ask questions when needed (Paasche-Orlow & Wolf, 2007). Therefore, creating a shame-free environment is another important attribute of a health-literate healthcare organization (Brach et al., 2012). To eliminate the fear and shame of not understanding, health literacy experts recommend using health literacy universal precautions, i.e., "treating everyone as though they have difficulty assessing and understanding health information" (Callahan et al., 2013, p. 598). *Universal precautions* refers to making sure that health information is easy-to-use and understand for everyone regardless of health literacy status (Callahan et al., 2013). Adopting easy-to-understand everyday healthcare practices when interacting with patients, regardless of health literacy status, is the best intervention for ensuring that all patients are comfortable with the health information they receive, thereby, improving health literacy. In addition, implementing health literacy universal precautions eliminates the need for determining which patients have LHL. Lastly, use of universal precautions is a proactive approach to addressing the health literacy needs of all patients regardless of health literacy status.

Easton, Entwistle, and Williams (2013) used first-hand patient accounts to show the impact of LHL on patient-provider interactions and found that the stigma associated with LHL had a negative impact on how patients interacted with healthcare providers. Due to the shame and embarrassment that patients often experience when they do not understand, health professionals do not always know exactly which patients have LHL. Jukkala, Deupree, and Graham (2009) found that 25 percent of health professionals believed that health literacy status can be determined by race, ethnicity, or socioeconomic status. While these three indicators are known to influence patients'

health literacy, it should not be assumed that persons who do not fit into one of these categories have adequate health literacy skills. Not being able to identify patients who struggle to understand health information negatively affects patient-provider communications, and as evidenced in the literature, poor patient-provider communication leads to negative health outcomes. Practicing health literacy universal precautions ensures that all patients are treated the same and have access to health-literate healthcare information and services at all times. In addition, exercising universal precautions promotes a shame-free healthcare environment.

Patient-Provider Communication. The sixth attribute of a health-literate healthcare organization introduces the use of health literacy strategies to enhance patient-provider communication (Brach et al., 2012). Improving patient-provider communication is also one of the CDC's recommendations for improving LHL (CDC, 2011). In addition, the National Action Plan to Improve Health Literacy lists effective patient-provider communication as one of its seven goals for improving health literacy (DHHS, 2010b). In 2009, the Arkansas Minority Health Commission reported that patient-provider communication is a problem in Arkansas with 58 percent of Latinos and 30 percent of African-Americans known to have problems communicating with healthcare providers. Participants who spoke English as a second language experienced even greater challenges communicating with healthcare providers. This report also stated that even for those who speak English as their primary language, communication can be a significant barrier to understanding health information. Although patients from minority backgrounds often report having trouble communicating with healthcare providers (Arkansas Minority Health Commission, 2009), poor patient-provider communication is known to be problematic for many patients regardless of race or ethnicity. For example, Wynia and Osborne (2011) assessed patient-provider communication in 13 healthcare organizations and found that most

patients, regardless of race and ethnicity, identified improving patient-provider communication as a priority.

One strategy for improving patient-provider communication is to confirm comprehension of health information in all patient-provider interactions by using a health literacy technique called teach-back (Brega et al., 2015). Teach-back involves asking the patient to repeat in their own words important health information communicated with them to confirm understanding. It is a technique highly recommended by health literacy experts to improve and confirm understanding of health information (Brega et al., 2015; DeWalt et al., 2010). HP 2020 also supports use of teach-back as one of the national health objectives to "increase the proportion of persons who report their healthcare provider always asked them to describe how to follow instructions" (ODPHP, 2014, para. 1.2). Confirming patient understanding is an important health literacy practice that can be effectively used to address patients' health literacy.

Poor patient-provider communication has a negative effect on patient's health literacy and may lead to lower quality of care, misinterpretation of medical diagnoses, and poor patient-provider relationships. As mentioned earlier, a patient's health literacy is related to health outcomes and improving patient-provider communication can contribute to improving health outcomes. According to Edlin (2004), even when physicians believe that they are using plain and simple instructions, there is still room for misinterpretation. The literature shows that health professionals often use advanced medical terminology and jargon when communicating with patients (Castro, Wilson, Wang, & Schillinger, 2007; Rudd & Anderson, 2006). In fact, use of medical jargon in everyday patient-provider interactions is routine for many health professionals. It is reported that approximately 81 percent of patient-provider encounters contain at least one unclarified medical term or jargon, with about four unfamiliar medical words used per visit

(Castro et al., 2007). In addition, Castro et al. (2007) reported that 37 percent of jargon use during a routine medical encounter occurs when making recommendations and 29 percent when providing health education. Since effective patient-provider communication is especially important for improving health literacy, the CDC (2011) and AHRQ (Brega et al., 2015) offer valuable tips for improving both verbal and written communication. One recommendation is simply to make improvements in patient-provider communication an organizational priority by promoting use of OHL practices in all interactions with patients.

Kessels (2003) reported that 40-80 percent of information verbally communicated by healthcare providers is forgotten almost immediately. DeWalt et al. (2010) also reported that patients are able to understand and retain approximately half of the information verbally communicated by their healthcare provider. In a more recent research study on the amount of information that patients actually recall from their doctor's visit, researchers found that the ability to retain health information that is verbally communicated was challenging for even those with adequate health literacy skills (McCarthy, Waite, Curtis, Engel, Baker, & Wolf, 2012). As expected, those with LHL had more difficulty recalling information verbally communicated by their healthcare provider. These results confirm that verbal communication is important for improving health outcomes for all patients, regardless of health literacy status. "Increasing the proportion of persons who report that their healthcare providers have satisfactory communication skills" is among the list of HP 2020 objectives for improving health literacy (ODPHP, 2014, para. 2). To improve communication between patients and providers, the CDC (2011) provides the following recommendations:

1. Use plain language, i.e., less use of jargon and difficult to understand medical terms;
2. Explain technical terms when there is no easier or familiar term to substitute;

3. Give information in meaningful chunks rather than all at once; and,

4. Use teach-back to confirm understanding.

In AHRQ's health literacy toolkit, improving health professional's verbal communication is one of the four major areas identified as a priority addressing health literacy (Brega et al., 2015). In a special report on the impact of health literacy on health outcomes, it was reported that patients typically receive large amounts of information in the few minutes allowed for their doctor's appointment (Edlin, 2004). For example, a typical patient-provider encounter might involve several verbal exchanges of information in one single visit, such as discussions of treatment plans, medication instructions, and information about follow-up appointments. Because patient-provider communication has a significant impact on health literacy, several researchers have assessed the relationship between patient-provider communication and health outcomes using patient feedback (Hernandez, 2012; Wynia, Johnson, McCoy, Griffin, & Osborn, 2010; Wynia & Osbone, 2011). Wynia and Osborne (2011) assessed patients' perception of communication with their healthcare providers and found that most patients agreed that significant improvement was needed in the way health professionals shared information with them, specifically information shared verbally. In an earlier research study, Wynia et al. (2010) assessed patient-provider communication quality by surveying patients in 13 healthcare facilities and found that effective communication was critical for ensuring quality patient care and addressing the challenges associated with LHL. In addition, Hernandez (2012) published discussions from a health literacy workshop summary on building health-literate healthcare organizations where health literacy experts agreed that effective communication is the key to bridging the gap between patient's health literacy and provider's communication skills. Health literacy experts agree that working toward greater comprehension

through effective communication is a shared responsibility between the patient and the healthcare provider (Koh et al., 2013; Villaire & Mayer, 2009).

Health literacy is affected not only by verbal communication but also by the quality of written health materials. “Increasing the [number] of persons who report their healthcare provider always gave them easy-to-understand written materials” is another HP 2020 objective for addressing the national health problems associated with LHL (ODPHP, 2014, para. 1.1.). The National Assessment of Adult Literacy (NAAL) highlights the important of written health materials in its definition of health literacy: the ability to understand written health information to make informed health decisions (White, 2008). The quality of written health materials is important because “healthcare providers rely heavily on print materials to communicate with patients” (DeWalt et al., 2010, p. 6). A patient might receive several pieces of health information at one routine visit to a clinic or during a trip to the emergency room. For instance, Stossel et al. (2012) found that approximately 75 percent of physicians routinely hand out patient education materials. While some patients and/or their family members may actually understand health materials written at a high literacy level, the majority tend to struggle with understanding health materials often written at or above a tenth grade reading level (Major & Villaire, 2009). Improving written communication is important because health materials written at a low grade level are known to increase understanding of health information and are beneficial for patients of all literacy levels, not just those with LHL (Charet, 2010; Pignone, DeWalt, Sheridan, Berkman, & Lohr, 2005).

Adequate literacy skills are a problem in Arkansas with more than 20 percent of adults reading at or below a fifth grade reading level (Arkansas Literacy Councils, 2011). Adults with low literacy skills are more likely to also struggle with health literacy. Even adults with adequate or above average literacy skills struggle to understand written health information at times. For this

reason, it is important to consider the readability levels of all health materials and to design materials that are easy to read and understand for all patients regardless of health literacy status. The NAAL reported that persons with LHL are less likely to seek health information from sources outside of healthcare organizations such as newspapers, internet, radio, or television (Kutner et al., 2006). This puts more responsibility on healthcare providers to ensure that patients with LHL have appropriate health information to make informed decisions regarding their health. Patients with LHL almost always have difficulty understanding written health information (DeWalt et al., 2010; Parnell et al., 2014; Weiss, 2014), and the inability to read and comprehend written health information leads to poor health outcomes and decreases the quality of patient-provider interactions.

Patient Education Materials. Since patients' health literacy is influenced by how well they understand patient education materials, the use of easy-to-understand patient health materials, including audiovisual and social media content, is another attribute of a HLHO (Brach et al., 2012). Ryan et al. (2014) assessed the readability of written health materials that are commonly distributed to patients with LHL at an academic health sciences center and found that 29 percent of the material evaluated were not suitable for patients with LHL. Of those materials, cancer-related materials had the highest percentage of information not suitable for patients with LHL (25.9 percent). The readability results of these health materials are evidence that many healthcare organizations continue to develop and distribute health materials that are not easy to use or understand. This is even more of a problem since it is known that health materials can be complicated and hard to understand for patients who typically do not struggle with health literacy. Ryan et al.'s (2014) research study confirmed that action steps are needed to improve the quality of health materials. They recommended working with patients, their families, and

local community members to develop and test methods of improving the quality of health materials.

"The average adult reads at the eighth or ninth grade level, and 20% read at the fifth grade level or below" (Brega et al., 2015, p. 35). Findings from the National Assessment of Adult Literacy survey revealed that approximately 50 million adults have limited reading skills (Kirsch, Jungeblut, Jenkins, & Kolstad, 2002). Therefore, using simple and easy-to-understand health information is the best intervention for ensuring greater comprehension of patient education materials (Safeer & Keenan, 2005; Seligman et al., 2007). Currently, health materials are expected to be written at a fifth grade reading level or lower; however, most patient education materials are written at much higher reading levels (Hill-Briggs, Schumann, & Dike, 2012). Schwartzberg et al. (2004) published a literature review using more than 250 research studies and found that most health materials were written far above the reading level of the average U.S. adult. Due to the high rate of adults with inadequate reading skills, providing easy-to-understand patient education materials is essential for increasing the chances of improving understanding, and better understanding equates to improvements in health literacy. Kessels (2003) reported that health information written at a low-grade level is easier for patients to remember and increases the chances of understanding for those with LHL. It is recommended that healthcare organizations decrease the reading level of all health materials so that all patients, regardless of their health literacy status, have access to health-literate health materials (Ryan et al., 2014).

In a survey of hospitals throughout the U.S., researchers found that informed consent documents and other important health-related materials had a mean grade reading level of 12.6, and only 7 percent of the health materials assessed had a reading level of eighth grade or

below (Cordasco, 2013). In 2012, researchers assessed the relationship between health literacy best practices and satisfaction with patient educational materials among parents at a pediatric clinic and concluded that health literacy had a significant influence on parent's ability to make informed health decisions when using health information from the clinic (Otal et al., 2012). In this study, it was recommended that a health literacy universal precautions approach be used so that all parents have access to patient health materials that are written in plain language. Otal et al. (2012) defines plain language is a way of organizing and presenting information using less complicated words to replace complex, and often unfamiliar, medical terms. Although most of the parents in this study (71%) had adequate or above average health literacy, the majority commented that they preferred to have access to health material written in plain language (Otal et al., 2012).

Today, health information is available online from various sources; however, electronic health information is not always easily accessible, particularly for older adults and persons living in rural areas who are less likely to access health information online. Electronic health information is also sometimes difficult to understand due to high readability levels. In addition, health information found on websites can be difficult to understand when there is too much content and when websites are not user-friendly (Bates, Romina, & Ahmet, 2007; Ryan et al., 2014). Websites with information on specific health conditions and procedures such as diabetes, cancer, or stroke are typically written at the tenth grade reading level or higher (Bates, Romina, & Ahmet, 2007). The Joint Commission (2007) reported that public benefits forms and other important health-related materials also tend to be written at the tenth grade reading level or higher. Since a vast majority of health information is written at a much higher grade level than the patient's reading level (Brega et al., 2015; DeWalt et al., 2010; Schwartzberg et al., 2004), the

AHRQ recommends using readability assessments to assess the quality of written health information, then reducing the reading level to fifth grade or lower (Brega et al., 2015).

While health literacy is often associated with the ability to read (Mayer & Villaire, 2009; Weiss, 2014), literacy skills alone do not indicate a patient's health literacy status. Patients with above-average reading skills and those with college degrees may have trouble understanding certain medical terms (Mayer & Villaire, 2009). DHHS (2009) published a guide for creating easy-to-use and understand health materials that lists important recommendations for developing health-literate patient education materials. A few of these recommendations are as follows:

1. Begin with the most important information to increase comprehension;
2. Avoid giving too much information because short messages are easier to understand;
3. Use pictures and other familiar images when appropriate;
4. Try to avoid use of jargon or other technical terms; and
5. Consider document format such as use large fonts, bold headings, standard font styles, and lots of white space.

Another important recommendation is to consider the needs of the specific patient population to ensure that materials are appropriate for the target audience. In some instances, it might be helpful to obtain feedback from patients or other community members in the design, implementation, and evaluation of patient education materials. Input from those who will actually benefit from use of the health materials is a great way to measure quality and ensure that materials are designed to meet the needs of the intended audience. To improve the health and wellness of all Americans, written health information on issues ranging from prevention, medication use, and discharge instructions to emergency preparedness must be developed with health literacy in mind (Somers & Mahadevan, 2010).

Accessible Health Information and Services. It is important not only to make sure that health materials are easy-to-read and understand but also to ensure that patients have adequate access to health information. Easily accessible health information and services is another attribute of a health-literate healthcare organization (Brach et al., 2012). The Patient Protection and Affordable Care Act (ACA) of 2010 makes multiple references to health literacy with special emphasis on the need for making sure patients have access to health-literate health information and services (Somers & Mahadevan, 2010). The ACA offers organizations incentives for improving OHL practices and making sure that health information is easily accessible (Frosch & Elwyn, 2014). In a paper commissioned by the Institute of Medicine, the importance of making sure that all individuals have access to low literate health information and services is discussed extensively. The authors recommended that organizations find ways to make investments in improving health literacy by making sure the health information is easily accessible (Somers & Mahadevan, 2010). In the HP 2020 goal for improving health literacy, there are three objectives targeting improvements in access to health information:

1. Increase use of electronic personal health information,
2. Increase access to online health information, and
3. Increase the number of persons who report that health information is easily accessible (ODPHP, 2014).

A review of the literature confirms that becoming an HLHO benefits the many Americans affected by LHL by making it easier to access and effectively use health information and services (Cloonan, Wood, & Riley, 2013; Frosch & Elwyn, 2014; Otal et al., 2012). Patients living in Arkansas's rural areas often have trouble accessing health information and services, and are more likely to need assistance navigating the healthcare system due to limited access. To make

sure that all patients have easily accessible and easy to understand health information and services, the recommendation is to promote a more user-friendly healthcare environment in which OHL practices are routine in all patient encounters (Brown et al., 2003; Frosch & Elwyn, 2014).

Healthcare organizations are now using the Internet to make health information easily accessible through patient portals, mobile applications, and other online health education resources. In a recent study on patient's perception of online health information, researchers assessed consumer use and value of electronic medical records using focus groups that included participants with LHL and from minority backgrounds. This population was specifically targeted because researchers considered them to be the most vulnerable health consumers. Although participants had LHL, most believed that patient portals were good tools for improving their healthcare knowledge and increasing their level of engagement in making health decisions. However, there were concerns about the information being too difficult to read and poor usability. Researchers concluded that providing easily accessible health information through use of patient portals helps to increase patient engagement, improves preventive care behaviors, and increases the chances that patients will adhere to treatment plans. Yet, it is important that online tools are user-friendly and written at a low grade level for easier understanding. (Zarcadoolas, Vaughon, Czaja, Levy, & Rockoff, 2013)

The U.S. Department of Health and Human Services (2008) released a report on the importance of providing accessible health information to improve patient's health literacy and noted that there is a need for health information that is easily accessible and user-friendly. According to Egbert and Nanna (2009), "The most obvious approach to addressing LHL is related to making information more accessible" (para. 6). While use of patient portals and other online resources increase access to health materials, patients with LHL are less likely to access

health information from the internet and typically do not take advantage of online access to electronic health materials or patient portals (Gu, Orr, & Warren, 2015; Sarkar et al., 2010). For this reason, health literacy experts recommend putting more measures in place to increase use and access to electronic health information in addition to ensuring that the information meets health literacy best practices for written materials, especially for patients living in rural areas (Brega et al., 2015; Gu, Orr, & Warren, 2015; Irizarry, Dabbs, & Curran, 2015).

High-Risk Situations. HLHO's are effective in addressing health literacy needs in high-risk situations including care transitions and proper use of medications (Brach et al., 2012). Addressing high-risk situations is the ninth attribute of a health-literate organization. Promoting health literacy in high-risk situations means that healthcare organizations have processes in place to assist patients during times of crisis. When dealing with critical issues, health literacy skills can be greatly diminished because patients are often very emotional, have added stress, and may have trouble focusing matters involving their health. During times of crises, promoting use of OHL practices assures that patients have clear and easy-to-understand information when making decisions during distress. Patients who are dealing with chronic illnesses and need to make important care decisions often need help understanding consent forms so that they can provide truly informed consent.

A systematic review of LHL and health outcomes by Berkman et al. (2011a) found that patients suffering from chronic diseases, such as hypertension and diabetes, are at a higher risk for not understanding health information. In a recent survey of stroke patients, researchers assessed the impact of health literacy on the ability to retain health information and found that LHL was an indicator of increased risk for recurrent strokes and non-adherence to follow-up care. In this research study, patients with LHL were able to recall about half of the information in

the stroke education material they were given (Schnepel et al., 2014). In another research study on health literacy in cancer patients, researchers assessed health literacy and the ability to navigate the healthcare system and found that improving OHL practices in oncology clinics contributed to better patient care and improved patient outcomes due to positive patient-provider interactions (Martinez-Donate et al., 2014). Both research studies are examples of the benefits of using OHL practices in high-risk situations with vulnerable populations.

Health Insurance Literacy. The tenth attribute of a health-literate healthcare organization is effectively communicating health plan coverage and healthcare billing such as co-pays, out of pocket expenses, and other important yet sometimes difficult to understand information regarding health insurance (Brach et al., 2012). Now that millions of Americans have access to health insurance under the Patient Protection and Affordable Care Act (DHHS, 2010a), healthcare providers can assist with understanding benefits available under these new healthcare plans to ensure that patients are using health benefits wisely. Individuals who were once uninsured may need extra help understanding complicated health plan materials due to unfamiliarity with health insurance terminology. Even those who have been insured for many years often struggle to understand health plan coverages due to continuous changes in health plan benefits.

Researchers examined the impact of health literacy on utilization of health services by patients who were insured and found that most do not understand exactly which services are covered and have trouble determining out of pocket costs (Hardie, Kyanko, Busch, LoSasso, & Levin, 2011). Hardie et al. (2011) also reported that LHL increased healthcare spending and use of healthcare services by patients who were insured whereas adequate health literacy skills were associated with decreased healthcare spending and unnecessary use of health services. In

addition, persons with higher health literacy had fewer emergency room visits and were more likely to use preventive health services. Since health plan members often depend on healthcare providers and insurance companies to keep them informed of benefits coverages (Gazmararian, Beditz, Pisano, & Carreon, 2010), easy-to-understand information regarding health plan coverage may help patients to use benefits more efficiently and reduce unnecessary healthcare costs (Gazmararian et al., 2010).

