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Primary Care Physicians' Knowledge and Perception of the Impact of Health Literacy on Patient Care

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Walden University
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Abstract

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by

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MHA/MBA, Webster University, 2008

BBA, Howard Payne University, 2005

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Health Care Administration

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Abstract

Until recently, many health literacy studies were completed from the patient and nurse perspective, while few focused on the physician perspective, specifically the primary care physician. The purpose of this study was to provide insight into the health literacy knowledge and education of primary care physicians and determine the association, if any, between physicians' perceptions of patients' limited health literacy and physicians' use of health literacy communication techniques. The knowledge, attitudes, and practice (KAP) framework directed this study. This framework posits that knowledge informs or influences attitudes, which leads to practices. The KAP framework was employed to answer the research questions regarding whether physicians' health literacy education and/or health literacy knowledge is associated with their attitudes toward health literacy and the use of health literacy communication strategies. A quantitative cross-sectional online survey was used to gain insight from primary care physicians and a one-way multivariate analysis of variance was the test selected to answer the research questions. The results revealed no statistically significant association between primary care physicians' health literacy knowledge or education and the use of effective health literacy communication strategies and attitudes towards the role of health literacy in patient care. However, the descriptive statistics support the need for mandatory health literacy education for medical professionals, as well as the need to universally, proactively, and consistently address health literacy in patient-physician communication to empower patients and ultimately improve health outcomes.

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Dedication

"Of all the forms of inequality, injustice in health care is the most shocking and inhumane." – Martin Luther King Jr.

This study is dedicated to the patients failed by the healthcare system and to the health care providers who refuse to accept the status quo and continuously act on their patients' behalf to improve health care quality and reduce health disparities.

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Chapter 1: Introduction to the Study

Background

Health literacy as a public health issue has gained considerable attention across the world in recent years. Health literacy is noted as a cause of health disparities for those affected as well as a reason for increased health care costs and poor health outcomes (Centers for Disease Control and Prevention [CDC], n.d.). Adequate health literacy, which according to the Institute of Medicine (IOM, 2004) is the ability to attain, manage, and understand basic health information to make appropriate health decisions, is necessary to navigate the complex health system and understand treatment plans. Individuals with limited health literacy are more susceptible to becoming victims of the health care system, as they are less likely to be actively engaged in their health and less capable of partnering with healthcare providers to appropriately manage their health (Cawthorn, Mion, Willens, Roumie, & Kripalani, 2014; Goodman, Griffey, Carpenter, Blanchard, & Kaphingst, 2015; Greenhalgh, 2015; Rudd, 2013; World Health Organization Regional Office for Europe, 2013). Though some researchers believe limited health literacy stems from lack of early education in school, limited health literacy has also been reported in people with adequate early education and higher education, making it difficult for this population to navigate the health system on their own behalf as well (World Health Organization Regional Office for Europe, 2013). Although navigating the health care system can be difficult for people in general, people with limited health literacy have more of a challenge than those with adequate health

literacy (CDC, 2014; Lambert et al., 2014). Considering the increasing complexity of the health care system, this issue will become more problematic for this population if not effectively addressed.

Problem Statement

A variety of research conducted regarding health literacy as a public health issue has led to a consensus that limited health literacy has an adverse effect on patient health, access to care, and treatment outcomes (Cawthorn et al., 2014; Goodman et al., 2015; Greenhalgh, 2015; World Health Organization Regional Office for Europe, 2013). In the last large national adult health literacy study conducted by the IOM, published in 2004, it was noted that almost half (47% or approximately 90 million adults) of all Americans at that time had limited health literacy, making it challenging for them to effectively function in the healthcare system. More recently, it was reported that limited health literacy affects nine out of 10 adults in the United States (CDC, 2014); with a current population greater than 320 million (U.S. Census Bureau, 2016), this means approximately 288 million people would be considered to have limited health literacy. The U.S. Census Bureau (2016) estimated the population to be approximately 330 million by the next census in 2020. Instruments, such as the Test of Functional Health Literacy in Adults (TOFHLA), which measures the comprehension of health information, and Rapid Estimate of Adult Literacy in Medicine **(**REALM), which measures the ability to pronounce health-related words correctly and thus a reading level, were introduced in the early 1990s to measure patient health literacy (Collins, Currie, Bakken, Vawdrey, &