There are numerous health insurance companies in the U.S. and multiple health insurance plans with specific guidelines on services covered, co-pays, deductibles, and how to file claims. Understanding health insurance plans can be challenging for patients with adequate health literacy skills. Therefore, when explaining health plan information, it is recommended that healthcare providers consider the context, importance, and complexity of the information to improve understanding (Borkowski, 2011). There have been significant changes in the healthcare industry over the last few years, and many of those changes have to do with how health information is communicated. For example, there are online tools for making health plan comparisons, and some insurance companies have tools available for determining out-of-pocket costs. To improve health insurance literacy, healthcare organizations must be willing to invest the time and resources needed to assist patients in understanding health plan coverages as well as develop tools to promote understanding. Better understanding equates to better health outcomes and lower healthcare costs (Parker, 2006; Villaire & Mayer, 2009).

Health Literacy Screening and Measurement Tools

While improving OHL practices is a highly recommended intervention for improving health literacy and making sure that all patients have access to user-friendly health information and services regardless of health literacy status, another intervention for addressing the problems

associated with LHL is to screen patients to identify those with LHL skills and provide extra help when needed. Some researchers believe that if patients with LHL can be properly identified, physicians can apply appropriate health literacy techniques with those patients to improve their health literacy skills. For example, if a patient scores low on a health literacy screening measure, the provider might take extra precautions when communicating with the patient by using clear and easy-to-understand words (Brega et al., 2015; Shealy & Threatt, 2016). If it is known that a patient has LHL, it might be necessary to use teach-back, i.e., asking patients to repeat in their own words to confirm understanding. Identifying exactly which patients have LHL would eliminate the need for making significant changes in healthcare practices throughout the entire organization. However, screening patients for health literacy would take time and could potentially cause patients to feel embarrassed if they fail the screening (Brega et al., 2015).

There are several tools available to assess patients' health literacy skills. These tools assess the ability to read, do math, and understand basic health information. Three commonly used tools for assessing patient's health literacy are the Newest Vital Sign (Pfizer, 2011), the Rapid Estimate of Adult Literacy in Medicine (REALM) (Davis et al., 1993), and the Test of Functional Health Literacy in Adults (TOFHLA) (Parker, Baker, Williams, & Nurss, 1995). These tools have been used in several health literacy interventions to identify patients with LHL (Berkman et al., 2011b; Downey & Zun, 2008; Ghadder, Valerio, Garcia, & Hansen, 2012; Hoffman & McKenna, 2006) and are supported by the AHRQ as appropriate instruments for measuring patient's health literacy (AHRQ, 2016). Each tool has been validated and tested with patients in clinical and other healthcare settings and can be used to screen for health literacy in patients from various backgrounds.

Rapid Estimate of Adult Literacy in Medicine (REALM). The REALM is a health literacy tool that assesses patients' reading level using three health literacy categories to measure health literacy skills as low, marginal, or adequate (Davis et al., 1993). The REALM is useful for predicting reading level only and does not measure math skills. The REALM also does not assess patients' comprehension of health information. The original version of the REALM included 66 items (Davis et al., 1993) but was later shortened to contain only eight items (Bass, Wilson, & Griffith, 2003). The short assessment can be administered in a healthcare setting in about three minutes.

Newest Vital Sign (NVS). The NVS is a short six-item health literacy screening tool that uses a nutrition label to measure patients' health literacy (Weiss et al., 2005). The NVS contains three measurements scales: limited, possibly limited, and adequate health literacy. The NVS takes about three to six minutes for patients to complete and is preferred by most health professionals because it assesses patients' reading comprehension and math skills. This health literacy screening tool has been used in a variety of healthcare settings and with patients of all races and health conditions (Shealy & Threatt, 2016).

Test of Functional Health Literacy in Adults (TOFHLA). The TOFHLA is a health literacy tool that uses sample health information to test patients' health literacy skills. Participants are given x-ray instructions and passages of health information to interpret when taking the assessment. Like the REALM, the TOFHLA uses three score ranges to categorize patients' health literacy skills as inadequate, marginal, or adequate. The assessment primarily measures patients' reading levels, but longer version of the TOFJLA assesses math skills as well. The original version of the TOFHLA was quite lengthy and included 17 to 50 items which took about 20-25 minutes for patients to complete (Baker et al., 1999). The assessment was later

shortened to the Short Test of Functional Health Literacy in Adults (S-TOFHLA) with only 4 to 36 items and about 12 minutes to complete.

Challenges of Health Literacy Screenings. While screening patients for health literacy is an important intervention for identifying patients with LHL skills, there are several benefits to promoting use of OHL practices in all healthcare setting and exercising universal precautions. Using health literacy screening tools to identify patients with LHL may cause patients to feel embarrassed due to the stigma associated with not understanding (Welch, VanGeest, & Caskey, 2011). Deciding which health literacy screening tool is appropriate for specific patient populations can also pose a challenge for health providers. As mentioned earlier, health literacy measures vary in scope and produce different outcomes regarding patients' health literacy skills. Some tools measure literacy only, and others measure literacy and math skills.

It is also important to consider the time and cost associated with developing and administering these tools. Employees have to be trained to administer health literacy screenings to ensure accurate results. In addition to administration time and associated costs, screening patients for health literacy does not address many of the issues that contribute to patients' LHL like limited access to health information. Screening patients for health literacy by itself will not improve access to health information and will not make the healthcare system easier to navigate, both of which have a significant influence patients' health literacy. Because health literacy is not a patient problem but more of a problem with complicated health information and services (Welch, VanGeest, & Caskey, 2011), improving patients' health literacy by promoting OHL practices is the best intervention for improving healthcare practices for all patients regardless of health literacy skills (DeWalt et al., 2011).

Organizational Development and Systems Theory

Organizational Development

Borkowski (2011) described organizational development (OD) as a systematic process for making organizational changes to improve performance. To deliver quality healthcare services, improve health, and reduce operating costs, organizational development within healthcare systems is necessary and must be ongoing. Organizational development is a process that involves two or more persons in pursuit of a common goal or set of objectives for improving organizational performance. There are many phases of OD including entry, start-up, assessment and feedback, action planning, implementation, evaluation, adoption, and separation (McLean, 2006).

During the entry-level phase, the organization performs an initial assessment to determine its readiness to change. Next, agreements are made to collaborate on goals and objectives for improving performance, and the organization develops a work plan which is also known as the start-up phase. Committees are formed, and leaders are identified to assist in facilitating change. The third phase of OD is an organizational analysis of strengths and weaknesses in performance using assessments. After reviewing feedback from the analysis, the next step is action planning, which involves identifying strategies for accomplishing goals and objectives identified during the start-up and analysis phases. The intervention for accomplishing goals and objectives is identified during the implementation phase. After choosing an intervention, the next step is to evaluate effectiveness of the intervention. During the adoption phase, the intervention becomes the organization's way of doing business, and new policies are developed if needed. During the separation phase, the work plan is completed and new areas of OD are explored. For most

organizations (e.g. healthcare organizations), OD is an ongoing process as part of quality improvement initiatives (Borkowski, 2011).

Improving OHL practices requires systematic organizational changes. According to Borkowski (2011), many healthcare systems rely on "experts in the field of organizational development to assist with change initiatives and to help ensure the long-term viability of the organization" (p. 357). Organizational development is often not limited to one specific area of organizational performance. In healthcare organizations, OD is important in all areas of the organization because all areas are interconnected and generally operate under the same policies. The goal of organization development is to improve effectiveness throughout the entire system (Borkowski, 2011). Abrams et al. (2014) focused on organizational development throughout the entire organization and not just any one area of healthcare. Implementing OHL practices and improving organizational capacity to improve health literacy requires systematic changes in how healthcare organizations communicate with patients. To facilitate organizational change, individuals within the organization must be willing to change, and there must be a clear and planned process for implementing organizational change. Briglia, Perlman, and Weissman (2015) recommended three important steps to facilitate organizational change when promoting OHL practices:

1. Encourage leaders to promote health literacy;
2. Create a health literacy change vision that is effectively communicated throughout the organization; and,
3. Provide training and education for all staff to ensure a smooth transition.

Integrating principles of health literacy into organizational objectives ensures the sustainability of a health-literate healthcare organization (Brach et al., 2012). Since healthcare providers are

expected to deliver high-quality healthcare services and patients often have higher expectations for health professionals (Borkowski, 2011), improving OHL practices is the best way to meet those expectations.

With only 12 percent of the U.S population reported as having proficient health literacy skills, there is a strong possibility that the number of persons with LHL includes not only patients from surrounding communities but also employees of the AHC. It is imperative to consider health literacy in terms of information and skills in the workplace and how LHL affects the health and well-being of employees. Employee health and wellness programs should consider and support the health literacy of employees. Promoting use of OHL practices will help employees who may have LHL skills make better healthcare choices. In addition, many AHC employees are also patients, and employees with LHL are at increased risk for poor health outcomes as well. Employee health affects job performance and productivity, and employees can also benefit from having easy-to-understand and accessible health information and services.

Systems Theory

McLean (2006) defined a system as a boundary within an organization that is separate from the external environment with several subsystems. According to Swanson and Holton (2001), systems theory is the foundation for organizational development where the goal is to find information about the system. Systems theory is considered low-hanging fruit in the field of human resources because there are so many areas within the organization that affect performance. In addition, "systems theory is a useful tool for designing programs that respond clearly to defined problems" (p. 71), such as addressing the national health problems caused by LHL. The application of systems theory is useful for determining what is working and where

improvements are needed when considering organizational development because it takes into account how all the parts of the system work together to affect the whole system.

The concept of systems thinking is derived from systems theory (Swanson & Holton, 2001). Systems thinking is the understanding of organizational processes, structures, and interrelationships that affect the organization as a whole (McLean, 2006). There are many components of systems: general systems theory, cybernetics, chaos theory, complex adaptive systems, and futures theory (Swanson & Holton, 2001). Systems can be identified by the way they are structured and the level of interaction that occurs between the various parts of the system as well as by relationships with external environments (McLean, 2006).

General Systems Theory. General systems theory is comprised of inputs, outputs, and ongoing feedback on organizational practices with emphasis on the level of interaction that occurs between all parts of the system (McLean, 2006). System inputs consist of the transfer of information from the external environment to the system, and outputs involve the transfer of information from the system. Due to ongoing environmental changes, organizations must continuously assess their mission, vision, and core values to ensure performance quality. General systems theory is most applicable to open systems where environmental factors stimulate organizational change. In general systems theory, increased interactions within the system are essential for strengthening working relationships. Swanson and Holton (2001) distinguished general systems theory from other theories by describing it as a theory that aims to explore interrelationships and how all parts of an organization work together to form a whole.

Cybernetics and Futures Theory. Cybernetics is a term used to describe controlled systems. In a controlled system, changes are made in response to system inputs and outputs, and changes within the system usually lead to environmental changes. Unlike general systems theory,

cybernetics emphasizes how systems function rather than their structure. Futures theory is also a type of systems theory that is critical for sustaining organizational performance, and a way of thinking that prepares the organization for strategically planning to deal with events in the future. (Swanson & Holton, 2001)

Chaos and Complex Adaptive Systems Theory. Chaos theory describes the random components that make up a system, and as with other systems theories, components within the system are typically affected by external environments. Environmental changes have a significant impact on system processes and drive change. In chaos theory, one small change can have a huge impact on the overall system and cause chaos in organizational performance. Organizational processes that appear to be unsystematic are characteristic of chaos theory (Swanson & Holton, 2001). Chaos theory is closely related to complex adaptive systems theory. Complex adaptive systems theory is a system that "functions in an area of complexity between chaos and order" due to the large number of interactions within the system (Swanson & Holton, 2001, p. 115). Another characteristic of organizations that function as complex adaptive systems is one in which organizational behavior is nonlinear and relationships within the organization are not connected which decreases efficacy. Unlike cybernetics, complex adaptive systems are not controlled systems and like other systems theories, changes in the system influence other parts of the system although the interrelationships are not clearly defined.

Human Resource Development

LHL "is a burden for patients, healthcare providers, and the healthcare system as a whole" (Jukkala, Deupree, & Graham, 2009, p. 301). In a report by the Ad Hoc Committee on Health Literacy (1999), LHL was determined to be a stronger predictor of a person's health than any other demographic, i.e., age, income, employment status, education level, and race. To

improve health outcomes, healthcare organizations must begin to address health literacy by improving all patient-provider interactions which includes electronic health information, telephone systems, patient handouts, front desk check-in procedures, and all other communications with patients (The Joint Commission, 2007). Improving patient-provider interactions can be accomplished by establishing a framework for helping employees to develop health literacy competencies, such as encouraging use of teach-back and plain language best practices. Developing human resources by offering health literacy training and promoting OHL practices in all patient encounters gives employees the tools needed to practice universal precautions. In addition, employees will have the knowledge and skills to effectively work with patients of all literacy levels, particularly those who struggle with health literacy.

Human resource development is also important to be competitive in the healthcare industry and to assure that patients have access to the tools and services needed to make good health decisions. Through health literacy training and education, health professionals can better assist patients in understanding health information and services as well as encourage them to take more initiative in managing their own health. Other suggestions for improving health literacy in the health professions include the use of health coaches to assist patients with adhering to treatment plans and provide additional health education needed to improve health outcomes when needed. Linking employee use of health literacy best practices to performance measures will help to sustain health literacy best practices over time (Brega et al., 2015; The Joint Commission, 2007).

Having access to the resources needed to develop employees' health literacy skills is a challenge for many organizations. Health literacy is still a relatively new field, and many organizations do not have health literacy departments or staff to provide health literacy training.

In addition, many organizations have not set aside funds to support health literacy training and education to improve employee performance. Because of health literacy research and reports on health literacy and the link to patient health outcomes and healthcare spending, more organizations are beginning to realize the importance of developing health literacy skills in health professionals and are taking steps to promote use of OHL practices (Center for Health Literacy, 2014; Charet, 2010; Cloonan, Wood, & Riley, 2013; Hersh, Salzman, & Snyderman, 2015).

There is current health literacy research on the use of faculty development programs to improve OHL practices. The Stanford Geriatric Education Center implemented a faculty development program that included health literacy knowledge, skills, and abilities for health professionals who work with older adults (Evans et al., 2014). Participants were from multiple healthcare disciplines and 19 healthcare institutions in 12 different states. Using participant feedback, the program was found to be effective in improving health professionals' knowledge, skills, and attitudes toward health literacy. In a case study on integrating health literacy into the organizational culture (Briglia, Perlman, & Weissman, 2014), a New-York-based healthcare organization took action in making sure that every patient-provider interaction included some element of health literacy to improve patient outcomes. A program manager was hired to lead health literacy initiatives and act as a change agent. The organization also established a health literacy task force and a patient communications committee. The program manager, the health literacy task force, the patient communications committee, and others in leadership roles worked with the human resources department to develop health literacy trainings that were mandatory for all employees at the organization. The researchers reported that almost 100 percent of the organization's staff received health literacy training. Improving health literacy through human

resources development helped the organization to change its organizational culture to a more health-literate healthcare environment that promotes use of OHL practices (Evans et al., 2014).

Another option for developing human resources is to incorporate the use of OHL practices in organizational policies. Organizational policies regarding the use of health literacy practice helps to sustain health literacy practices over time and ensures that promoting health literacy an organizational priority and value. Improving OHL practices will improve healthcare quality, lower healthcare utilization, and reduce healthcare costs (Hardie et al., 2011; Parker & Hernandez, 2012; Vernon et al., 2007). Healthcare quality and lower healthcare costs are two important goals for most healthcare organizations (Kepros & Opreanu, 2009), including the academic health center chosen as the research site in this study.

Summary

Health literacy has been closely linked to overall health status and healthcare costs and is highly influenced by healthcare practices. Therefore, the Institute of Medicine recommends implementing more health literacy interventions at the organization level that involve use of OHL practices to address the national health problems associated with LHL. Unfortunately, many organizations are still not aware of the significant impact of LHL on health outcomes and the need for promoting OHL practices in all health professions (Coleman, 2011). Improving health literacy is the responsibility of the health system because "it is the health system that determines the parameters of health interactions" (Adams, 2010, p. 65). To address the national problems associated with LHL, "[Healthcare organizations] need to implement solutions that recognize it is not patients who are deficient, but rather the systems of care that do not serve them well" (Frosch & Elwyn, 2014, p. 13). Prior to implementing health literacy policies and practices, the AHRQ recommends beginning with a needs assessment of current OHL practices

(Brega et al., 2015). “Addressing the challenge of health literacy requires system-level changes for both health professionals and organizations” (Koh et al., 2012, p. 434).

Chapter III. Methodology

The purpose of this research study was to assess organizational health literacy (OHL) practices at a major academic health center using employee ratings of organizational practices that consider and promote the health literacy of patients. A quantitative survey that contains questions representing each of the ten attributes of a health-literate healthcare organization (HLHO) was the primary data collection instrument used to assess OHL practices (Brach et al., 2012; Kowalski et al., 2015). After administering the assessment and analyzing the data, results were used to answer the following research question:

To what extent do AHC employees think that their organization considers and promotes the health literacy of patients?

To further assess employee ratings of OHL practices at their organization, there were three hypotheses aimed at assessing differences in survey responses based on health profession, years of service, and level of patient contact. The hypotheses are as follows:

- Hypothesis 1:
    - H_0: There are no statistically significant differences among the ratings of OHL practices at the AHC by employees' health professions.
    - H_1: There are statistically significant differences among the ratings of OHL practices at the AHC by employees' health professions.
- Hypothesis 2:
    - H_0: There are no statistically significant differences among the ratings of OHL practices at the AHC based on employees' years of service.
    - H_1: There are statistically significant differences among the ratings of OHL practices at the AHC based on employees' years of service.

- Hypothesis 3:
    - H_0: There are no statistically significant differences among the ratings of OHL practices at the AHC based on employees' level of patient contact.
    - H_1: There are statistically significant differences among the ratings of OHL practices at the AHC based on employees' level of patient contact.

Research Design and Instrumentation

Research Design

A survey research design was used to better assess OHL practices that consider and promote patients' health literacy. Survey research design is often used when the goal of the research project is to obtain data to perform an analysis of current events and processes (Fowler, 2009) or, in reference to this research project, to obtain an analysis of current OHL practices. A good survey research design consists of three components: 1) sampling, 2) designing survey questions, and 3) data collection (Fowler, 2009). Sampling is used to gather information about the targeted population. Survey design is important for ensuring data quality. Determining how the data will be collected is especially important for improving response rates and obtaining enough data to reach statistical significance when testing research hypotheses.

A survey research design was chosen because the targeted population was health professionals at a busy healthcare organization who have a limited amount of time to participate in qualitative interviews. A literature review of interventions for addressing health literacy revealed that promoting OHL practices in all healthcare organizations is effective for addressing health literacy, and the first step in developing and promoting use of OHL practices is to assess current healthcare practices (Brega et al., 2015; DeWalt et al., 2010; Parker & Hernandez, 2012; Pleasant et al., 2013). Survey research design was chosen as the method of performing the

assessment since there was a recently developed instrument that was validated and reliable for efficiently assessing all attributes of a health literate healthcare organization, i.e., an organization that considers and promotes the health literacy of patients.

The HLHO-10 survey was chosen as the instrument to assess OHL practices because it is short and can be completed in less than 10 minutes, making it a great choice to use with busy health professionals. All survey questions are multiple choice and use a 7-point Likert-type scale. The survey was converted to an online survey for ease of distribution and access to improve the response rate. Demographic questions with predefined categories were added to the beginning of the survey to collect employee demographics. The data was collected online using Qualtrics survey software, downloaded to SPSS (version 22) and analyzed. Data analysis involved use of frequency counts, descriptive statistics, and univariate analysis to examine relationships in employee responses to HLHO-10 questions.

Needs Assessments. A needs assessment is a commonly used method of gaining an overview of organizational performance and may be used for general or specific purposes, such as an assessment of OHL practices only. Performing a needs assessment is highly recommended for organizations, such as the ACH, that are considering system-wide changes in practices or policies to improve performance. The specific type of needs assessment used in this project is a strategic needs assessment of OHL practices only. To assess organizational practices that consider and support the health literacy of patients. Addressing health literacy by improving OHL practices is important for improving patient outcomes, enhancing organizational performance, and reducing healthcare costs.