Stone, 2012). These instruments have been used in conducting numerous studies over the years, which has led to an agreement that limited health literacy has a negative impact on patients and their families as well as the health care system (CDC, 2014). People with limited health literacy skills, when compared to those with adequate health literacy, have a higher rate of emergency room use and hospitalization and are less likely to seek preventive health measures (CDC, 2014). These people are also less compliant with prescription medications, have more medication errors, less understanding of medical instructions, and less ability to manage chronic diseases (Berkman, Sheridan, Donahue, Halpern & Crotty, 2011; Vermeire, Hearnshaw, Van Royen, & Denekens, 2002).

Legislation was introduced to combat the health literacy issue, such as the Plain Writing Act of 2010. The Plain Writing Act of 2010, which was presented as law in October 2010, requires federal agencies to train personnel to use plain or basic language in their written communications with the public (Executive Office of the President, 2011). Patient education classes have also been introduced, specifically for patients with chronic conditions, such as hypertension or diabetes; however, people with limited health literacy are less likely able to benefit from health education classes (Nutbeam, 2015). Therefore, a more proactive approach by knowledgeable professionals is required to make a greater impact. To reach this goal, it must be recognized that the health literacy skills necessary for health care professionals to communicate with patients of limited health literacy are just as important as individual patient health literacy (CDC, 2014; IOM, 2004). It is important that healthcare professionals are educated on the proper way

to communicate with patients of limited health literacy for treatment to be effective. Thus, health care professionals must not only improve their written correspondence with patients but also improve the way they verbally communicate (CDC, 2014). Improving their understanding of health literacy better positions healthcare providers to offer a tailored education approach based on patient needs using approved methods, such as the teach-back method (Nutbeam, 2015). Although, many studies have been completed from the patient and nurse point of view, few have focused on the primary care physician's perspective. This research adds to the body of knowledge about health literacy by gaining primary care physicians' knowledge and perception of the importance of health literacy in the treatment of patients. This information could guide future health literacy education and interventions.

Purpose of the Study

The purpose of the study was to provide insight into the perception of health literacy knowledge and education among primary care physicians involved in patient care. A recommendation made by the IOM in 2004 sought to make health literacy education a mandatory part of the curriculum for medical and public health schools. Although there are indications that health literacy education for health professionals has received increased attention since that time, limited action has been taken to address this recommendation (Coleman, Hudson, & Maine, 2013; Coleman, Nguyen, Garvin, Sou, & Carney, 2016). Little has been done to ensure that the health care professionals treating patients with limited health literacy are educated on health literacy themselves, so they

have a full understanding of the importance of their role in positively influencing the health literacy issue (Coleman Hudson, & Maine, 2013). Additionally, though many studies have been completed from the patient and the nurse point of view, few have focused on the primary care physician's perspective. To address this gap, this study used a quantitative cross-sectional method to obtain information regarding primary care physicians' health literacy education and knowledge and the association, if any, of these variables with the physicians' attitudes about health literacy and use of health literacy communication techniques. The independent variables in this study were health literacy knowledge and education. The dependent variables were provider attitudes/perception and health literacy communication techniques.

Research Questions

The following research questions and their associated null and alternative hypotheses were addressed in this study:

RQ1: What is the association, if any, between primary care physicians' health literacy education (e.g., the formal education or training they have received), their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care?

$H_0$1: There is no association between primary care physicians' health literacy education (e.g., the formal education or training they have received), their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care.

H_a1: There is an association between primary care physicians' health literacy education (e.g., the formal education or training they have received), their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care.

RQ2: What is the association, if any, between the level of primary care physicians' health literacy knowledge, their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care?

H_02: There is no association between the level of primary care physicians' health literacy knowledge, their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care.

H_a2: There is an association between the level of primary care physicians' health literacy knowledge, their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care.