An alternative to conducting a strategic needs assessment was to perform a training needs assessment. This type of assessment would be useful if the research goal was to explore training

needs only. While employee training and development is important, health literacy training is only one attribute of the ten attributes of a HLHO; therefore, a training needs assessment would not be efficient for assessing all OHL practices that address health literacy. Since this research study is focusing on all organizational practices that address health literacy, conducting a needs assessment that uses employee feedback on every attribute of an HLHO was beneficial for identifying ways to improve performance in all areas that influence patients' health literacy. Another approach to performing a needs assessment is the use of focus groups or individual interviews with employees, patients, or other community members. This approach is time consuming and may not work well with busy health professionals.

Strategic needs assessments may utilize existing data such as reports or other statistical data that the organization collects. The most widely used method of performing needs assessments is through use of surveys, such as the survey that will be used to assess OHL practices in this research study (i.e. HLHO-10). Use of a survey research design to perform the needs assessment was a quick and effective means of collecting data using employee feedback because the time needed to complete the survey was less than ten minutes, and all questions contained pre-selected response options.

A thorough needs assessment consists of three phases: pre-assessment, assessment, and post-assessment (Altschuld & Witkin, 2000). The purpose of the needs assessment was determined during the pre-assessment phase. Pre-assessment was also the time to examine methods of performing the assessment that would be most beneficial, such as ways to collect data supporting the assessment. During this phase, it was determined that the Health Literate Healthcare Organization 10-item questionnaire (Kowalaski et al., 2015) would be the most efficient tool to use for assessing OHL practices using employee feedback.

The next phase after the pre-assessment involves preforming the actual needs assessment; data is collected, reviewed, and analyzed during this phase. During this phase of the assessment, the HLHO-10 survey was administered to all employees. Finally, in the post-assessment phase, organizational priorities are identified, action plans are established, and outcomes are evaluated. In this research study, a needs assessment was used to determine the extent to which the organization is considering and supporting the health literacy of patients.

After performing a needs assessment, the next step is to conduct a needs analysis. The needs analysis involves the review of data obtained during the assessment phase to determine specific causes of weaknesses in organizational processes or operating procedures that may be contributing to negative outcomes (Altschuld & Witkin, 2000). In this research project, the needs analysis helped to determine where improvements in organizational performance where needed to ensure that the organization is adequately considering and promoting the health literacy of patients by utilizing OHL practices as outlined in the ten attributes of health-literate healthcare organizations.

Putting the needs assessment into action follows the needs analysis. For example, if assessment outcomes reveal that the organization is not satisfactorily considering and promoting the health literacy of patients in several areas that influence health literacy based on the ten attributes of an HLHO, action planning will be necessary to determine the best method of improve healthcare practices that promote health literacy. Patient feedback has been used in former research studies that assessed OHL practices in primary care settings (Kowalski et al., 2015; Kripalani et al., 2013; Weaver et al., 2012). However, this research study uses employee feedback to assess OHL practices. Using employee feedback, the goal of this needs assessment is to assess how well the organization is addressing health literacy. The assessment will also be

helpful for identifying ways to improve OHL practices at the organization to strengthen ongoing efforts to promote health literacy.

Instrumentation

The recently developed Health-Literate Healthcare Organization (HLHO) 10-Item questionnaire was used to collect quantitative data on OHL practices at the ACH. The HLHO-10 measures the extent to which an organization considers and promotes the health literacy of patients and was developed using Brach et al.'s (2012) ten attributes of a health-literate healthcare organization; each question represents one of the ten attributes of HLHO's verbatim. Written permission to use the HLHO-10 was obtained by email (See Appendix B). Kowalski et al. (2015) published methods used to develop and validate the HLHO-10, such as use of item analysis to determine the extent that each survey item correlated with the overall OHL score. Focus groups that included health professionals from various disciplines were used to assess the validity of each survey item. Validity and reliability were assessed using classical measurement theory, a theory that determines the extent to which an instrument produces consistent results and measures what it was designed to measure. Item analysis was used to determine the extent to which each survey question correlated with the total score of the instrument, and Cronbach's alpha measured internal consistency in survey responses. The following statistical tests were performed to assess validity and reliability of the HLHO-10: confirmatory factor analysis, Tucker-Lewis index, and bivariate tests to establish criterion validity. Overall, the HLHO-10 was found to have good psychometric properties.

Kowalski et al. (2015) used a t-test and ANOVA to assess differences in survey responses based on the type of healthcare organization, i.e., academic, public, private, etc. This research study assessed differences in OHL survey responses based on demographic variables,

i.e., department, years of service, and health profession. They found that the HLHO-10 was useful for assessing the degree to which healthcare organizations manage issues surrounding LHL in their patient populations. The authors recommended using the HLHO-10 as a tool for identifying strengths and weaknesses in OHL practices in future research studies involving larger, more diverse healthcare organizations, such as the research site chosen for this study.

The HLHO-10 assessment was converted to an online survey in Qualtrics. The survey was set up so that participants were allowed to choose only one response for each question. To prevent missing values, the online survey was designed so that answering each question was mandatory before moving to the next section. Employees answered nine demographic questions prior to completing the HLHO-10 questions. There were five work-related demographics and four employee-specific demographics.

The first work-related demographic question asked the employee's campus location: on or off campus. The second demographic question contained a drop-down list of all departments at the ACH with an "other" option for those who were not sure of their department name. Department names were listed to prevent the possibility of entering incorrect data. The next question identified health professions and was also designed using a drop-down list so that employees could choose from a list of options. Since there are several positions at the health center (too many to list), the top positions were listed with an "other" option to prevent an extensive list of positions. The fourth work-related demographic question asked years of service and contained six answer options ranging from less than 1 year to more than 21 years of service. In addition, there was a demographic question about the level of patient contact with three response choices ranging from 0-10% to greater than 51% direct patient contact. The

question/answer format for position, years of service, and level of patient contact (questions 2-4) were adapted from the AHC (2016) Culture of Safety Survey.

The four employee-specific demographic questions were for age, race, education, and gender. These questions were developed using a similar question and answer format found in federal surveys. For example, the CDC (2013) provides guidance on the types of demographic questions traditionally used in surveys. CDC's recommendations were used to create the employee-specific demographic questions.

The ten questions assessing OHL practices followed the demographic questions. These questions were designed using a 7-point scale from 1 to 7, with 1 meaning "absolutely not" and 7 meaning "to a very large extent" (Kowalski et al., 2015). The seven point rating scale for each question response reflects the degree to which the participant agrees or disagrees with each statement rather than a simple agree/disagree response. Similarly, participants in this study were asked to rate the extent to which their organization considers and promotes the health literacy of patients using this seven-point rating scale.

Research Setting and Participants

Setting

This study was conducted at a major academic health center that is among the largest healthcare providers in Arkansas. The organization provides healthcare and academic services to patients and students and had more than 170,000 outpatient visits in fiscal year 2016; there were 2,870 students and nearly 800 medical residents in 2016 (AHC, 2017). The AHC has 10,300 employees in a variety of health professions, making it a suitable site for recruiting a diverse sample of employees from various professions. The organization is a part of a large healthcare system that provides educational, research, and career opportunities for health professionals and

students. There are numerous departments in the organization including academic affairs, clinical and regional programs, administration and governmental affairs, communications and marketing, etc. Other departments that offer specialized services to patients include institutes on aging, psychiatry, myeloma, cancer, and the eye institute to name a few. In addition to providing patient care, the organization serves as a source of health education to students by offering healthcare degrees in medicine, nursing, pharmacy, and other fields.

Health professionals in all areas in which health degrees are offered are currently employed at the ACH. These professions include physicians, physician assistants, nurses, pharmacists, etc. Other employee categories fall into the classification of research, education, clerical/administrative, and information technology. There are also maintenance and food service positions as well as positions located on the main campus and at satellite locations. Since the organization has a diverse group of employees from all professions, all employees were included in the targeted population to obtain a sample representative of all professions that have varying levels of patient contact. The organization was also chosen as the research site because it recognizes the importance of improving performance and health outcomes as well as reducing healthcare costs by addressing health literacy. For example, the ACH launched a Center for Health Literacy in 2013 to support ongoing efforts to improve healthcare practices and patient health outcomes by addressing health literacy.

Population and Sample

Total population sampling was used to recruit participants from the entire employee population at the organization. All employees (N = 10,300) at the AHC were targeted in the sample population. Total population sampling was used to ensure that every employee readily available and willing to participate would have access to the survey. Total population sampling is

a type of purposive sampling that is often used when project goals involve assessing relationships between variables (Daniel, 2012). Since survey results from the study are generalizable to OHL practices at the AHC only, this sampling method was most appropriate for reaching the targeted number of participants with specific demographic characteristics needed to answer the hypotheses, i.e., employees from various health professions, levels of patient contact, and years of service. While this sampling method allowed equal access to all employees interested in participating, there were significantly more responses from certain departments or health professions than others during the first few weeks of data collection; therefore, it was necessary to recruit employees from departments with low response rates to obtain a more diverse sample. The survey announcement was emailed to the entire organization initially, then to specific departments based on response rates to collect data to answer the three hypotheses which compared differences in employee responses based on health position, years of service, and level of patient contact.

Sampling bias was taken into consideration when choosing the sampling technique. Sampling bias can cause the data to be skewed, making it appear as though certain questions are favored over others (Daniel, 2012). When participants from the targeted population are not equally represented or are less likely to be included, the data is likely to be biased. Since sampling bias was a possibility, demographic data was carefully reviewed to ensure the sample was representative of all employees and not just a select few from the same department or health profession. The number of employees in each department varies; thus, employee participation also varied by department size as expected. Survey responses were received from all departments.

An alternative approach to dealing with sampling bias is to mention the possibility of sampling bias in the research results and explain that the bias is due to less participation from some groups (Daniel, 2012). Sampling bias prevents data from being generalizable to the target population (i.e., AHC employees); however, none of the data appeared to be biased and no responses were excluded from the analysis. To address unequal sample sizes in several groups (i.e. department, health profession, etc.), some demographic variables were collapsed by combining response options to create larger groups. For example, responses for health professions that had five or fewer participants were grouped into similar categories to meet the assumption of homoscedasticity.

Selection of Participants

The HLHO-10 questionnaire was distributed to all employees and was used to determine the extent to which the AHC considers and promotes the health literacy of all patients. A power analysis was performed to determine the appropriate sample size to obtain significance based on the number of employees at the ACH (10,300). Using a 95 percent confidence level and a 5 percent margin of error, the targeted sample size was 371 employees. The AHC has a global email address list that is accessible to all employees. Since all employees were targeted in the sample population, an invitation to participate in the study was emailed through the organization's weekly announcements. The invitation informed participants about the purpose of the study and included specific information regarding the importance of addressing health literacy by improving organizational health literacy.

Employees interested in taking the survey were asked to click on the survey link included in the invitation to participate. The survey link opened with the consent form, which contained more information regarding the purpose of the research study, study contacts, and all other

required elements necessary for providing informed consent, i.e., risks, benefits, confidentiality statements, etc. After providing consent, participants were asked to click on the survey link at the bottom of the consent discussion if they were interested in participating. Consent was implied when participants clicked on the link to access the survey questions. The survey was open from June 19, 2016, through September 30, 2016, to allow at least 371 responses to meet the targeted sample size. A total of 463 employees participated in the study. Based on a total of 10,300 employees, the survey response rate was 4.5 percent. At the end of data collection, the survey was closed and results were exported to Excel, then transferred to SPSS for analysis.

Data Collection Procedures

Most employees at the AHC have access to a computer and the internet, and all employees have a work email account; therefore, emailing the HLHO-10 online assessment was the most feasible method of administering the survey and reaching all employees. Participants were asked to answer the ten questions about OHL practices and the nine demographic questions (i.e. department, staff position and years of service, level of patient contact, age, race, gender, and highest level of education completed). Since demographic questions typically used in several surveys was also used in this survey, the expectation was that most participants would be familiar with answering these questions; therefore, the estimated time to complete the demographic section was about two minutes. Reading the informed consent and completing the entire HLHO-10 assessment required no more than 10 minutes of the participants' time. Employee participation was strictly voluntary. Since no identifying information was collected from employees that could link them to their responses, all survey responses were confidential. To encourage participation, employees informed of the implications of low health literacy and the importance of promoting OHL practices to improve patient health literacy and health

outcomes. Employees who completed the entire survey were given the opportunity to click on a link at the end of the survey that gave access to a totally separate survey designed to collect entries for the participant incentive, a $100 Amazon gift card drawing.

The protocol, consent form, data collection instruments, and all supporting documents were sent to the University of Arkansas Fayetteville (UAF) Institutional Review Board (IRB) for approval. Prior to submitting to the UAF IRB for approval, permission to contact employees to administer the online OHL assessment was granted by the research site. A letter of support from the AHC's communications department was included with the UAF IRB submission to confirm permission to contact employees by posting the survey announcement in the AHC's weekly email announcements. The protocol and other study materials were reviewed and approved by the UAF IRB (Appendices A, B, D, & E). Upon IRB approval from UAF, all documents were sent to the AHC IRB for review and approval before beginning the study (Appendices A, B, D, & E). The survey was then activated and open for responses for two and one-half months (10 weeks). At the end of each week, survey responses were checked to monitor completion rates. Halfway through the data collection, the survey was re-posted to the ACH's weekly announcements to remind employees and increase the response rate. The survey was closed at the end of September, and the data was downloaded to Excel and then transferred to SPSS statistical software for data analysis. All research data is stored on a secure, password protected USB drive so that only the researcher has access to employee responses to assure employee confidentiality.

Data Analysis

The first step during data analysis was to run descriptive statistics to get an overview of survey responses. Descriptive statistics show demographic characteristics of the survey sample and provide an overall view of employee ratings of their organizations ability to promote and

support the health literacy of patients. The HLHO-10 mean scores for each employee attribute revealed the extent to which employees believed that their organization considers and promotes the health literacy of patients based on specific employee demographics: (1) health profession, (2) level of patient contact, and (3) years of service. The interaction between employees' responses to the HLHO-10 questions and employee attributes (Hypotheses 1-3) was assessed using a three-factor ANOVA.

Distribution Tables

Distribution tables display descriptive statistics from the survey responses (Table 1). A separate distribution table represents the dependent variable and fixed factors:

1. Mean HLHO-10 responses,
2. Health profession,
3. Years of service, and
4. Level of patient contact.

Three-Factor ANOVA

Three-way factorial Analysis of Variance (ANOVA) was used to examine the relationship between HLHO-10 responses and employee work-related attributes. The dependent variable was the mean response to all HLHO-10 items. The fixed factors are health profession, years of service, and level of patient contact. Keppel (1991) recommended use of Bonferroni and Tukey's test to further assess differences in the mean scores of each independent variable. An alternative is to use the Dunnett test to assess significant differences among variables. Dunnett's test is recommended because it compensates for the existence of Type I errors, which is the probability that the null hypothesis is rejected when it is in fact true. To determine the degree of differences between each independent variable, Bonferroni and Tukey's post hoc tests were used.

The Shapiro-Wilk test statistic shows the significance in HLHO-10 score, and was used to assess normality and homogeneity of variance.

Assumptions of the Study

All assumptions of ANOVA were checked before running the analysis. The assumptions of independence, normal distribution of scores, and homogeneity of variance were met for each variable which according to Keppel (1991) meant that all observations were independent of one another. The test for independence was used to determine if the variables were independent of one another and to verify the assumption that the null hypotheses are true. Statistical results revealed that the assumption of independence was not violated; therefore, ANOVA was the most appropriate test for analyzing the data.

The HLHO-10 scores were normally distributed to satisfy the assumption of normality. Normality and line plots were reviewed to determine the presence of outliers. The interaction between factors was assessed and displayed using line plots. The next assumption tested was the the assumption of equal variances. Homogeneity of variance assumes that each group in the sample has the same variance. Due to the small sample sizes of many of the groups used in the analysis, Levene's test for homogeneity of variance was significant ($p < .05$); however, data plots were used to identify outliers and confirmed that the data was normally distributed. Levene's test statistic measured how far away each participant response was from the group mean, making it possible to identify extreme values. Shapiro-Wilk's test revealed that ANOVA was in fact the correct statistical procedure for assessing differences in group means based on employee work-related demographics.

Limitations and Delimitations

Since this research study involved an assessment of organizational health literacy at a specific healthcare organization, participation was limited to employees of this health center only. Limiting participation to AHC employees means that the assessment describes health literacy best practices at this organization only, and an assessment of OHL practices at another health center may have different results. To increase participation, non-probability purposive sampling was used. Using this sampling technique increased the potential for bias in participant responses. Although non-probability purposive sampling was used to recruit participants from all employees, recruiting during the summer months when employees are typically vacationing or out of the office due to nine or ten month contracts, made obtaining the required sample size quite challenging. Another limitation of this study is the time allowed to collect and analyze data. Since this is a dissertation and the study is being performed to fulfill program requirements, time is limited.

The research design consisted of the administration of a quantitative organizational health literacy assessment using three-way factorial ANOVA. An alternative was to use a mixed-methods research design with a combination of quantitative surveys and qualitative interview questions. The problem with using a mixed-methods approach is encouraging busy health professionals to participate in the follow-up interviews. Qualitative data would be useful for obtaining in-depth information on organizational health literacy at the AHC, but it might be impossible to get enough health professionals to participate in the interviews. It took almost two months to get the targeted number of participants to respond to the short HLHO-10 survey.

A delimitation of this research study is the use of health literacy resources from the last ten years. Health literacy was recognized as a public health problem many years ago, and there

have been numerous research studies on health literacy outcomes and interventions. However, this literature review reflects research and resources on health literacy best practices and outcomes published with the last ten years. Limiting the literature search to the last ten years eliminates earlier studies on health literacy interventions and outcomes.

Work-Based Research

There are many things to consider when conducting research in an organization. First, the researchers must be sure to get permission from the organization/employer to conduct research in the workplace. This project received support from the student researcher's supervisor, who is the executive director of the health literacy department and values the importance of assessing OHL practices at the AHC. Elliott, Costly, and Gibbs (2010) recommended informing the organization of "what is expected of the participants in terms of both the project itself and the research element of the project" (p. 56). Therefore, the research protocol and other supporting documents were submitted to the organization for review prior to study enrollment. Although the project was conducted in the workplace, the researcher maintains ownership of all data collected.

In addition, prior to conducting research at the workplace, employee privacy was considered. Therefore, the survey was set up so that all responses were completely anonymous. It was also important not to influence participant responses and equally important not to coerce employees to participate simply because the researcher is a fellow employee. The survey announcement contained the researcher's name and contact information so that employees were fully aware of the researcher's role in the organization and in the research project. The consent form informed employees that they were under no obligation to participate and that participation would not affect their employment status with the organization. The consent form also provided

specific details on confidentiality and anonymity and helped to further ensure employees that survey responses would be strictly confidential as recommended by Elliott, Costly, and Gibbs (2010).

When conducting research in the workplace, it is also important to have complete understanding of the organization's research policies. Therefore, the research protocol was reviewed and approved by the organization's Institutional Review Board (IRB) as well as the IRB at the school of attendance. All research records were stored on the researcher's personal USB storage device. At no time was the organization's computer or network used to store research records related to the project. Using the researcher's personal storage devices ensured the confidentiality of employee responses by eliminating unauthorized viewing by other employees who may have access to network files. To prevent a conflict of interest due to the role of the researcher as an employee, it was necessary to be clear about the purpose of the study and provide specific details on use of the data in future publications or presentations.

Summary

Health literacy is a national health problem that is linked to negative health outcomes, unnecessary use of healthcare services, and increased healthcare spending. Promoting OHL practices is a recommended intervention for addressing health literacy and improving health outcomes. This quantitative research study assessed OHL practices at a major health center using a three-way factorial ANOVA design. The targeted sample size for the research study was 371 current employees. Data collection began in the summer 2016 and lasted ten weeks. Using convenience sampling, all employees on the organization's global email list who receive weekly announcements were invited to complete the online survey. Data analysis involved use of

factorial ANOVA to assess differences in employee responses to the HLHO-10 questions based on their health profession, years of service, and level of direct patient contact.

Chapter IV. Data Analysis

To assess organizational health literacy (OHL) practices that consider and support the health literacy of patients, a quantitative survey that contains all attributes of a health-literate healthcare organization (HLHO) was distributed to current employees at an academic health center (AHC). A total of 463 employees from the study site participated in the study. Employee responses to the survey questions were used to answer the following research question: To what extent do AHC employees think that their organization considers and promotes the health literacy of patients?

The three hypotheses are listed below; $p < 0.05$ was assumed for each:

1. H_0: There are no statistically significant differences among the ratings of OHL practices at the AHC by employees' health professions.

   H_1: There are statistically significant differences among the ratings of OHL practices at the AHC by employees' health professions.

2. H_0: There are no statistically significant differences among the ratings of OHL practices at the AHC based on employees' years of service.

   H_1: There are statistically significant differences among the ratings of OHL practices at the AHC based on employees' years of service.

3. H_0: There are no statistically significant differences among the ratings of OHL practices at the AHC based on employees' level of patient contact.

   H_1: There are statistically significant differences among the ratings of OHL practices at the AHC based on employees' level of patient contact.

Demographic Characteristics

An invitation to participate in the research study was sent to a total population sample of 10,300 employees through the organization's weekly email announcements. Of the number of

employees who participated (n = 463), there were 375 complete and 88 incomplete survey responses. Since response rates from some departments were substantially less than others, departments were grouped into broader categories based on scope of work and overall purpose within the organization (Office of Human Resources, 2014). For example, responses from participants who work in Clinical Programs and Regional Programs were grouped into the category "Medical Center/Hospital" because these departments are typically associated with patient care, and employees often have a high level of direct patient contact. In addition, there are several "Institutes" at the organization that offer specialized services such as eye care, psychiatry, and cancer-related services to name a few. Each of these departments contains the word "Institute" in its title and was therefore grouped into a category called "Institutes."

The next major category represents colleges and academic programs at the organization. These departments typically interact with students and offer educational services; therefore, they were grouped into the category titled "Colleges/Academic Programs." The last category, "Other Departments," was created for all other departments that did not fit into either of the newly created categories. This category contains departments that have very little patient interaction; most employees serve in administrative or administrative support roles such as information technology or campus operations. An institutional overview of the number of employees in each department shows that the largest department at the organization is Colleges/Academic Programs (36.1%) (Office of Human Resources, 2014). Survey results for each department at the organization revealed that most responses were also from Colleges/Academic Programs (34.3%). There was missing data or incomplete responses from 8.2% of the participants. Table 1 shows the number and percentage of participants from all departments.

Table 1. Departments at the study site

Department	Number of Participants n	Percentage of Participants %
Academic Affairs	50	10.8
Medical Center/Hospital - Clinical Programs - Regional Programs	47	10.2
Institutes - Institute on Aging, Jones Eye Institute, Myeloma Institute, Psychiatric Research Institute, Translational Research Institute, Cancer Institute	39	8.4
Colleges/Academic Programs - Nursing, Medicine, Pharmacy, Public Health, Health Professions, Graduate School	159	34.3
Other Departments - Administration/Governmental Affairs, Campus Operations, Chancellor's Office, Communications and Marketing, Finance, Information Technology, Institutional Advancement, Research Administration	130	28.1
Missing Data*	38	8.2%
Total	*463*	*100%*

*Incomplete surveys/no response

The health profession with the largest number of responses was Administration (23.3%). An "Other" category (28.7%) was used for employees who either did not want to disclose their position or for those who felt that they did not fit into any of the categories listed. Since there are so many health professions at the organization, only the top seven health professions were listed to prevent having participants scroll through a very long list of job categories. Before running the univariate analysis, health professions categories were grouped into major categories based on similar characteristics to create larger groups for comparison. Creating larger groups for comparison increases the chances of reaching statistical significance in findings. For example, physicians, pharmacists, and therapists were combined into one group since these professions had very low response rates. All other groups remained the same. Table 2 shows the number and percentages of all health professions, level of patient contact, and years of service.

Table 2. Health profession, level of patient contact, and years of service

Demographic	Category	Number of Participants n	Percentage of Participants %
Health Profession	Nurse	39	8.4
	Physician	28	6.0
	Pharmacist	7	1.5
	Therapist	13	2.8
	Administration	108	23.3
	Research	53	11.4
	Education	61	13.2
	Other	133	28.7
	Missing Data*	21	4.5
	Total	*463*	*100%*
Level of Patient Contact	0-10% Direct patient contact	323	69.8
	11-50% Direct patient contact	31	6.7
	Greater than 50% Direct patient contact	88	19.0
	Missing Data*	21	4.5
	Total	*463*	*100%*
Years of Service	Less than 1 year	57	12.3
	1-5 years	153	33.0
	6-10 years	80	17.3
	11-15 years	59	12.7
	16-20 years	42	9.1
	21 years or more	51	11.0
	Missing Data*	21	4.5%
	Total	*463*	*100%*

*Incomplete surveys/no response

Analyses of other work-related demographics revealed that the majority of participants had 0-10% direct patient contact (69.8%). Most participants reported one to five years of service (33%), consistent with the latest report of the number of employees at the organization based on years of service. A recent report from the organization shows that most employees had one to five years of service (28.6%) (Office of Human Resources, 2014). Twenty-one (4.5%) participants did not answer the questions regarding health profession, level of direct patient contact, and years of service; therefore, there is a category for missing data. As with other demographic categories, these categories were combined to form larger groups before running the univariate procedure. There were several employee responses from those with 0-10% direct patient contact, and only a few from employees with 11-50% and greater than 50% direct patient contact. Therefore, level of patient contact was combined to form two large groups to prevent unequal sample sizes. The new categories created for level of patient contact were: 0-10% direct patient contact (n = 262) and greater than 10% direct patient contact (n = 113). Years of service was also combined to form two major groups instead of six small groups to meet the ANOVA assumption of equal sample sizes. The new categories for years of service were as follows: five years of service or less (n = 181), and more than five years of service (n = 194).

Employee-specific demographics included race, gender, age, and education (Table 3). The majority of participants were White (70.4%), followed by Black or African-American (18.1%), and a small percentage (0.4%) chose not to disclose their race. The organization's Office of Human Resources (2014) reports that 65.7% of employees are White and 22.6% Black or African-American. These demographics are similar to the number of survey responses by race. Since there were low response rates in many of the minority racial groups reported,

categories were combined to form three major groups prior to running univariate analyses: Black (n = 73), White (n = 275), and Other (n = 27).

There were considerably more female participants (76.7%) than males (18.8%), which is fairly close to the total number of female (71%) and male (29%) employees at the organization (Office of Human Resources, 2014). Only 1.3% of participants were under the age of 25, with the majority between the ages of 40-49 (27%) and 50-59 (27.4%). The ages of survey respondents closely resembles the average age of employees at the organization. The AHC's Office of Human Resources (2014) reported that the average age of most employees is 42.3. Since there were so few participants in the under 30 age groups, before running univariate analyses, responses were grouped to form larger categories as follows: under 30, 30-39, 40-49, 50-59, and 60 or older.

Most participants responded that they had obtained at least a college degree: Associate (6.7%), Bachelor's (21.4%), Master's (25.9%), and Doctoral (20.5%). Participant responses for highest education completed was also grouped to form larger categories before running univariate analyses: Less than college degree (n = 49); Associate or Bachelor's degree (n = 106); and graduate, professional, or advanced degree (n = 220). Overall, 83.1% of participants had a college degree, which is not surprising since the research site is an academic health center with 42% of employees in a health-related profession, 19% in administration, and 13% are classified as faculty (Office of Human Resources, 2014). Employees also tend to take advantage of academic programs offered at the AHC and other affiliated institutions. Missing or incomplete responses for the questions about gender, age, and education added up to 21 (4.5%). Table 3 shows the number and percentage of responses for each demographic as actually reported by participants before categories were combined to form larger groups for purposes of data analysis.

Table 3. Other employee demographics (n = 463)

Demographic	Category	Number of participants n	Percentage of participants %
Race	American Indian or Alaskan Native	2	.4
	Asian	8	1.7
	Black or African American	84	18.1
	White	326	70.4
	Two or more races/Some other race	5	1.1
	Hispanic	15	3.2
	Choose not to disclose	2	.4
	Missing Data*	21	4.5
	Total	*463*	*100%*
Gender	Male	87	18.8
	Female	355	76.7
	Missing Data*	21	4.5
	Total	*463*	*100%*
Age	Under 25	6	1.3
	26-29	32	6.9
	30-39	91	19.7
	40-49	125	27.0
	50-59	127	27.4
	60 or older	61	13.2
	Missing Data*	21	4.5
	Total	*463*	*100%*
Education	High school graduate	16	3.5
	Completed some college	41	8.9
	Associate degree	31	6.7
	Bachelor's degree	99	21.4

Table 3. Other employee demographics (n = 463) (cont.)

Demographic	Category	Number of participants n	Percentage of participants %
Education	Completed some post graduate	21	4.5
	Master's degree	120	25.9
	PhD, MD, PharmD, or Law degree	95	20.5
	Other advanced degree beyond Master's	19	4.1
	Missing Data*	21	4.5
	Total	*463*	*100%*

*Incomplete survey or no response

Descriptive Data

Data was collected online using Qualtrics Survey Software from July 19, 2016, through September 30, 2016. Overall mean employee responses to the extent to which their organization considers and promotes the health literacy of patients was 4.72 (to a moderate extent) on a 7-point Likert-type scale with a response of 1 meaning *Not at All* and a response of 7 indicating the highest rating of *To a Very Large Extent* (7 = To a Very Large Extent, 6 = To a Large Extent, 5 = To a Fairly Large Extent, 4 = Neutral (neither /nor), 3 = To a Moderate Extent, 2 = To a Small Extent, 1 = Not at All). For each attribute of an HLHO, employees provided the highest rating to attribute seven, providing access (Table 4). The mean rating for the extent to which "efforts are made to ensure that patients can find their way at your organization without any problems" was 5.33 (to a fairly large extent). Leadership support on the topic of health literacy resulted in a mean of 5.22, which means most participants agreed to a fairly large extent as well. Integrating the topic of health literacy into quality management issues received a mean of 5.19 followed by addressing high-risk situations (4.99). When asked about the quality of communication standards that ensure patients understand, the mean employee response was also 4.99. The use of individualized health information received a mean of 4.86. Attribute seven assessed the extent to

which patients are included in the development of health material; the mean employee response was 4.54. The mean response on the availability and variety of patient health information was 4.46. Attributes of an HLHO that received the lowest ratings were employee training on the topic of health literacy (M = 4.45) and patient-provider communication about costs (M = 4.26). Table 4 shows the ranking of mean HLHO-10 scores from highest rating to lowest.

Table 4. Responses to organizational health literacy questions (n = 375)

			95% Confidence Interval	
Survey question	Mean	Std. Error	Lower Bound	Upper Bound
…are efforts made to ensure that patients can find their way at your organization without any problems (e.g. direction signs, information staff)? (7, provide access)	5.327[a]	0.118	5.095	5.560
…is the management at your organization explicitly dedicated to the subject of health literacy (e.g. mission statement, human resources planning)? (1, leadership)	5.216[a]	0.118	4.983	5.449
…is the topic of health literacy considered in quality management measures at your organization? (2, integration)	5.188[a]	0.123	4.947	5.429
…is it ensured that the patients have truly understood everything, particularly in critical situations (e.g. medication, surgical consent), at your organization? (9, high-risk)	4.994[a]	0.117	4.764	5.224
…are there communication standards at your organization which ensure that patients truly understand the necessary information (e.g. translators, allowing pauses for reflection, calling for further queries)? (6, communication standards)	4.985[a]	0.122	4.744	5.226
…is individualized health information used at your organization (e.g. different languages, print sizes, braille)? (5, health literacy skills range)	4.860[a]	0.125	4.614	5.105
…is health information at your organization developed by involving patients? (4, inclusion of the served)	4.535[a]	0.129	4.282	4.789
…is information made available to different patients via different media at your organization (e.g. three-dimensional models, DVDs, picture stories)? (8, media variety)	4.463[a]	0.126	4.216	4.711
…are employees at your organization trained on the topic of health literacy? (3, workforce)	4.445[a]	0.128	4.194	4.696
…do you communicate openly and comprehensibly at your organization to your patients in advance about the costs which they themselves have to pay for treatment (e.g. out-of-pocket payments)? (10, costs)	4.261[a]	0.131	4.004	4.519

a. Based on modified population marginal mean.

Research Question

The purpose of this research study was to assess the extent to which employees believe that their organization considers and promotes the health literacy of patients. The organization received a mean rating of 4.72 on a scale of 1 to 7 on how well it considers and promotes the health literacy of patients in each attribute of an HLHO. Employee responses to the organizational health literacy questions ranged from a mean of 4.26 to 5.33 for each survey response. Survey data revealed that participants agreed *to a fairly great extent* that "management [is] explicitly dedicated to the subject of health literacy" and "the topic of health literacy [is being] considered in quality management measures," i.e., attributes one and two (M = 5.22 and 5.19 respectively). Employee responses on the extent to which efforts are made to ensure that patients are able to easily find their way around the organization indicates that employees agree *to a fairly great extent* on the organizations use of signage, information desks, and other tools accessible to patients and visitors for getting directions when visiting (M = 5.33). The areas in most need of improvements based on mean employee responses to the HLHO survey items are communications about out-of-pocket costs (M = 4.26) and training employees on the topic of health literacy (M = 4.44). Actual responses to each HLHO-10 survey question are in Appendix D. Since the overall employee response regarding the extent to which their organization considers and promotes the health literacy of patients resulted in a mean rating of less than 5 (to a fairly great extent) on a 7-point Likert-type scale, there are several areas within the organization where improvements are needed to adequately address health literacy.

ANOVA Assumptions

Before running the analysis, the first step was to obtain the overall mean score of the HLHO-10 responses (M = 4.72). After computing the mean HLHO-10 score, a univariate

ANOVA was performed using the HLHO-10 score and the independent variables: health profession, years of service, and level of patient contact. The decision to accept or reject the null hypotheses was determined by running ANOVA and examining the resulting F ratio. The findings show that there are no statistically significant differences ($p < 0.05$) in the mean HLHO-10 responses by health profession, years of service, and level of patient contact, meaning that the decision was to reject the null hypotheses that there are no statistically significant differences among employee ratings of OHL practices based on health profession, years of service, or level of patient contact.

Kolmogorov-Smirnov's and Shapiro-Wilk's tests were used to test the assumption of normality. Since the test revealed that the level of significance was less than $p < 0.05$ and the significance level of some of the variables were also less than $p < 0.05$, visual verification of box plots was used to detect the presence of possible outliers since smaller samples tend to make rejecting the ANOVA assumptions easier (Figures 1-3). Box plots may be used to help determine visually whether a distribution meets the assumption of normality (Lane, Hebl, Osherson, & Ziemer, 2008). In Figure 1 (health profession), there are a few outliers for each category in the variable health profession. The outliers are identified by the circles above or below the upper or lower fences (horizontal lines) in the figure. There is one outlier in Figure 1 that falls above the upper outer fence, and a few outliers that fall below the lower fences. Figures 2 and 3 also show outliers below the lower fences for level of patient contact and years of service. However, normal distributions may have a small number of outliers and still meet the assumption of normality (Lane et al., 2008).

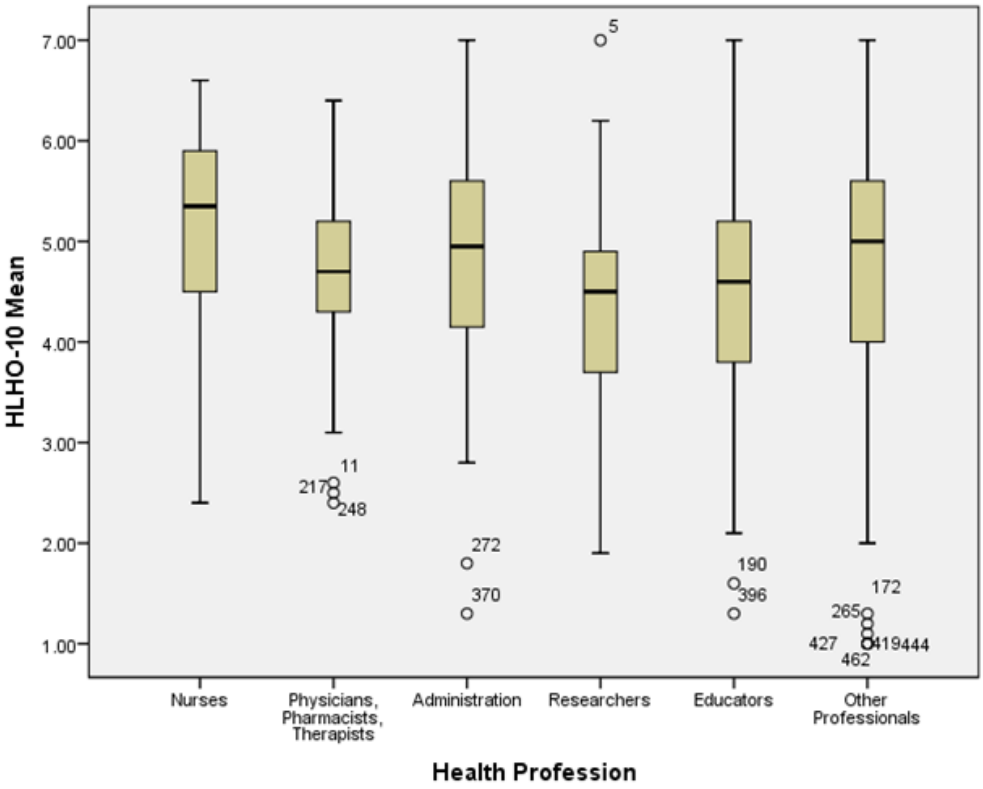

Figure 1. Box plot for health professions

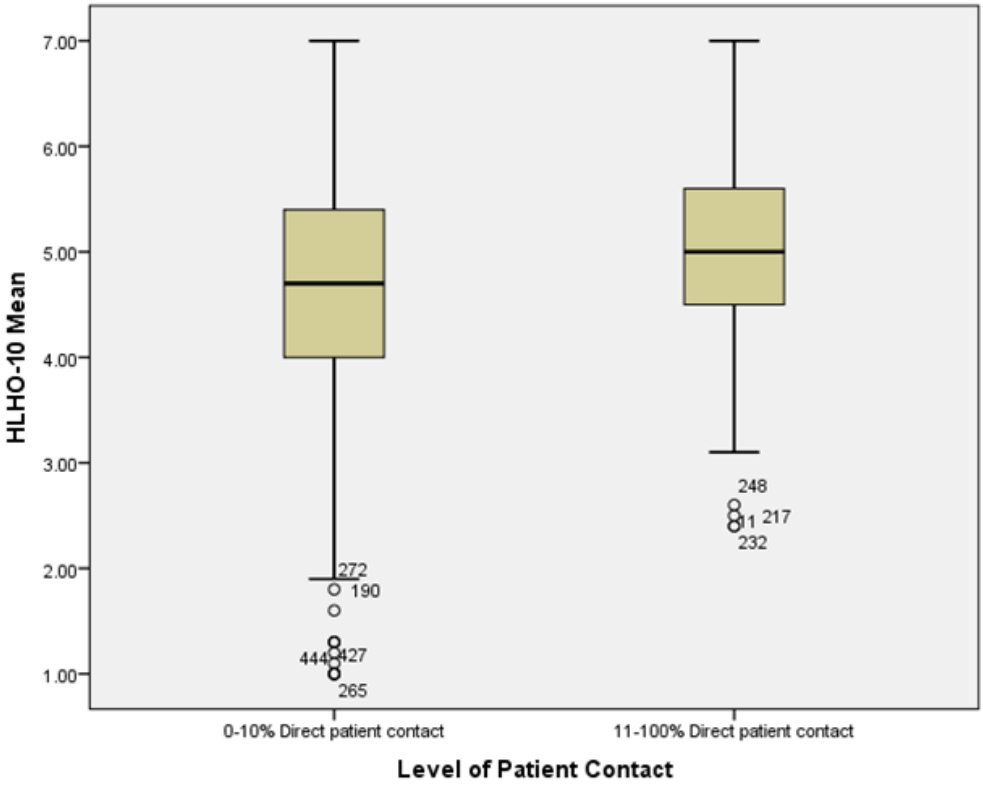

Figure 2. Box plot for level of patient contact

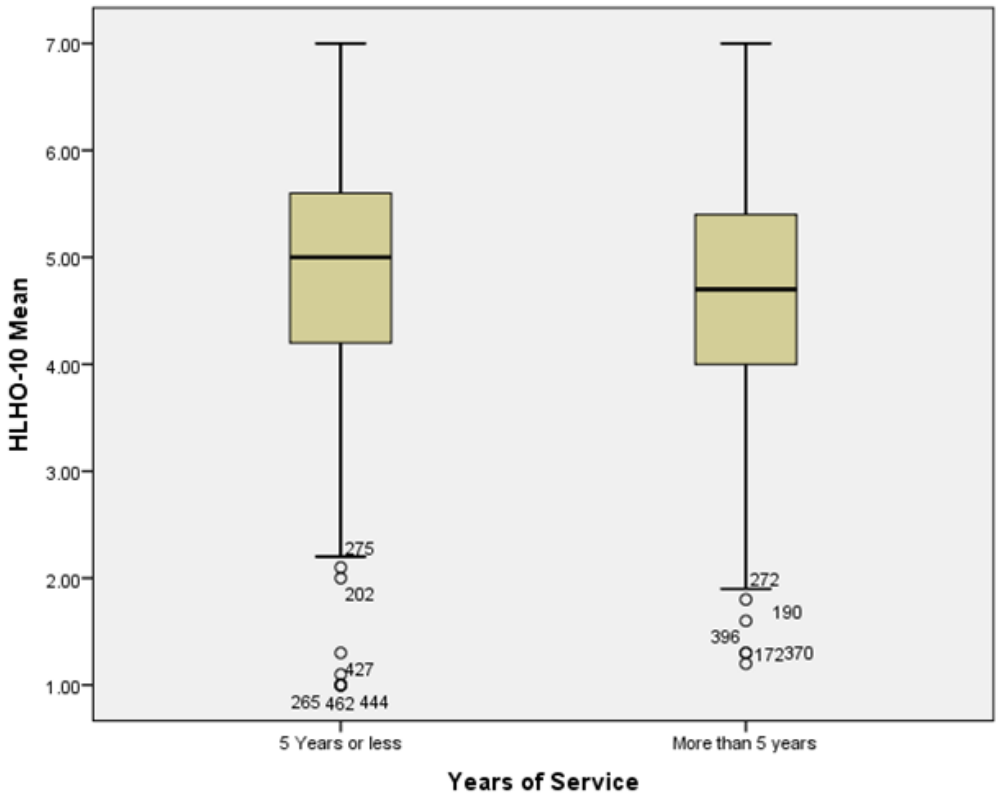

Figure 3. Box plot for years of service

Table 5. Tests of normality for each variable

Demographic	Category	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	*df*	Sig.	Statistic	*df*	Sig.
Health Profession	Nurses	.112	36	.200*	.955	36	.147
	Physicians, Pharmacists, Therapists	.123	46	.080	.949	46	.042
	Administration	.069	96	.200*	.978	96	.100
	Researchers	.124	42	.107	.971	42	.348
	Educators	.088	41	.200*	.970	41	.339
	Other Professionals	.106	114	.003	.938	114	.000
Patient Contact	0-10% Direct patient contact	.134	262	.000	.961	262	.000
	11-100% Direct patient contact	.166	113	.000	.956	113	.001
Years of Service	5 Years or less	.181	181	.000	.942	181	.000
	More than 5 years	.117	194	.000	.971	194	.000