Conceptual Framework

The conceptual framework that directed this cross-sectional quantitative research study was the knowledge, attitudes, and practice (KAP) framework. The KAP conceptual framework assumes that a linear relationship exists between knowledge, attitudes, and practices (Muleme, Kankya, Ssempebwa, Mazeri, & Muwonge, 2017). The

variables of the KAP model correspond with the constructs of this study. In this study, the variables equate to the knowledge, awareness of, and/or familiarity with health literacy that inform or influence attitudes regarding the role that health literacy plays in patient care and thereafter the communication practices, if any, that primary care physicians employ to address the potential limited health literacy in their patient populations. Figure 1 shows a visual representation of the KAP conceptual framework employed for this study.

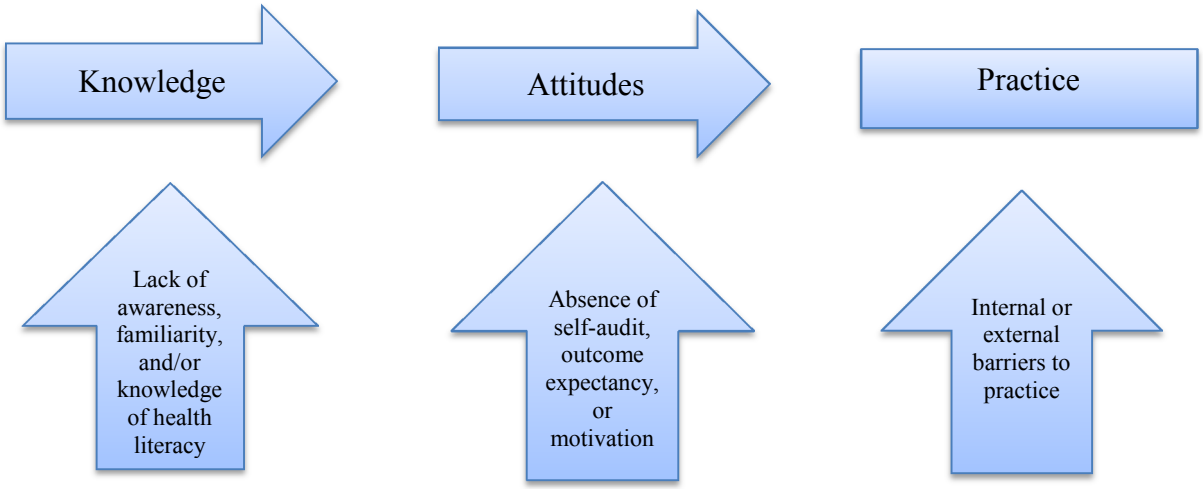

Figure 1. The knowledge, attitudes, practice conceptual framework regarding health literacy.

Nature of the Study

This study used a quantitative cross-sectional survey design. The quantitative approach provided insight on the relationship, if any, between primary care physicians' health literacy knowledge and health literacy education as it related to patient-provider

communication and attitudes regarding the importance of health literacy. The quantitative survey research design was the most appropriate to acquire a statistical description of trends and attitudes of the population based on a sampling of that population and may allow for generalization to the overall primary care physician population. The independent variables in this study were physician health literacy education and physician health literacy knowledge. The dependent variables were physician attitudes regarding health literacy and health literacy communication techniques. The target population selected for this project consisted of primary care physicians who attended medical school in the United States and were actively employed in their profession in a primary care setting. Participants were recruited through a mailed postcard invitation or through an e-mail sent via SurveyMonkey; a unique link to access the survey was provided, and once participants accessed the website, they were provided the consent form for review prior to beginning the survey.

Definitions of Terms

The following is a list of terms defined in the manner they were used in this study:

Health literacy education: Formal education in health literacy while in medical school or with the use of continuing medical education activities or programs.

Health literacy knowledge: General knowledge of the facts regarding health literacy in the United States.

Attitudes: An expression of the individual's feelings and inclinations towards health literacy that has an impact on patients, which can be favorable or unfavorable.

Health literacy communication strategies: The use of special health literacy techniques to communicate with patients.