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

Kolmogorov-Smirnov's and Shapiro-Wilk's tests show that the p-values for nurses are above 0.05, 0.200 and 0.147 respectively (Table 5). The significance levels for physicians, pharmacists, and therapists are 0.080 and 0.042. Although Shapiro Wilk's test shows that the p-value for this group is less than 0.05, the value is close enough to the significance level to meet the assumption of normality, as verified by visual inspection. The significance levels for administration (0.200, 0.100), researchers (0.107, 0.348), and educators (0.200, 0.339) are all greater than 0.05 and meet the assumption of normality. The variables "Health Profession," "Level of Patient Contact," and "Years of Service" are all less than the 0.05 alpha level and appear to not meet the assumption of normality. However, when viewing the data plots for these variables, there are a few outliers that do not appear to be extreme, which confirms that the assumption of normality is adequately met for other professionals, level of patient contact, and years of service.

Levene's test of equality of error variances shows an overall significance level of $p < 0.05$, indicating that the variances are not equal. The significance levels for health profession ($p = 0.006$) and level of patient contact ($p = 0.003$) are less than 0.05. This is likely due to the small sample sizes in each of the groups. The data confirms that the sample sizes are substantial, and sample size can affect statistical significance, in this case making it easier to reject the assumptions. Visual inspection of histograms (Figures 4-11) confirmed that the assumption of homoscedasticity was met since the distributions are normal and reflect a bell-shaped curve (Lane et al., 2008). All assumptions were met, meaning that ANOVA was the most appropriate test procedure for performing the analysis.

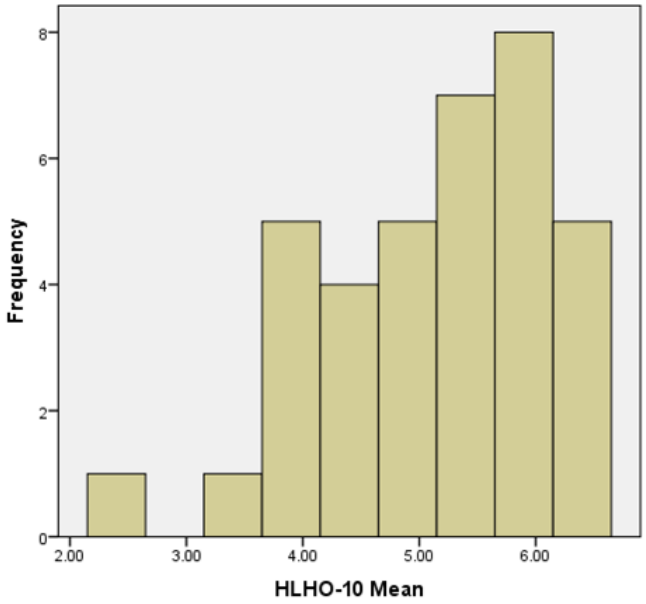

Figure 4. Histogram: Nurses

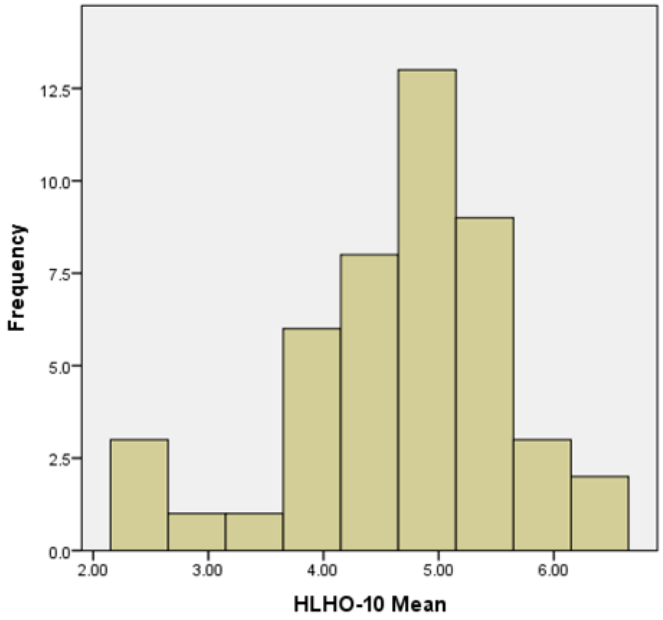

Figure 5. Histogram: Physicians, pharmacists, and therapists

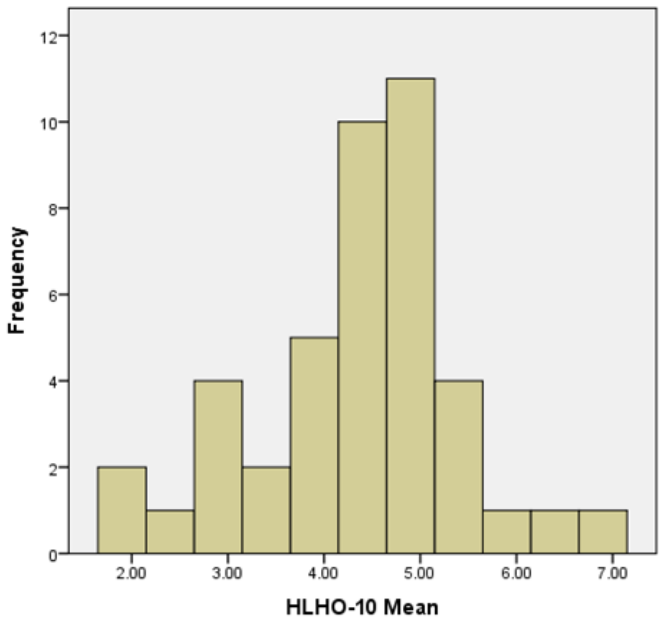

Figure 6. Histogram: Administration

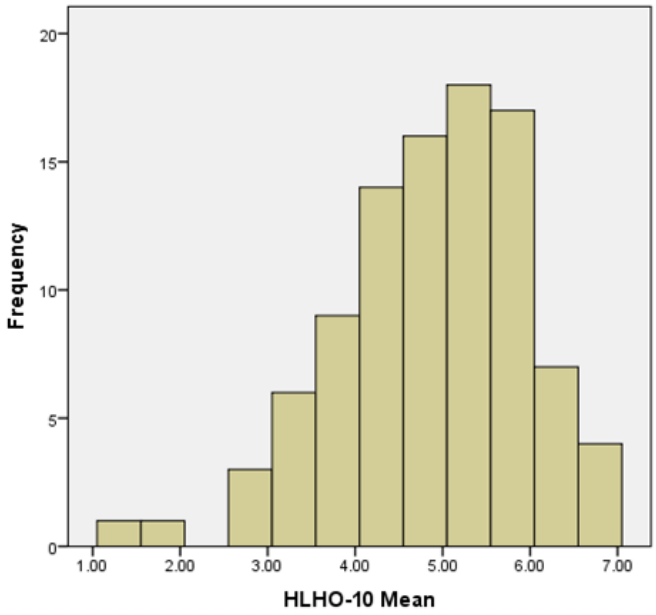

Figure 7. Histogram: Researchers

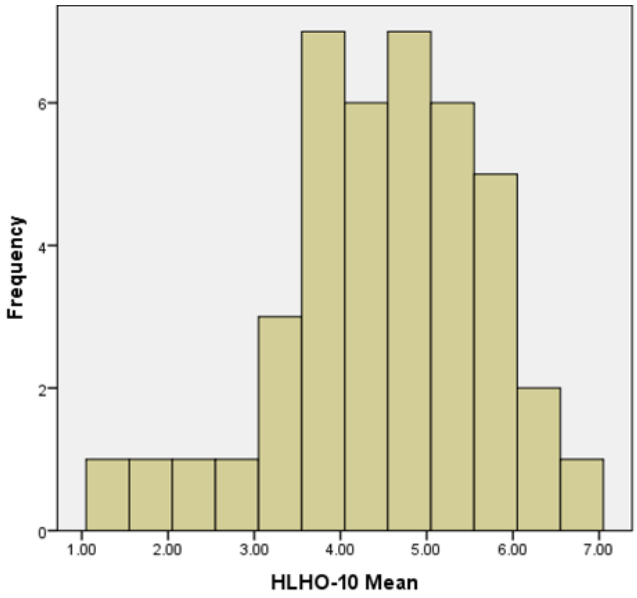

Figure 8. Histogram: Educators

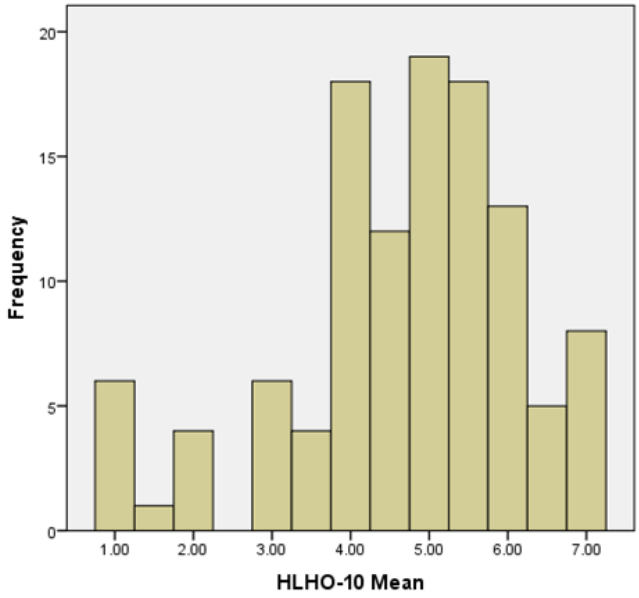

Figure 9. Histogram: Other health professions

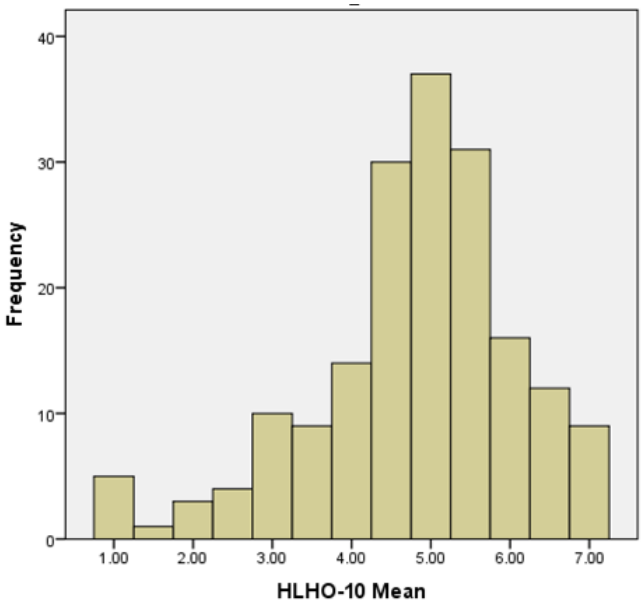

Figure 10. Histogram: Years of service

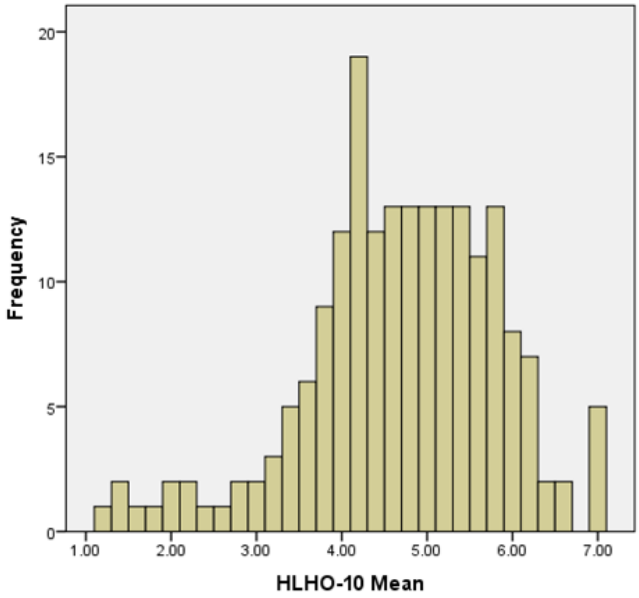

Figure 11. Histogram: Level of patient contact

Factorial ANOVA

Data from the between-subject effects shown in Table 6 revealed that there were no statistically significant interactions at the 0.05 level of significance by health profession and level of patient contact (p = 0.785); health profession and years of service (p = 0.786); level of patient

contact and years of service (p = 0.904); or health profession, level of patient contact, and years of service (p = 0.695). Since there were no statistically significant interaction effects, the main effects were reviewed for significance. When reviewing the main effects, there were also no statistically significant differences at the 0.05 level for each variable: health profession (p = 0.918), level of patient contact (p = 0.112), and years of service (p = 0.372).

Table 6. Between-subjects effects based on HLHO-10 mean score: health profession, level of patient contact, and years of service

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	40.523[a]	23	1.762	1.223	.221	.074	28.123	.890
Intercept	2517.986	1	2517.986	1747.452	.000	.833	1747.452	1.000
Health_Profession	2.100	5	.420	.292	.918	.004	1.458	.123
Level_Contact	3.649	1	3.649	2.533	.112	.007	2.533	.355
Years_Service	1.153	1	1.153	.800	.372	.002	.800	.145
Health_Profession * Level_Contact	3.519	5	.704	.488	.785	.007	2.442	.183
Health_Profession * Years_Service	3.506	5	.701	.487	.786	.007	2.433	.182
Level_Contact * Years_Service	.021	1	.021	.014	.904	.000	.014	.052
Health_Profession * Level_Contact * Years_Service	4.372	5	.874	.607	.695	.009	3.034	.221
Error	505.772	351	1.441					
Total	8896.920	375						
Corrected Total	546.296	374						

a. R Squared = .074 (Adjusted R Squared = .014)
b. Computed using alpha = .05

Although there were no statistically significant differences in employee ratings of OHL practices at their organization, survey results revealed that nurses with more than 10% of direct patient contact and five or less years of service gave their organization the highest rating of OHL practices that consider and promote the health literacy of patients at their organization (M =

5.64), and researchers with 0-10% direct patient contact and more than five years of service rated OHL practices the lowest (M = 4.24). Data showing the interations between level of patient contact and years of service revealed that employees with more than five years of service and greater than 10% direct patient contact gave the highest rating of OHL practices that consider and promote the health literacy of patients (M = 5.05). Line plots (Figures 12 – 14) display graphic representations of interactions between health profession and level of patient contact, health profession and years of service, and level of patient contact and years of service. Although Figures 12 and 13 show some interaction, the level of interaction was not statistically significant for patient contact and health profession (p = 0.785) or health profession and years of service (p = 0.786). As indicated in the Figure 14, there was no interaction between level of patient contact and years of service (p = 0.904), there was no interaction between all three variables (p = 0.695): patient contact, years of service, and health profession.