Assumptions

An initial assumption in this study was that health literacy education is measurable by self-report, which is the method employed in this study. Another assumption was that effective patient-provider communication can be measured by the types of and number of communication methods employed, aside from the teach-back method, which is an approved communication technique listed as one of the top 11 patient safety practices in health care based on the strength of research conducted by DeWalt, Callahan, Hawk, Broucksou, & Hink (2010) for the Agency for Healthcare Research and Quality. An additional assumption was that because the responses were anonymous, participants of the study responded to questions in a truthful manner. Additionally, I assumed that the population sample size was representative of the target audience. Despite these assumptions, based on the goal of this study, this survey method was the most appropriate approach to answer the research questions.

Limitations

As with most studies, this study had limitations. The perception of the primary care providers, which was purely subjective, was a limitation. There was no objective evidence to document whether any formal health literacy education was completed. Because the survey is self-reported, the responses were subject to reporting bias. Also, a temporal relationship could not be established with the cross-sectional design.

Additionally, at the time of this study, the Nursing Professional Health Literacy Survey (NPHLS) instrument was still being validated (Macabasco-O'Connell & Fry-Bowers, 2011), so results may not be generalizable to the entire primary care physician population based on this study alone. However, in exchange for use of the NPHLS instrument, raw data from this study will be submitted to the authors of the NPHLS study to assist in further validation of their instrument, which provides an opportunity for its future development.

Significance

This research fills a gap in understanding by focusing on the health literacy knowledge of primary care physicians, who are the main gatekeepers for patient health, and investigating whether they are consistently using effective verbal communication methods, including the teach-back method, to ensure patient understanding of treatment recommendations. The results of this study could provide much-needed insight into the effectiveness of patient-physician communication as it relates to physicians' health literacy knowledge. Insights from this study could serve as evidence that a more proactive intervention method by the knowledgeable health care professionals treating this vulnerable population is necessary. Mandatory health literacy education for medical and public health professionals, whether at the university level or through continuing education, could serve as the driving force for social change. By mandating health literacy education for the medical and public health population, a proactive step would be

taken to positively influence limited health literacy as a public health issue (Nutbeam, 2015).

Summary

In this chapter, I discussed a broad account of the health literacy issue. The public health community has made strides in recognizing limited health literacy as a public health issue. In response to this issue, researchers have created not only tools that assist in recognizing patients with limited health literacy but also interventions. However, the health literacy issue continues to exist with no signs of effective mitigation and will continue to become more challenging as the health care system becomes increasingly complex. Unfortunately, this means that health care providers will need to balance the already demanding schedule placed upon them by the health care system and make the necessary adjustments to address the health literacy issue. This will not be an easy task, but if the time is taken upfront to address health literacy in the treatment of individual patients, less time will be spent trying to correct the health issues created because of their limited health literacy, such as poor medication or treatment compliance. Patients will be able to better manage their health, follow medication and diagnostic treatment directions, and access the appropriate care in the appropriate manner. These improvements cannot happen unless healthcare providers proactively act to ensure patient understanding in patient-provider interactions.

The next chapter provides a review of scholarly literature that supports the need for this study, with specific focus placed on the variables of health literacy, physician attitudes regarding health literacy, and patient-provider communication.

Chapter 2: Literature Review

Literature Search Strategy

The variety of research conducted concerning health literacy as a public health issue has led to an agreement that limited health literacy has an adverse effect on patient health, access to care, and treatment outcomes. Recently, it was reported that limited health literacy still affects nine out of 10 adults in the United States (CDC, 2014), which is approximately 288 million people with limited health literacy when the current population of greater than 320 million is considered (U.S. Census Bureau, 2016). People with limited health literacy skills, when compared to those with adequate health literacy, have a higher rate of emergency room use and hospitalization and are less likely to seek preventive health measures (CDC, 2014). These people are also less compliant with use of prescription medications, have more medication errors, have less understanding of medical instructions, and are less able to manage chronic diseases (Berkman et al., 2011; Vermeire et al., 2002). Few health literacy studies have been published from the primary care physician's perspective; instead, much of the published health literacy studies have focused on the patient and nurse point of view. This research study sought primary care physicians' perspectives on the importance of health literacy in their treatment of patients and has the potential to guide future health literacy education and intervention activities.

Several libraries were searched to complete this literature review. A search conducted of the Stephen B. Thacker CDC library to locate full text, peer-reviewed articles published between 2011 and 2016 yielded 376 articles for review. This included

a SCOPUS search, the largest database of peer-reviewed literature, as well as a MEDLINE search. The terms used for the search included but were not limited to *patient-physician communication*, *patient-provider communication*, *provider-patient communication*, *physician-patient communication*, *nurse-patient communication*, *patient-nurse communication*, *health literacy*, and *effective communication and health*. I also employed a search of the Walden University library and Google Scholar using the same terms, which yielded 6,804 and 16,500 articles for review, respectively. Titles and/or abstracts were reviewed, and the most pertinent articles were chosen for this literature review.

Content and Organization of the Literature Review

This literature review begins with a description of the conceptual framework that was the basis for this study. Following is a discussion regarding health literacy, patient-provider communication, health literacy and communication, and the health care professional's perspective regarding the importance of health literacy. This literature review is organized to provide background on the health literacy issue and patient-provider communication variables of this study first, including any possible association between them, then continues by addressing physician perspectives regarding health literacy. The focus of this study was on primary care physicians' health literacy knowledge and education and whether the presence of health literacy knowledge and education, or lack thereof, has an association with effective patient-provider

communication and attitudes regarding the importance of health literacy in patient treatment.

Conceptual Framework

A conceptual framework is selected based on the main variables of a study. It is meant to describe the presumed relationship or progression between the main constructs (Adom, Hussein, & Agyem, 2018). The KAP model was the conceptual framework for this study. The KAP model is based on the principle that an individual's knowledge will influence their attitude and encourage a behavior or behavior change (World Health Organization Regional Office for the Eastern Mediterranean, 2012). This model was initially introduced in the 1950s in the form of a KAP survey used to research population and family planning behaviors (Launiala, 2009). The purpose of the KAP survey was to gain insight on the community's knowledge about certain topics, such as programs or health related knowledge, assess their attitudes or feelings about the topic, and investigate their practices or actions regarding that topic (Launiala, 2009). KAP model studies have also been completed in studies of healthcare professionals, comparable to the goal of this study. Hassan, Hadi, and Keng (2012) sought to obtain information about the knowledge, attitudes, and practices of nursing and medical students regarding the use of complementary and alternative medicine, while a similar study conducted by Alzghoul and Abdullah (2016) sought to gain nurse perspectives regarding treatment for patients presenting for pain management. A recent systematic review of studies completed by Barzkar and Baradaran (2017) sought information about physicians' knowledge,

attitudes, and practices towards evidence-based medicine and revealed that physicians' knowledge and practice remained poor although attitudes were positive, leading to a recommendation for more objective testing of evidence-based medicine knowledge. The KAP model has also been used as a conceptual framework for studies of healthcare professionals' knowledge, attitudes, and practices, comparable to the goal of this study (Roelens, Verstraelen, Van Egmond, & Temmerman, 2006). A KAP survey was not conducted for this study; however, the premise behind such a survey was the conceptual framework for this study. In the current study, the KAP conceptual framework was used to obtain information regarding primary care physicians' health literacy knowledge, their attitudes regarding health literacy and treatment, and their communication practices. The goal of this study corresponded with KAP surveys, as they are conducted to assess what participants know, how they feel, and the actions taken (World Health Organization, 2008).

Due the historical use of the KAP model as a conceptual framework and the nature of this study, the KAP conceptual framework was deemed the most appropriate guide for this study to achieve the research goals. The belief is that providers who have education in health literacy, specifically education about how to communicate with patients of limited health literacy, are more cognizant of health literacy and thus modify their behavior to be more effective in their communication with patients (World Health Organization Regional Office for the Eastern Mediterranean, 2012). These providers are thought to be more conscientious in using appropriate patient-provider communication

techniques, such as the teach-back method, due to the knowledge gained from their health literacy education. The KAP approach has been used previously in health education and promotion and can potentially guide research regarding the effectiveness of patient-provider communication.