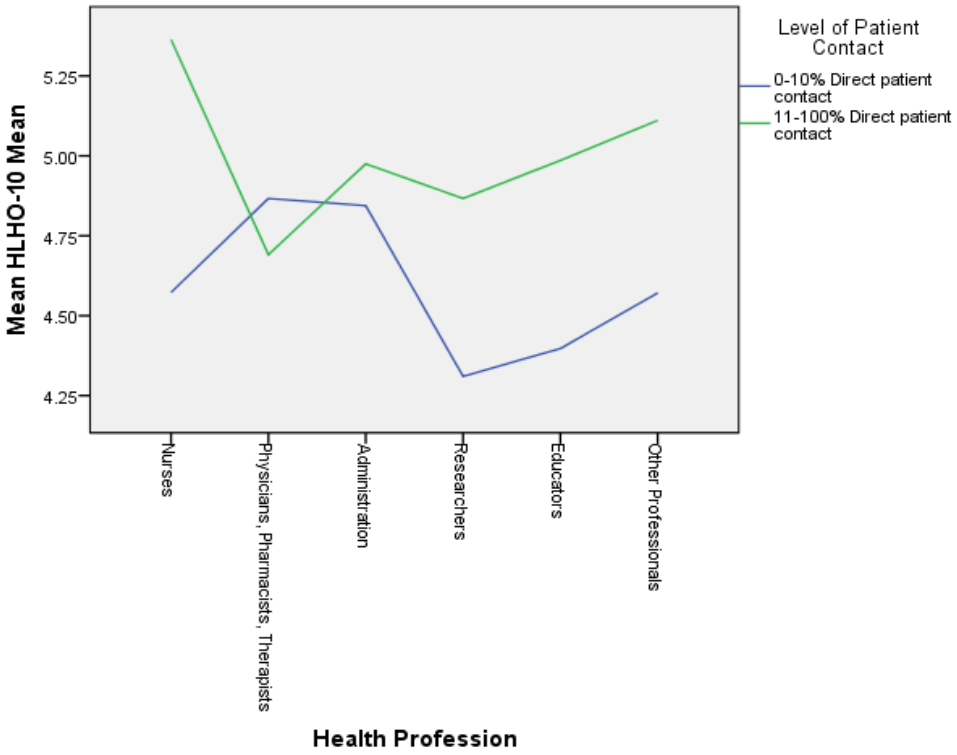

Figure 12. Interaction between health profession and level of patient contact

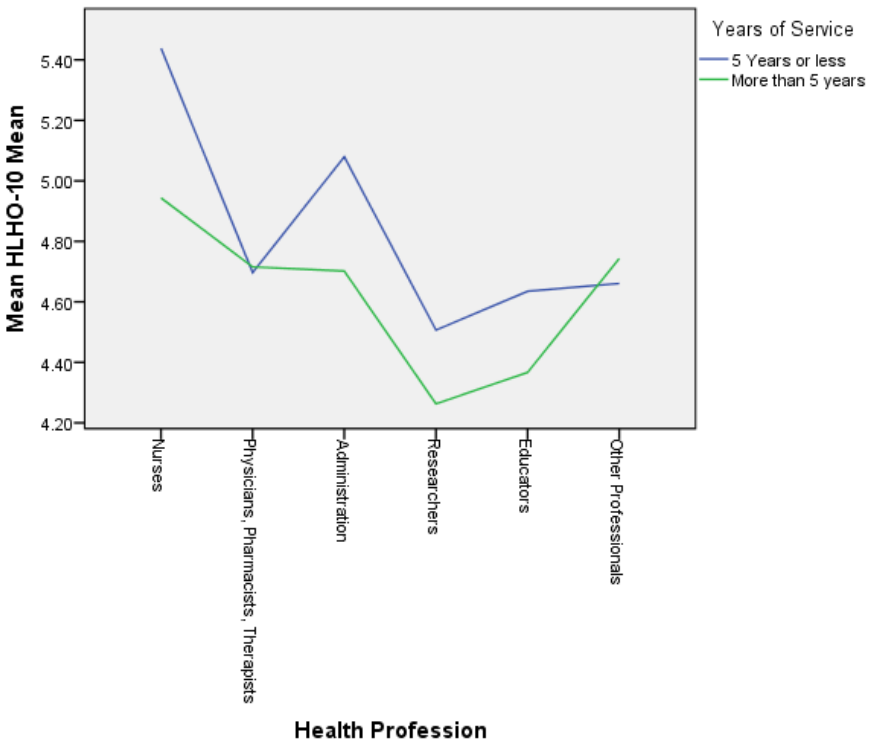

Figure 13. Interaction between health profession and years of service

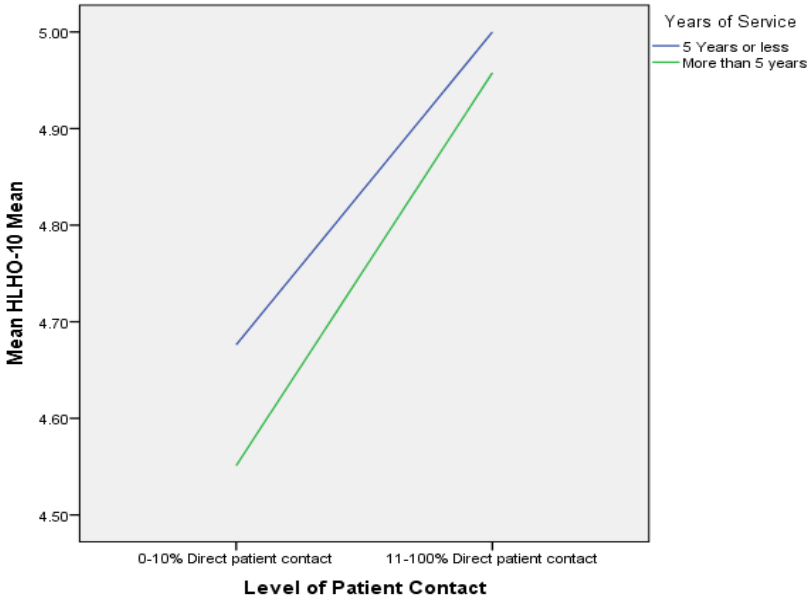

Figure 14. Interaction between level of patient contact and years of service

Hypotheses

Hypothesis One

Hypothesis one posited differences in employee ratings of OHL practices by health profession. The null hypothesis that there are no statistically significant differences could not be rejected because the data revealed that there were in fact no statistically significant differences ($p < 0.05$) in the mean HLHO-10 responses based on health profession ($p = 0.918$). The mean HLHO-10 responses for all health professions ranged from 4.83 to 5.04 and were not very different across health professions.

Hypothesis Two

Hypothesis two posited differences in employee ratings of OHL practices by years of service. The null hypothesis that there are no statistically significant differences could not be rejected because the data revealed that there were in fact no statistically significant differences ($p < 0.05$) in the mean HLHO-10 responses based on years of service ($p = 0.372$). The mean HLHO-10 responses for years of service ranged from 4.70 to 4.91.

Hypothesis Three

Hypothesis three posited differences in employee ratings of OHL practices by level of patient contact. The null hypothesis that there are no statistically significant differences could not be rejected because the data revealed that there were in fact no statistically significant differences ($p < 0.05$) in the mean HLHO-10 responses based on level of patient contact ($p = 0.112$). The mean HLHO-10 rating for employees with 0-10% direct patient contact was 4.62 compared to a mean of 4.99 for employees with 11-100% direct patient contact. The mean rating for OHL practices was within the range of 4.00 to 5.00 on a 7-point scale regardless of level of patient

contact. Although there is a slight difference, the mean HLHO-10 rating is not significantly different.

Other Statistical Analyses

Since there were no statistically significant differences in ratings of OHL practices at the organization based on health profession, level of patient contact, or years of service, other analyses were performed using the independent variables race, age, gender, and education. Although not hypothesized, these demographics were considered to determine if there were differences in employee ratings of OHL practices based on employee-specific demographics. Before running the analyses, it was necessary to make sure that all ANOVA assumptions were met for each group: age and race, age and gender, education and gender. Levene's test of equality of variances ($p < 0.05$) revealed that the variances were equal for each group and the assumption of homoscedasticity was met: $p = 0.159$, 0.056, and 0.372, respectively. These demographics were analyzed in groups of two because combining all variables violated the ANOVA assumptions of normality and homoscedasticity. Since all assumptions were met when combining variables into groups of two, univariate analyses were performed to determine if there were differences in OHL ratings using the following groups of variables: age and race, age and gender, and education and gender. Differences in OHL responses using the variables age and race was the first analysis. Data revealed that there were no statistically significant interactions between age and race ($p = 0.321$). Since there were no statistically significant interaction effects, main effect differences were reviewed. As shown in Table 7, there was no main effect difference based on age ($p = 0.698$) or race ($p = 0.101$). The data indicates that there were no statistically significant differences in ratings of OHL practices based on employee age and race.

Table 7. Between-subjects effects based on HLHO-10 mean score: age and race

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	31.687[a]	14	2.263	1.583	.081	.058	22.167	.873
Intercept	1959.643	1	1959.643	1370.889	.000	.792	1370.889	1.000
Age	3.155	4	.789	.552	.698	.006	2.207	.184
Race	6.606	2	3.303	2.311	.101	.013	4.622	.468
Age * Race	13.294	8	1.662	1.162	.321	.025	9.300	.539
Error	514.609	360	1.429					
Total	8896.920	375						
Corrected Total	546.296	374						

a. R Squared = .058 (Adjusted R Squared = .021)
b. Computed using alpha = .05

The next analysis assessed differences in OHL ratings based on age and gender. Data revealed that there were no statistically significant interactions between age and race ($p = 0.358$). Since there were no statistically significant interaction effects, main effect differences were reviewed. As shown in Table 8, there was no main effect difference based for employee age ($p = 0.820$) or gender ($p = 0.806$).

Table 8. Between-subjects effects based on HLHO-10 mean score: age and gender

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	14.111[a]	9	1.568	1.075	.380	.026	9.678	.535
Intercept	4338.811	1	4338.811	2975.784	.000	.891	2975.784	1.000
Age	2.240	4	.560	.384	.820	.004	1.536	.139
Gender	.088	1	.088	.060	.806	.000	.060	.057
Age * Gender	6.395	4	1.599	1.096	.358	.012	4.386	.345
Error	532.184	365	1.458					
Total	8896.920	375						
Corrected Total	546.296	374						

a. R Squared = .026 (Adjusted R Squared = .002)
b. Computed using alpha = .05

Just as in the previous analysis which assessed differences in employee responses to HLHO-10 questions based on age and race, there were no statistically significant differences ($p < 0.05$) in employee ratings of OHL practices that consider and promote the health literacy of patients based on employee age and gender.

Finally, differences in employee responses on the extent to which their organization considers and promotes the health literacy of patients based on education and gender was assessed using univariate analyses. Data revealed that there were no statistically significant interactions between education and gender ($p = 0.486$). Since there were no statistically significant interaction effects, main effect differences were reviewed and as shown in Table 9, there was not a main effect difference for gender ($p = 0.732$). There was a main effect difference for education ($p = 0.022$). Employees with less than a college degree (M = 5.09; CI 4.69, 5.49) rated OHL practices higher than employees with an associate or bachelor's degree (M = 4.87; CI 4.64, 5.10) and those with graduate, professional, or advanced degrees (M = 4.56, CI 4.41, 4.71).

Table 9. Between-subjects effects based on HLHO-10 mean score: education and gender

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	16.744[a]	5	3.349	2.334	.042	.031	11.668	.748
Intercept	2915.701	1	2915.701	2031.709	.000	.846	2031.709	1.000
Education	11.075	2	5.537	3.859	.022	.020	7.717	.697
Gender	.169	1	.169	.117	.732	.000	.117	.063
Education * Gender	2.074	2	1.037	.722	.486	.004	1.445	.172
Error	529.551	369	1.435					
Total	8896.920	375						
Corrected Total	546.296	374						

a. R Squared = .031 (Adjusted R Squared = .018)
b. Computed using alpha = .05

Summary

Data analysis began with a review of data collected, followed by tests to ensure all ANOVA assumptions were met, then univariate analyses to assess relationships between employee responses to the HLHO-10 questions and independent variables from each of the hypotheses: health profession, level of patient contact, and years of service. Results revealed that there were no statistically significant differences in the mean HLHO-10 responses based on health profession: nurses (M = 5.12, SD = .98); physicians, pharmacists, therapists (M = 4.70, SD = .91); administration (M = 4.86, SD = 1.09), researchers (M = 4.35, SD = 1.04), educators (M = 4.50, SD = 1.23), other health professionals (M = 4.70, SD = 1.47), $F(5, 351) = .29$, $n_p^2 = .004$. There were also no statistically significant differences in the mean HLHO-10 responses based on level of patient contact: 0-10% direct patient contact (M = 4.60, SD = 1.29) and 11-100% direct patient contact (M = 4.98, SD = .95), $F(1, 351) = 2.53$, $n_p^2 = .007$). In addition, data revealed that there were no statistically significant differences in the mean HLHO-10 responses based on employees' years of service: 5 years of less (M = 4.80, SD =1.29), and more than 5 years (M = 4.65, SD =1.31), $F(1, 355) = .80$, $p = .372$, $n_p^2 = .002$).

There were also no statistically significant differences in employee responses to the HLHO-10 questions based on gender: female (M = 4.73, SD = 1.19) and male (M = 4.66, SD = 1.29), $F(1, 365) = 0.06$, $p = 0.806$, $n_p^2 = 0.057$). The data also revealed that there were no statistically significant differences in employee responses based on age: under 30 (M = 4.57, SD = 0.96), age 30-39 (M = 4.96, SD = 1.21), age 40-49 (M = 4.60, SD = 1.40), 50-59 (M = 4.69, SD = 1.15), and age 60 or older (M = 4.79, SD = 1.04), $F(4, 365) = 0.384$, $p = 0.820$, $n_p^2 = 0.139$. Data analyses of employee ratings based on race also revealed no statistically significant differences: Black (M = 4.82, SD = 1.311), White (M = 4.75, SD = 1.15), and Other (M = 4.11,

SD = 1.39), F(2, 360) = 2.31, p = 0.101, n_p^2 = 0.468). However, there were statistically significant differences in employee responses based on education: less than college degree (M = 5.09, SD = 1.39); Associate or Bachelor's degree (M = 4.87, SD = 1.22); and graduate, professional, or advanced degree (M = 4.72, SD = 1.21), *F*(2, 369) = 0.722, p<0.0005, n_p^2 = 0.697). Overall, the data shows that the only demographic that had an influence on employee ratings on the extent to which their organization considers and supports the health literacy of patients was level of education.

Chapter V. Discussion and Recommendations

The purpose of this research study was to assess organizational health literacy practices at an academic health center using employee feedback on how well their organization considers and promotes the health literacy of patients. An online survey developed using the ten attributes of health literate healthcare organizations was distributed to all employees. A total of 463 employees participated in the research study. Participants were from various health professions, years of service, and all levels of patient contact. The null hypotheses revealed that there were no statistically significant differences in employees' perceptions of whether their organization considers and promotes the health literacy of all patients based on health profession, years of service, or level of patient contact. There were also no statistically significant differences in employee responses based on age, gender, or race. However, there were statistically significant differences in employees' perception of how well their organization considers and promotes the health literacy of patients based on highest education obtained.

Important findings

Overall, the mean rating of how well the organization considers and promotes the health literacy of patients was 4.72 on a scale of 1 to 7 with 1 representing *Not at All* and 7 representing *To a Very Large Extent*. Although there were no statistically significant differences in survey responses for the ten Health Literate Healthcare Organization (HLHO-10) questions by health profession, years of service, or level of patient contact, nurses gave the highest rating of organizational health literacy (OHL) practices than any other health professions. Employees with five or fewer years of service rated OHL practices higher than those with more than five years of service. In addition, findings revealed that employees with more direct patient contact rated OHL practices higher than those with little or no direct patient contact. Although there were slight differences in employee

ratings of how well their organization considers and promotes the health literacy of patients, the differences were not statistically significant; therefore, the decision was to fail to reject the null hypotheses that there were no statistically significant differences in employee responses based on health profession, level of patient contact, or years of service.

There were statistically significant differences in employee responses based on highest education obtained. Employees who reported having less than a college degree rated OHL practices higher than those with an Associate, Bachelor's, Graduate, or other professional degree. Overall, mean HLHO-10 responses indicate that employees in this sample population believed that their organization is supporting and promoting the health literacy of patients more in some areas than in others, yet improvements are needed. Ensuring that patients can find their way around the organization and leadership support for addressing health literacy received the highest ratings of the ten attributes. Areas with the lowest ratings are communications with patients regarding out-of-pocket costs and employee training on OHL practices.

Organizational Health Literacy (OHL) Practices

Improving OHL practices is a recommended intervention for addressing patients' health literacy, improving health outcomes, and reducing healthcare costs (Berkman et al., 2011b; Brega et al., 2015; DeWalt et al., 2010). Organizations that promote use of OHL practices are known as health-literate healthcare organizations (HLHO) (Parker & Hernandez, 2012). *Building Health-Literate Organizations: A Guidebook to Achieving Organizational Change* and the Agency for Research and Quality's Health Literacy Universal Precautions Toolkit offer tools and guidance on improving healthcare practices to address health literacy by focusing on ten attributes of an HLHO (Abrams, Kurtz-Rossi, Riffenburgh, & Savage, 2014; Brega et al., 2015; DeWalt et al., 2010). To consider and promote the health literacy of patients, organizations should demonstrate effective and

consistent use of OHL practices as described in each attribute of a HLHO; thus, the research question was developed to assess the extent to which AHC employees think that their organization considers and promotes the health literacy of patients. The ten attributes of health literate healthcare organizations was used as the framework for assessing use of OHL practices. Using the HLHO-10 survey, each attribute was rated on a scale of 1 to 7 with 7 representing the highest rating (To a Very Large Extent) and 1 the lowest rating (Not at all). A rating of 4 falls within the neutral range and would indicate that employees do not agree nor disagree with the question on how well their organization is addressing patients' health literacy. Therefore, a neutral rating (M = 4.72) indicates that overall, employees did not agree nor disagree with statements describing the extent to which their organization is promoting health literacy. Improvements are needed in all areas at the AHC to effectively address health literacy at the organization level.

Leadership Support

Health literacy experts recommend gaining leadership support when promoting use of OHL practices (Abrams et al., 2014; Brach et al., 2012; Parnell et al., 2014; Willis et al., 2014). Leadership support for use of OHL practices received the second highest rating of all attributes. To determine the extent to which AHC employees think that their organization considers and promotes the health literacy of patients in the area of leadership support, employees were asked to rate the extent that leaders in their organization are dedicated to the subject of health literacy. The mean response was 5.22 out of 7 points, which indicates that employees believe that leaders and administrators are supporting use of OHL practices, yet more measures are needed to improve use of OHL practices at the ACH. Abrams et al. (2014) as well as other health literacy experts (Brach et al., 2012; DeWalt et al., 2014) highly recommend gaining leadership support for promoting OHL practices to ensure that health literacy becomes and organizational value and

to assist with policy development to ensure sustainability of a health literate healthcare environment. The literature shows that with leadership buy-in, health literacy is more likely to be reflected in the organization's mission and core values. Leaders can also assist in improving use of OHL practices by considering health literacy when exploring the organization's vision for healthcare quality and positive health outcomes (Brega et al., 2015).

Quality Improvement Initiatives

The third highest employee rating of OHL practices that consider and promote the health literacy of patients was Attribute 2, the extent to which "the topic of health literacy is considered in quality management measures." The mean employee response for this attribute was 5.19 out of 7 points. Employee ratings of the extent to which the organization considers health literacy in quality management measures indicates that employees believe that health literacy is being integrated into organizational quality improvement, patient safety, and other organizational improvement measures *to a fairly large extent.* Integrating health literacy into quality improvement initiatives is recommended to ensure patient safety and healthcare quality (Abrams et al., 2014). Researchers recommend establishing a health literacy department and gaining leadership support to assist with developing and monitoring quality improvement planning initiatives (Abrams et al., 2014; Koh, Brach, Harris, & Parchman, 2013; Parnell et al., 2014). Ongoing organizational assessments of OHL practices, such as the assessment of OHL practices performed in this research study, will assist in monitoring performance and identifying improvement needs when needed.

Workforce Development

Health literacy training and education in the workplace received one of the lowest rating from employees (M = 4.45). On a 7-point scale, a rating of four represents neither/nor, meaning

that employees did not agree nor disagree with the statement that employees are adequately trained use of OHL practices. Since the literature shows that health professionals are often not aware of the implications of low health literacy and do not always know which patients have trouble understanding (Brach et al., 2012; Coleman & Appy, 2012; Cormier & Kotrlik, 2009), health literacy training and education will increase the awareness of the outcomes associated with low health literacy, and will be useful for encouraging employees to use OHL practices that consider and promote the health literacy of patients. Researchers found that health literacy trainings lead to significant improvements in health professionals' knowledge, skills, and behaviors about health literacy (Coleman & Fromer, 2015).

It is recommended that health literacy training be introduced in medical school and early in program curricula with ongoing training to assure adherence to OHL practices (Coleman & Appy, 2012; McCleary-Jones, 2016). The literature shows that medical students often have limited knowledge of health literacy (Cormier & Kotrlik, 2009), and health literacy experts suggest integrating health literacy competencies into healthcare curricula to increase the awareness of the implications of low health literacy and train students on use of OHL practices before students enter the workplace (Coleman & Appy, 2012; Coleman, Hudson, & Maine, 2013).

In addition to training future health professionals, current employees can benefit from health literacy training. For example, nurses are often the first and last point of contact with patients, and have many opportunities to teach and confirm understanding with patients. The high level of contact between nurses and patients makes it essential for nurses to be trained on OHL practices. Health literacy training and education is necessary for all health professionals, especially those with a high level of direct patient contact. This includes front desk staff, patient care technicians, and employees involved in research who may have contact with patients while

working on research projects (Abrams et al., 2014). Through employee education and training, the organization can improve its capacity to consider and promote the health literacy of patients in all areas of the organization. The low rating on workforce development is alarming because one of the most important attributes of an HLHO involves preparing the workforce to be health literate to take the health literacy demands off patients (Brach et al., 2012). Training and educating employees makes health literacy an organizational value and puts the responsibility of addressing health literacy on the organization.

Patient Engagement

Employee ratings to the question regarding the extent to which the organization develops health information with patients involved received a response equivalent to neither/nor on the 7-point rating scale (M = 4.54). Employee responses to this question are especially important since it has been reported that highly engaged patients are more likely to make informed health decisions and take appropriate actions to properly manage their health (Kaphingst et al., 2014; Koh et al., 2013). Patient engagement has also been associated with patient satisfaction, which contributes to positive health outcomes (Brach et al., 2012; Hibbard, Green, and Overton, 2013; Kaphingst et al., 2014; Koh et al., 2013). The health-literate care model illustrates use of a systems approach to improving patient engagement to address health literacy (Koh et al., 2013). The model emphasizes the importance of shared decision making, self-management support, written and verbal communication, and use of supportive systems, all qualities of an organization that considers and promotes the health literacy of patients.

Individualized Health Information

Employee responses on the extent to which their organization considers and promotes the health literacy of patients by using health information for a variety of health literacy skills ranges

also did not receive a high rating by employees. The average response for this question was neutral or neither/nor (M = 4.86), indicating that improvements are needed to ensure patients, including those with language barriers and other special needs, have access to information that is easy to understand. Although patients who speak English as a second language have even more challenges communicating and understanding health information, the literature shows that poor patient-provider communication is problematic for many patients regardless of language (Wynia & Osborne, 2011). The stigma associated with not understanding prevents patients from asking questions and getting the help needed when they do not quite understand (Easton, Entwistle, & Williams, 2013; Paasche-Orlow & Wolf, 2007). To alleviate the shame and embarrassment that patients may experience when not understanding, adopting health literacy universal precautions provides all patients with access to easy to read and understand health information and services (Brega et al., 2015; Callahan et al., 2013). Utilization of health literacy universal precautions also diminishes the need for identifying patients who have low health literacy because OHL practices are used with all patients and at all patient-provider interactions.

Communication Standards

The extent to which the organization promotes use of communication standards that ensure patients truly understand health information was rated slightly higher than the availability of individualized health information. The mean employee responses for this question fell within the range of neither/nor (M = 4.99), which indicates that employees were not quite sure if enough measures are in place to ensure that patients understand. Patient-provider communication, written and verbal, has a huge influence on patients' health literacy and is one of the four major domains discussed in the Health Literacy Universal Precautions Toolkit (HLUPT). The Centers for Disease Control and Prevention (CDC), the U.S. Department of Health and Human Services

(DHHS), and the Agency for Healthcare Research and Quality (AHRQ) are among the list of federal agencies that provide guidance on improving patient-provider communication to address health literacy (Brega et al., 2015; CDC, 2011; DeWalt et al., 2014; DHHS, 2010b).

Teach-back, a health literacy practice for improving patient-provider communication, involves having the patient to repeat information shared by the provider in their own words to confirm understanding (Brega et al., 2015; DeWalt et al., 2010). The literature shows that about half of information shared by healthcare providers during a routine office visit is not easily understood, confirming the need for use of teach-back to confirm understanding (DeWalt et al., 2010; Kessels, 2003; McCarthy et al., 2012). CDC's recommendations for improving the patient-provider communication includes use of plain language and limited jargon, explaining information using meaningful chunks, and use of the teach-back technique to confirm understanding (CDC, 2011). AHRQ recommends making improvements in patient-provider communication an organizational priority (Brega et al., 2015). Improving verbal communication is one of the four major areas identified in the HLUPT as a priority for improving OHL practices (Brega et al., 2015). Patient-provider communication has a significant impact on health literacy, thus, greater comprehension through effective communication is a shared responsibility between patients and providers (Hernandez, 2012; Koh et al., 2013; Villaire & Mayer, 2009; Wynia & Osbone, 2011).

With the average reading level in the U.S. at an eighth grade level or below (Brega et al., 2015), use of easy-to-read and -understand health information is necessary for addressing health literacy. Although the current recommendation for written health materials at a fifth grade reading level or below, readability assessment of widely used patient health materials found that most are written at much higher levels than the average reading level in the U.S. (Hill-Briggs, Schumann, & Dike, 2012; Otal et al., 2012; Schwartzberg et al., 2004). Considering and

promoting the health literacy of patients by making sure that they truly understand health information means that materials should be developed to suit the targeted population and should be written at a level so that everyone understands. Since a recent report by the AHRQ reported that about eight percent of patients stated that providers rarely provide explanations that are easy to understand, adhere to grade level recommendations (i.e. fifth grade or below) when developing written health materials, limit use of jargon, and promote universal precautions to assure that all patients understand regardless of health literacy status.

Accessibility

When asked to rate the extent to which their organization considers and promotes the health literacy of patients in all ten attributes of an HLHO, employees gave the highest rating to attribute seven, accessibility. Question seven asked to what extent "are efforts made to ensure patients can find their way at your organization without any problems." Responses to this question were ranked in the top three areas in which employees feel that their organization is meeting expectations in the use of OHL practices. However, the mean rating of 5.33 out of 7 points implies that improvements are still needed in this area. The Patient Protection and Affordable Care Act (ACA) of 2010 supports easily accessible health information and services and has provisions in place to incentivize organizations that make health information easily accessible (Office of Disease Prevention and Health Promotion, 2014; Somers & Mahadevan, 2010). Healthcare organizations are beginning to use patient navigators, improved signage, online patient portals, and 24-hour patient help lines. Although these services are available at the AHC, responses to this attribute indicate that improvements are needed to adequately address health literacy.

Media Variety

The extent to which health information is available in different media received a neutral rating (M = 4.46). Today, health information is easily accessible online, and patients have access to mobile applications and other virtual healthcare resources. While organizations are making health information available in a variety of formats, it is important to ensure that the health materials meet plain language standards, i.e., easy to read and understand for patients of all literacy levels (Egbert & Nanna, 2009; DHHS, 2008). Resources are available to assist organizations in the development of health materials in different media that is easy to understand and use, particularly for patients with low health literacy. The HLUPT, the Plain Language Act of 2010, and the CDC offer guidance and online tools to assist in developing and editing health materials from various sources based on plain language recommendations (Brega et al., 2015; CDC, 2011).

High-Risk Situations

Having processes in place to ensure that patients who are under additional stress and in emergency situations still understand health information is one of the ten attributes that involves responding to patients' needs during high risk conditions (Brach et al., 2012; Brega et al., 2015). Addressing high-risk situations such as having processes in place to assist patients during times of crisis is the ninth attribute of a health-literate organization (Brach et al., 2012). When asked to rate the extent to which their organization ensures that patients understand health information in critical situations, the mean employee rating was 4.99 out of 7. Improvements are needed in this area to adequately address health literacy in high-risk situations. Health literacy is important when patients are dealing with critical issues because stress affects the ability to make informed health decisions. To improve communication during high-risk situations, research studies

recommend using visual aids, confirming understanding through use of teach-back, getting an interpreter when needed, and offering additional assistance when communicating risk factors and probabilities as useful strategies for ensuring effective patient-provider communication (Andralus & Brach, 2007; Callahan et al., 2013; Cordasco, 2013).

Health Insurance Literacy

The mean rating of OHL practices described in attribute ten, the extent to which the organization communicates openly and comprehensibly in advance about costs associated treatments, including co-pays, deductibles, and other out of pocket costs, was 4.26; the lowest rating of all ten attributes of a HLHO. Health insurance literacy is especially important because the literature shows that most patients do not understand insurance plans, and hospital billing can be difficult to understand (Hardie, Kyanko, Busch, LoSasso, & Levin, 2011). Not understanding health insurance information contributes to unnecessary use of healthcare services and increased healthcare spending (Hardie et al., 2011). For example, persons with low health literacy are known to have more emergency room visits and are less likely to use preventive health services. Health insurance information can be very complicated, and patients often depend on providers to keep them informed of benefits coverages (Gazmararian, Beditz, Pisano, & Carreon, 2010). Use of easy-to-understand health plan information may help patients to use benefits more efficiently (Gazmararian et al., 2010). Insurance provisions under the Patient Protection and Affordable Care Act require all U.S. citizens to obtain health insurance; therefore, communicating openly and comprehensively with patients about healthcare coverages and associated costs is ever more essential. As indicated by employee ratings of communication regarding healthcare costs, there are not enough measures in place to adequately consider and promote the health literacy of patients at the ACH.

Hypotheses

Hypothesis One

It was hypothesized that employees' health profession would influence their responses to how well their organization considers and promotes the health literacy of patients. Health professionals with more patient contact should know more about healthcare policies and practices; therefore, the expectation is that those with more direct patient contact would rate OHL practices differently than those with little or no direct patient contact. However, the literature shows that health professionals are often not fully aware of the implications of low health literacy (Andrulis & Brach, 2007; Weaver et al., 2012; Wynia & Osborn, 2011), and nurses are the least knowledgeable of the problems associated with low health literacy (Jukkala, Deupree & Graham, 2009). In this research study, nurses provided the highest rating of OHL practices at their organization. The mean employee responses based on health profession ranged from 4.35 to 5.12. Univariate analyses revealed that these differences were not statistically significant, meaning there were no differences in employee responses to the OHL questions based on health profession. For hypothesis one, the decision was to fail to reject the null hypothesis that there are no statistically significant differences among the ratings of OHL practices at the ACH by employees' health profession.

Hypothesis Two

It was also hypothesized that the number of years worked at the organization would influence employee responses to how well their organization considers and promotes the health literacy of patients. The expectation that employee feedback would vary based on years of service was based on the assumption that new employees would be less likely to assess OHL practices at the organization due to unfamiliarity with standard healthcare practices.

Alternatively, long-term employees would be more likely to provide an accurate assessment of healthcare practices due to experience working at the organization, familiarity with the organizational culture, and increased knowledge of long-term healthcare practices and policies. Data revealed that employees with five years of service or less provided higher ratings of OHL practices than those with more than five years of service. Although there were differences in employee responses based on years of service, univariate analyses revealed that there were no statistically significant differences in employee ratings of OHL practices based on their years of service. For hypothesis two, the decision was to fail to reject the null hypothesis that there are no statistically significant differences among ratings of OH practices at the ACH based on employees' years of service.

Hypothesis Three

Finally, it was hypothesized that the level of direct patient contact would influence employee responses to how well their organization considers and promotes the health literacy of patients. This assumption is based on evidence in the literature which shows that nurses, physicians, and other health professionals with a high level of direct patient contact are often not aware of the implications of low health literacy and have limited knowledge of health literacy practices (Coleman & Appy, 2012). The expectation was that employees who work with patients daily would have a different perception of OHL practices than those with little or no direct patient contact. The data revealed that employees with more than 10 percent direct patient contact provided higher ratings of OHL practices than those with little or no direct patient contact. Although there were slight differences, univariate analyses confirmed that there were in fact no statistically significant differences in employee ratings of OHL practices based on their level of patient contact. For this reason, the decision was to fail to reject the third hypothesis that

there are no statistically significant differences among the ratings of OHL practices at the ACH based on employees' level of patient contact.

Limitations of the Study

The targeted population was limited to employees at the study site only; therefore, these results are not generalizable to the population of health professionals in similar academic health centers or other healthcare organizations. Although the survey was open for ten weeks and several announcements were sent to employees to encourage participation, the response rate was still lower than expected, which affects the strength in associations and interactions between health profession, level of patient contact, and years of service. For example, there were several small groups in the demographic health profession. Groups that had fewer than five cases were combined to form larger groups without compromising the results. The assumptions of normality and homoscedasticity were observed as not being met as far as statistical significance due to the small sample size. However, the sample sizes were substantial when combined to form larger groups. Since sample size affects statistical significance, graphics were reviewed to visually confirm or reject the ANOVA assumptions; the graphs confirmed that the assumption of normality was adequately met.

Other limitations involved the timeframe for data collection and conducting research in the workplace. Data collection began during the summer months, the time when many faculty members are not working or are unavailable, particularly those with nine- or ten-month academic appointments. Because this is student research, the time allowed to collect data was limited and lasted only ten weeks. Another limitation is the potential for bias since the targeted population included employees of the study site and the student researcher is also an employee.

Implications

Implications for Health Professionals

Coleman (2011) reported that health professionals often lack the awareness, skills, and knowledge of health literacy practices. Health literacy training and education received the lowest rating by employees indicating that more training is needed on recommended OHL practices such as teach-back and risk communication. Training and educating health professionals would help to improve the organization's ability to consider and promote the health literacy of patients. Survey responses also indicate that more is needed to ensure that patients have access to easy-to-understand health information to improve comprehension. Patients often have high expectations for health professionals, which has an influence on patient satisfaction as well as health outcomes (Bowling, Rowe, & McKee, 2013). Therefore, health professionals play a key role in assisting the organization in implementing measures to address health literacy to support the needs of patients.

Patient-provider communication is an essential element of healthcare delivery, and positive patient-provider communication builds strong relationships and leads to improved health outcomes. Employee responses to the question regarding communication standards that ensure patients truly understand indicates that most employees believe improvements are needed in this area as well. Coleman (2011) recommended improving patient-provider communication by integrating health literacy competencies in the healthcare curriculum and requiring health literacy training for all health professionals. To monitor the use of OHL practices by health professionals, particularly those with a high level of patient contact, the ACH can link health literacy performance to employee evaluations to ensure compliance and encourage use of OHL practices by all employees.

Implications for Administrators

Leadership buy-in is the first and most important attribute of a health literate healthcare organization. Without strong leadership support, the task of improving OHL practices at the AHC would be difficult. Leaders are needed to promote an organizational culture that considers and supports the health literacy of patients. Leaders would make great health literacy champions due to their status and level of influence within the organization. Although leadership support for addressing health literacy received the second highest rating by employees, the mean rating (5.22) on a 7-point rating scale indicates that there is still room for improvement. Recommendations for making health literacy a priority when promoting use of OHL practices indicate that strong leadership support helps to sustain use of OHL practices (Brega et al., 2015; DeWalt et al., 2010). Administrators as health literacy champions would be helpful for settings goals related to improvements in OHL practices and monitoring progress.

To address health literacy at the organizational level, leadership support would be needed to allocate funds for training and development. As more organizations transitions to HLHOs, future research on the use of OHL practices by health professionals will be useful for assessing the relationship between OHL practices and health outcomes, patient satisfaction, patient-provider relationships, healthcare utilization, and healthcare costs; all of which are especially important to administrators when reviewing organizational efficiency. Employee responses imply that most participants believe administrators and those in leadership roles should do more to ensure that health literacy an organizational priority which can be accomplished by integrating health literacy into organizational policies and standard operating practices.

Implications for Human Resource Development Professionals

Developing human resources includes incorporating health literacy into organizational policies and quality improvement initiatives and monitoring progress to ensure sustainability. Health literacy polices are needed to ensure that all departments are enforcing use of OHL practices, particularly those departments with a high level of direct patient contact. Linking health literacy practices to employee performance demonstrates the importance of health literacy and helps to build an organizational culture that considers the health literacy of patients.

The third attribute of a health literate healthcare organization refers to preparing the workforce through training and education as well as monitoring progress. When asked to what extent employees are trained on the topic of health literacy, most employees felt that improvements are needed. Developing human resources by mandating health literacy trainings for all employees is an important step toward becoming a HLHO. Recommendations for developing human resources include use of health literacy competencies in healthcare curriculum, providing ongoing employee training, and gathering feedback from patients on organizational performance. The organization's human resources department and the AHC's health literacy department can collaborate on ways to monitor employee use of OHL practices by adding questions to performance evaluations that assess use of OHL practices by employees who have direct patient contact.

Implications for the Center for Health Literacy

The mission of the Center for Health Literacy (CHL) is to improve health by promoting use of easy to understand and use health information. The CHL is a newly established department that works with the AHC, other healthcare organizations, and community partners to promote health literacy. Providing health literacy training is one of the services offered by the

CHL. Since the extent to which employees are trained on the topic of health literacy received one of the lowest ratings by employees, the CHL has more goals to accomplish to ensure that employees are adequately trained and educated on use of OHL practices. The CHL's involvement in improving OHL practices might include increasing the number of training sessions offered, implementing more health literacy awareness campaigns, and conducting ongoing organizational assessments of OHL practices to identify strengths and weaknesses.

Since the data revealed that improvements are needed in all areas that represent attributes of a HLHO, expertise from employees in the CHL is needed to identify which area to address first based on recommendations from the *Health Literacy Universal Toolkit* (Brega et al, 2015). The CHL offers a variety of services to health professionals and is actively involved in increasing the awareness of health literacy. However, employee ratings of OHL practices at their organization is addressing revealed that employees are undecided about the extent to which their organization is addressing the health literacy of patients. Therefore, health literacy outreach, training, education, research, and policies are areas that the CHL should further explore to improve employee ratings.

Recommendations

Recommendations for Practice

There have been numerous research studies on the role of health professionals in addressing health literacy (ARHQ, 2014; Brach et al., 2012; Koh & Rudd, 2015), and the lack of awareness on the topic of health literacy in the health professions (Coleman, 2011; Jukkala, Deupree, & Graham, 2009; Weaver et al., 2012). However, findings from this research study indicate that more research is needed on how well health professionals understand the implications of low health literacy and what it means to be a health literate healthcare

organization. Research data on the relationship between health professionals' knowledge of health literacy, use of OHL practices, and the relationship to health outcomes, healthcare utilization, and healthcare costs would be useful for increasing the awareness of health literacy at the AHC.

A future research project assessing OHL practices using feedback from employees who have received health literacy training would help to gain a better idea of how well the organization is considering and promoting the health literacy of patients. Although there are several techniques and tools for improving use of OHL practices in the Health Literacy Universal Precautions Toolkit (Brega et al., 2015; DeWalt et al., 2012), research on use of these tools and techniques to address health literacy would help to promote consistent use of OHL practices throughout the AHC. Employee responses to the OHL questions also indicate that the AHC can benefit from implementing these tools and assessing changes in OHL practices over time. Future research might focus specifically on health professionals' use of OHL practices when communicating with patients about healthcare costs since this attribute received the lowest rating from employees.

Recommendations for Policy

The Centers for Disease Control and Prevention developed policies aimed at addressing health literacy and improving health outcomes (Baur, 2011). As more health literacy policies are developed at the national, state, and organization level, research on use of these policies to explore interventions for empowering health professionals to adopt use of OHL practices will be critical for addressing health literacy. To ensure that health literacy is an organizational value, AHC policies regarding employee performance for those with direct patient contact should include use of OHL practices with measures in place to monitor compliance. Improving health

literacy is a national health goal that should also be an organizational health goal for improving population health.

Suggestions for AHC policymakers to improve use of OHL practices are to provide support for more employee training so that future research can assess the impact of use of OHL practices on healthcare quality, health outcomes, and healthcare costs. Policy recommendations related to employee training might also include best practices for communicating healthcare costs, use of easy to read and understand informed consent, and best methods of communicating with patients about risk that encourages shared decision-making. Federal policies on use of plain language when developing written health material (Centers for Disease Control and Prevention, 2011) support the need for organizational policies regarding use of written health materials such as easy to understand discharge instructions and other patient education materials.

Finally, policies are especially needed to address use of written health material and best practices for communicating with patients in high-risk situations and about healthcare costs. As more organizations transition to health literate healthcare organizations, it will be helpful to assess the impact of health literacy policies on patient engagement, healthcare quality, and healthcare costs to identify improvement needs. The literature shows that developing and enforcing health literacy policies increases the awareness of low health literacy and promotes use of OHL practices that take the burden of understanding off patients and makes organizations more responsible for addressing health literacy.

Recommendations for Future Research

Health literacy was identified as a public health problem in 1974 (Ratzan, 2001), and since that time research studies have documented the link between low health literacy, health outcomes, healthcare utilization, and healthcare costs (Aboumatar et al., 2013; Berkman et al.,

2011a; Callahan et al., 2013). Employee feedback on leadership support for addressing health literacy implies that future research is needed to encourage more leaders to get involved in making health literacy an organizational value. As more organizations identify strategies for addressing health literacy policies and use of OHL practices will help to generate health literacy awareness and the need for HLHO's. There is limited research on outcomes associated with leadership buy-in and use of health literacy champions in HLHO's to address health literacy; therefore, more research is needed in this area to encourage leadership support.

Based on findings from this research project, future research on specific health literacy interventions that resulted in new organizational policies may help with the identification of needed policies to improve the extent to which the AHC is addressing health literacy. In this study, the sample population included employees at the AHC only. A future research project might explore patient feedback on the extent to which the organization is addressing patients' health literacy. Since patients have first-hand experience communicating with providers and utilizing healthcare services, a future research project would help to understand how well the organization is considering and supporting health literacy from a patients' perspective. A future research project might also explore differences in HLHO-10 ratings based on patients' level of health literacy. Would patients with adequate health literacy provide higher ratings on the extent to which the organization considers and promote the health literacy of patients? Would employee ratings of OHL practices differ significantly from patient ratings of OHL practices at the health center?

The National Action Plan to Improve Health Literacy (Baur, 2011) states that before organizations can begin to address the problems associated with low health literacy, they must first assess OHL practices and adequately train employees on use of OHL practices. Future

research on assessing OHL practices in healthcare organizations will not only help to identify more outcomes associated with low health literacy, but will provide supporting evidence for transitions to an HLHO. Future organizational assessments of OHL practices at the AHC might also include comment fields to collect qualitative feedback from employees and/or patients on strengths and weaknesses in OHL practices. Other ideas for future research projects include assessments of OHL practices at partnering healthcare organizations to compare the extent to which competing and partnering organizations are considering and supporting the health literacy of patients.

As mentioned earlier, findings indicate that more evidenced-based research is needed to support health literacy training, health literacy curriculum, and health literacy policy development. It is important to identify specific health literacy competencies most beneficial for health professionals and students when promoting health literacy in health education programs (Coleman, 2011; Coleman & Appy, 2012; Coleman & Fromer, 2015; Cormier & Kotrlik, 2009). As more organizations proceed with developing health literate healthcare organizations, introducing health literacy competencies in healthcare curriculum and providing health literacy training in the workplace will be critical for ensuring patients have the tools and resources needed to make good health decisions.

The *Health Literacy Universal Precautions Toolkit* provides several tools for training and educating health professionals on use of OHL practices (Brega et al., 2015); however, research findings from this study indicate that more research is needed to assess use these tools in healthcare organizations. One suggestion is to encourage researchers various specialties to collect health literacy data and share research findings to increase the awareness of low health literacy. This data can be used to identify improvement needs in specialized clinics or at the

organization as a whole. Employee feedback revealed that improvements are needed in all areas of the AHC that influence patients' health literacy; therefore, ongoing health literacy research is needed on all attributed that influence organizational health literacy, along with recommendations for improvement.

Since the overall mean survey responses was 4.72 on a 7-point Likert scale, future research explore the development and impact of health literacy policies to address health literacy. Data on use of health literacy policy initiatives is needed to increase leadership support for use of OHL practices. As policies are implemented and the awareness of health literacy increases within the organization, it would be helpful to perform another assessment of OHL practices using employee feedback on the extent to which their organization is considering and promoting the health literacy of patients in all attributes of a HLHO.

Summary

Addressing low health literacy by considering and promoting the health literacy of patients is a recommended intervention of improving patient health outcomes and decreasing healthcare costs. Research confirms that there is a strong relationship between health literacy, health outcomes, and healthcare costs. The latest estimate of the cost of low health literacy in the U.S. is $106 to $238 billion annually, making health literacy a national health problem that contributes to poor health outcomes and increased healthcare costs. Most of the current health literacy research focuses on interventions to address health literacy, including addressing health literacy at the organizational level. Increased awareness of the implications of low health literacy have caused many organizations to explore ways of addressing health literacy. Interventions for addressing health literacy at the organization level include patient health literacy screenings and use of OHL practices in all patient-provider interactions. The purpose of this research study was to

assess organizational health literacy practices at a major academic health center based on the ten attributes of a health-literate healthcare organization. Findings indicated that while the organization is considering and promoting the health literacy of patients, improvements are needed to ensure that health literacy is a priority and core value. As evidenced in the literature, patients' heath literacy is highly influenced by the systems that serve them. Addressing health literacy at the organization level takes the responsibility of understanding complicated health information off patients and creates an environment that considers and promotes the health literacy of all patients.

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Appendices

A. Institutional Review Board Approval Letters

B. Informed Consent and Data Collection Instrument

C. Frequencies and Percentages of Employee Responses to Health Literacy Questions

D. Permission to use the Health Literate Healthcare Organization 10-Item Survey

E. Letter of Support from the Study Site

Appendix A

UNIVERSITY OF ARKANSAS

Office of Research Compliance
Institutional Review Board

July 7, 2016

MEMORANDUM

TO:	Latrina Prince Carsten Schmidtke
FROM:	Ro Windwalker IRB Coordinator
RE:	New Protocol Approval
IRB Protocol #:	16-06-813
Protocol Title:	*Assessing Organizational Health Literacy at an Academic Health Center: A Quantitative Research Study*
Review Type:	☒ EXEMPT ☐ EXPEDITED ☐ FULL IRB
Approved Project Period:	Start Date: 07/06/2016 Expiration Date: 07/05/2017

Your protocol has been approved by the IRB. Protocols are approved for a maximum period of one year. If you wish to continue the project past the approved project period (see above), you must submit a request, using the form *Continuing Review for IRB Approved Projects*, prior to the expiration date. This form is available from the IRB Coordinator or on the Research Compliance website (https://vpred.uark.edu/units/rscp/index.php). As a courtesy, you will be sent a reminder two months in advance of that date. However, failure to receive a reminder does not negate your obligation to make the request in sufficient time for review and approval. Federal regulations prohibit retroactive approval of continuation. Failure to receive approval to continue the project prior to the expiration date will result in Termination of the protocol approval. The IRB Coordinator can give you guidance on submission times.

This protocol has been approved for 500 participants. If you wish to make *any* modifications in the approved protocol, including enrolling more than this number, you must seek approval *prior to* implementing those changes. All modifications should be requested in writing (email is acceptable) and must provide sufficient detail to assess the impact of the change.

If you have questions or need any assistance from the IRB, please contact me at 109 MLKG Building, 5-2208, or irb@uark.edu.

UAMS
UNIVERSITY OF ARKANSAS FOR MEDICAL SCIENCES
Institutional Review Board
4301 West Markham, #636
Little Rock, AR 72205-7199
501-686-5667
501-686-7265 (fax)
http://irb.uams.edu/

FWA00001119

07/08/2016

PI Name: Prince, Latrina
PI Department: AA Center for Health Literacy Admin
Number: 205718
Project Title: Assessing organizational health literacy at an academic health center: A quantitative research study

NOT HUMAN SUBJECT RESEARCH DETERMINATION

The Institutional Review Board Director or Designee reviewed your material and determined that this project is NOT human subject research as defined in 45 CFR 46.102, and therefore it does not fall under the jurisdiction of the IRB review process.

Committee Notes/Comments:
The activity is not designed to develop or contribute to generalizable knowledge. The purpose is to evaluate an existing program or practice and to use the findings within the institution to improve the practice or program.

Please keep the IRB advised of any changes that may require the project to be re-classified as human subject research.

If you have any questions, please contact an IRB administrator at 501-686-5667.
Click here to access study.

Brittany Lehman
UAMS IRB Senior Administrator

Appendix B

HLHO-10
Assessing Organizational Health Literacy at an Academic Health Center:
A Quantitative Research Study

Consent to Participate in a Research Study

Principal Researcher: Latrina Prince, M.Ed.
Faculty Advisor: Carsten Schmidtke, PhD

INVITATION TO PARTICIPATE
You are invited to participate in a research study about organizational health literacy practices at UAMS. You are being asked to participate in this study because you are a current employee of UAMS. Your participation will require you to read this informed consent statement and, if you agree to participate, click on the survey link at the bottom of this page to complete an online organizational health literacy assessment.

WHAT YOU SHOULD KNOW ABOUT THE RESEARCH STUDY

Who is the Principal Researcher?
Latrina Prince, M.Ed.
Graduate Student, College of Education and Health Professions
Rehabilitation, Human Resources, and Communication Disorders
University of Arkansas
Fayetteville, AR 72701
Phone: 501-804-3750
lprincew@uark.edu

Who is the Faculty Advisor?
Carsten Schmidtke, PhD
Assistant Professor, College of Education and Health Professions
Rehabilitation, Human Resources and Communication Disorders
University of Arkansas
Fayetteville, AR 72701
Phone: 479-575-4047
cswded@uark.edu

What is the purpose of this research study?
The purpose of this study is to assess organizational health literacy practices at UAMS using the ten attributes of a health literate health care organization.

Who will participate in this study?
All UAMS employees will be invited to participate in this research study.

What am I being asked to do?
You are being asked to complete an online health literacy assessment that contains two sections: the Health Literate Healthcare Organization 10-Item Questionnaire about health literacy practices and nine demographic questions about your campus location, department, position or health profession, years of service, level of patient contact, age, race, gender, and education. The survey will be administered using the Qualtrics software available through the University of Arkansas.

What are the possible risks or discomforts?
There are no known risks associated with this project that are greater than those ordinarily encountered in daily life.

What are the possible benefits of this study?
There are no personal benefits to you for participating in the study. The findings may lead to the identification of areas in need of improvement that will help UAMS to better consider and promote the health literacy of patients.

How long will the study last?
The survey will take approximately 10 minutes to complete.

Will I receive compensation for my time and inconvenience if I choose to participate in this study?
There is no compensation for participating in this study. However, participants will have the opportunity to enter a drawing for a $100 Amazon gift card once the survey is completed. If you would like to be entered into the drawing for the chance to win the gift card, you will have the option of clicking on another link at the end of the survey that will ask for your email address. You will be contacted by email if your email is selected from the drawing.

Will I have to pay for anything?
There is no cost to you for participating in this research study.

What are the options if I do not want to be in the study?
If you do not want to be in this study, you may refuse to participate. Also, you may refuse to participate at any time during the study by exiting the online survey. Your employment with the organization will not be affected in any way if you refuse to participate.

How will my confidentiality be protected?
All information will be kept confidential to the fullest extent of the law and University of Arkansas policy. All survey responses will be anonymous, and there will be no identifying information linking you to your survey responses. Your colleagues and your supervisors will not be able to see your answers to the questions. After the completion of the study, the data file will be downloaded from Qualtrics and stored on a password protected computer in Ms. Prince's office. Reports of the findings of the study will not include any personal information that can be linked to you.

Results of the data analysis will be distributed in several ways:

- Results will be used for presentations at conferences, workshops, and other public forums.
- Results of this study will be published in Ms. Prince's doctoral dissertation.
- Results of this study will be published in scholarly journals.

The University of Arkansas Institutional Review Board has the authority to inspect consent records and data files to assure compliance with approved procedures. If you choose to enter the drawing by providing your email address at the end of the survey, this information will not be downloaded with the survey results, and all email addresses entered into the drawing will be deleted immediately after the drawing.

Will I know the results of the study?
At the conclusion of the study, you will have the right to request feedback about the results. You may contact the faculty advisor, Carsten Schmidtke, PhD., 479-575-4047 or cswded@uark.edu or the Principal Researcher, Latrina Prince, M.Ed., 501-804-3750 or lprincew@uark.edu.

What do I do if I have questions about the research study?
As a participant in this research, you are entitled to know the nature of my research. You are free to decline to participate, and you are free to decide not to answer questions or withdraw from the study at any time. No penalty or risks are associated with withdrawing your participation. Feel free to ask any questions at any time about the nature of the research activity and the methods. You may contact the Principal Researcher or the Faculty Advisor as listed below for any concerns that you may have.

Latrina Prince, M.Ed.
Principal Researcher
Phone: 501-804-3750 or 501-686-5044
lprincew@uark.edu or princelatrina@uams.edu

Carsten Schmidtke, PhD
Faculty Advisor
Phone: 479-575-4047
cswded@uark.edu

You may also contact the University of Arkansas Research Compliance office listed below if you have questions about your rights as a participant, or to discuss any concerns about, or problems with the research.

Ro Windwalker, CIP
Institutional Review Board Coordinator
Research Compliance
University of Arkansas
109 MLKG Building
Fayetteville, AR 72701-1201
479-575-2208
irb@uark.edu

I have read the above statement and have been able to ask questions and express concerns, which have been satisfactorily responded to by the investigator. I understand the purpose of the study as well as the potential benefits and risks that are involved. I understand that participation is voluntary. I understand that significant new findings developed during this research will be shared with the participant. I understand that no rights have been waived by agreeing to the terms of this consent form.

My clicking on the arrows below to access the survey indicates that I voluntarily consent for my answers to be used in this research.

>>

Q1. Do you work on the main campus?

- ❍ Yes
- ❍ No

Answer If Do you work no the main campus? No Is Selected
Q1a. What campus do you work on? _____

Q2. What is your department name?

- ❍ Academic Affairs
- ❍ Administration and Government Affairs
- ❍ Campus Operations
- ❍ Cancer Institute
- ❍ Chancellor's Office
- ❍ Clinical Programs
- ❍ College of Public Health
- ❍ College of Nursing
- ❍ College of Pharmacy
- ❍ College of Health Professions
- ❍ College of Medicine
- ❍ Communications and Marketing
- ❍ Jones Eye Institute
- ❍ Finance
- ❍ Graduate School
- ❍ Information Technology
- ❍ Institute on Aging
- ❍ Institutional Advancement
- ❍ Myeloma Institute
- ❍ Psychiatric Research Institute
- ❍ Regional Programs / AHEC

- ❍ Spine and Neurosciences Institute
- ❍ Translational Research Institute
- ❍ N/A
- ❍ Other _____

Q3. What is your staff position?

- ❍ Registered Nurse
- ❍ LVN/LPN
- ❍ Physician Assistant
- ❍ Nurse Practitioner
- ❍ Patient Care Assistant/Aide/MA
- ❍ Attending/Staff Physician
- ❍ Resident Physician
- ❍ Pharmacist
- ❍ Dietician/Nutrition Services
- ❍ Unit Assistant/Clerk/Secretary
- ❍ Respiratory Therapist
- ❍ Physical, Occupational, or Speech Therapist
- ❍ Research
- ❍ Education
- ❍ Technician (EKG, Lab, Radiology, Phlebotomy, etc.)
- ❍ Administration/Management
- ❍ Social Work
- ❍ Staff Education/Training
- ❍ Other _____

Q4. What is your level of patient contact?

- ❍ 0-10% Direct patient contact (management, administration, other)
- ❍ 11-50% Direct patient contact
- ❍ Greater than 50% Direct patient contact

Q5. How long have you worked at your organization?

- ❍ Less than 1 year
- ❍ 1-5 years
- ❍ 6-10 years
- ❍ 11-15 years
- ❍ 16-20 years
- ❍ 21 years or more

Q6. Race:

- ❍ American Indian or Alaskan Native
- ❍ Asian
- ❍ Black or African American
- ❍ Hispanic
- ❍ Native Hawaiian or Other Pacific Islander
- ❍ White
- ❍ Two or more races/Some other race
- ❍ I choose not to disclose

Q7. Gender:

- ❍ Male
- ❍ Female

Q8. Age:

- ❍ Under 25
- ❍ 26-29
- ❍ 30-39
- ❍ 40-49
- ❍ 50-59
- ❍ 60 or older

Q9. What is the highest degree or level of school you have completed? If currently enrolled, choose the highest degree received.

- ❍ Completed some high school
- ❍ High school graduate
- ❍ Completed some college
- ❍ Associate degree
- ❍ Bachelor's degree
- ❍ Completed some postgraduate
- ❍ Master's degree
- ❍ PhD, MD, PharmD, or Law degree
- ❍ Other advanced degree beyond a Master's degree

Q10. Health literacy practices at your organization
Patients have varying levels of health literacy. Health literacy is the ability to find, understand and put health information into practice. The following statements relate to measures at your organization, which consider and promote the health literacy of your patients. Please think about your organization in answering the questions.

Q11. Please assess your organization in accordance to each question on a scale from 1 (absolutely not) to 7 (to a very large extent).

Q12 To what extent...	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
...is the management at your organization explicitly dedicated to the subject of health literacy (e.g. mission statement, human resources planning)? (1)	❍	❍	❍	❍	❍	❍	❍
...is the topic of health literacy considered in quality management measures at your organization? (2)	❍	❍	❍	❍	❍	❍	❍
…are employees at your organization trained on the topic of health literacy? (3)	❍	❍	❍	❍	❍	❍	❍
…is health information at your organization developed by involving patients? (4)	❍	❍	❍	❍	❍	❍	❍
…is individualized health information used at your organization (e.g. different languages, print sizes, braille)? (5)	❍	❍	❍	❍	❍	❍	❍
…are there communication standards at your organization which ensure that patients truly understand the necessary information (e.g. translators, allowing pauses for reflection, calling for further queries)? (6)	❍	❍	❍	❍	❍	❍	❍
…are efforts made to ensure that patients can find their way at your organization without any problems (e.g. direction signs, information staff)? (7)	❍	❍	❍	❍	❍	❍	❍
...is information made available to different patients via different media at your organization (e.g. three-dimensional models, DVDs, picture stories)? (8)	❍	❍	❍	❍	❍	❍	❍
...is it ensured that the patients have truly understood everything, particularly in critical situations (e.g. medication, surgical consent), at your organization? (9)	❍	❍	❍	❍	❍	❍	❍
...does your organization communicate openly and comprehensibly to patients in advance about the costs which they themselves have to pay for treatment (e.g. out-of-pocket payments)? (10)	❍	❍	❍	❍	❍	❍	❍

Appendix C

Frequencies and percentages for each Health Literate Healthcare Organization Question

To what extent…	**Absolutely not n(%)**			**Neither/Nor n(%)**		**A very large extent n(%)**		**Total n(%)**
	1	2	3	4	5	6	7	
…is the management at your organization explicitly dedicated to the subject of health literacy (e.g. mission statement, human resources planning)? (1, leadership)	9 (2.4%)	15 (4.0%)	27 (7.2%)	50 (13.3%)	98 (26.1%)	**114 (30.4%)**	62 (16.5%)	375 (100%)
…is the topic of health literacy considered in quality management measures at your organization? (2, integration)	11 (2.9%)	23 (6.1%)	22 (5.9%)	53 (14.1%)	**108 (28.8%)**	105 (28.0%)	53 (14.1%)	375 (100%)
…are employees at your organization trained on the topic of health literacy? (3, workforce)	20 (5.3%)	42 (11.2%)	47 (12.5%)	**91 (24.3%)**	74 (19.7%)	69 (18.4%)	32 (8.5%)	375 (100%)
…is health information at your organization developed by involving patients? (4, inclusion of the served)	27 (7.2%)	24 (6.4%)	32 (8.5%)	**98 (26.1%)**	75 (20.0%)	77 (20.5%)	42 (11.2%)	375 (100%)
…is individualized health information used at your organization (e.g. different languages, print sizes, braille)? (5, health literacy skills range)	21 (5.6%)	27 (7.2%)	23 (6.1%)	**89 (23.7%)**	84 (22.4%)	82 (21.9%)	49 (13.0%)	375 (100%)
…are there communication standards at your organization which ensure that patients truly understand the necessary information (e.g. translators, allowing pauses for reflection, calling for further queries)? (6, communication standards)	18 (4.8%)	20 (5.3%)	19 (5.0%)	75 (20.0%)	**102 (27.2%)**	94 (25.1%)	47 (12.5%)	375 (100%)
…are efforts made to ensure that patients can find their way at your organization without any problems (e.g. direction signs, information staff)? (7, provide access)	14 (3.7%)	14 (3.7%)	20 (5.3%)	55 (14.7%)	82 (21.9%)	**123 (32.8%)**	67 (17.9%)	375 (100%)
…is information made available to different patients via different media at your organization (e.g. three-dimensional models, DVDs, picture stories)? (8, media variety)	20 (5.3%)	32 (8.5%)	35 (9.3%)	**107 (28.5%)**	80 (21.3%)	56 (14.9%)	45 (12.0%)	375 (100%)
…is it ensured that the patients have truly understood everything, particularly in critical situations (e.g. medication, surgical consent), at your organization? (9, high-risk)	15 (4.0%)	16 (4.3%)	23 (6.1%)	79 (21.1%)	**105 (28.0%)**	89 (23.7%)	48 (12.8%)	375 (100%)
…do you communicate openly and comprehensibly at your organization to your patients in advance about the costs which they themselves have to pay for treatment (e.g. out-of-pocket payments)? (10, costs)	40 (10.7%)	29 (7.7%)	35 (9.3%)	**113 (30.1%)**	62 (16.5%)	63 (16.8%)	33 (8.8%)	375 (100%)

Appendix D

Prince, Latrina

Attachments: Kowalski-2015-The health literate health care.pdf; PIAT Versorgerfragebogen_END.pdf

From: Christoph Kowalski [mailto:kowalski@krebsgesellschaft.de]
Sent: Thursday, May 07, 2015 6:18 AM
To: Latrina Prince-Williams
Subject: AW: HLHO-10

Hi Latrina,

Sure, feel free to use the HLHO-10! Find attached the original questionnaire in which we used the HLHO-10 (12 on page 11). That's the original wording which won't help you much if you don't speak German ☺.

The translation in the article however has been done properly by a translator.

Best wishes,

Christoph

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Appendix E

Prince, Latrina

From: Parham, Jon C
Sent: Monday, April 25, 2016 4:07 PM
To: Prince, Latrina
Cc: Chase, Yavonda C
Subject: Survey this summer on health care practices

Latrina,

Following up on our phone visit, here's the link to the form to submit an announcement for the Inside UAMS email: http://inside.uams.edu/announcement-form/

These announcements are posted on the intranet and then included in the Inside UAMS email that is sent on Tuesdays and Thursdays to all employees and students.

I think I mentioned on the phone that I'm moving to a new job at UAMS. I've copied Yavonda Chase who is taking over internal communications and can help you with any questions or problems with submitting this summer when you're ready to distribute the survey.

Thanks,
Jon

Jon Parham
Manager, Internal Communications
Office of Communications & Marketing

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