Health Literacy

Health literacy has been defined in various forms since its introduction as a concept in the 1970s (Lambert et al., 2014; Mancuso, 2009). The earliest definition introduced by Nutbeam (1998) was an individual's ability to comprehend health information, cognitively as well as socially, and use the health information to maintain their good health. Nutbeam (2000) further clarified the health literacy definition by describing three different classifications of health literacy: functional health literacy, interactive health literacy, and critical health literacy. Functional health literacy referred to basic skills that make an individual capable of functioning in their daily life (Nutbeam, 2000). Interactive health literacy referred to an individual's ability to use advanced cognitive and social skills to communicate and interact with the changing situations in their environment (Nutbeam, 2000). Critical health literacy referred to an individual with the most advanced cognitive and social skills, allowing for the critical analysis of information and the ability to assert greater control over life situations (Nutbeam, 2000). The American Medical Association (AMA, 1999) defined health literacy similarly to the general definition of literacy that concerns an individual's ability to read, write, and speak English but that also includes the ability to problem solve at a level that develops

knowledge for themselves and accomplishes their goal. The IOM (2004) defined health literacy as the level at which an individual has the capacity to attain, manage, and comprehend basic health information, including programs and services, to make proper health decisions to maintain good health. Further, Ishikawa and Yano (2011) defined health literacy as an individual's capacity to access, understand, and use information to make appropriate informed decisions about issues related to health. Regardless of the preferred definition of health literacy, there is consensus among researchers that the ability to function and navigate through the health care system to maintain self-health is at the forefront of adequate health literacy. Any lack of health literacy can place patients at risk for poor self-control of health, leading to poor health compliance and poor health outcomes. In fact, there is consensus among researchers that individuals with limited health literacy are at higher risk of poorer health outcomes (Altin, Lorrek, & Stock, 2015; Bennett, Chen, Soroui, & White, 2009; Paasche-Orlow & Wolf, 2010; Sudore et al., 2006).

Causes of Limited Health Literacy

Health literacy is closely tied to the general literacy of an individual, in that those with limited health literacy also commonly have lower education (U.S. Department of Health and Human Services, 2008). Traditionally, this meant that if an individual could read and understand text, they could interpret patient instructions regarding their care (Greenhalgh, 2015). However, this has not proven to be an effective measure of health literacy, because a person's health literacy may vary based on the health condition

experienced, complexity and nature of health information being shared (negative versus positive), and the health care provider seen (Heinrich, 2012). Therefore, the level of general literacy and education is not a definitive predictor of health literacy because even highly educated individuals may have difficulty understanding the complexity of a health condition or the health system as a whole (World Health Organization Regional Office for Europe, 2013).

Impact of Limited Health Literacy

Patients with limited health literacy have less access to or are less likely to take advantage of preventive medicine services, and they are less likely to be able to manage chronic diseases, such as diabetes or asthma, leading to reduced ability to self-manage their health, poorer health outcomes, and higher incidences of emergency room visits, hospitalizations, and rehospitalizations (CDC, 2014; Dennis et al., 2012; Easton, Entwistle, & Williams, 2013; Goodman et al., 2015; Rudd, 2013). Limited health literacy is also associated with riskier health behavior, poor compliance with taking prescription medication, poor patient engagement with health care providers, overall poor health, and higher rates of mortality (Greenhalgh, 2015; Heinrich, 2012; Rudd, 2013; World Health Organization Regional Office for Europe, 2013).

Emergency room visits and hospitalizations are increased for those with limited health literacy, leading to greater health care costs (Cawthorn et al., 2014). The inability to self-manage health and navigate the health system lands many of these individuals in the emergency room to seek care for poorly managed conditions, which then require

hospitalization to provide the necessary care, which at times is extensive, to stabilize the condition (Goodman et. al., 2015; World Health Organization Regional Office for Europe, 2013). Even after this extensive inpatient care, the patient may be rehospitalized thereafter for the same or worsening condition due poor treatment compliance due to limited health literacy.

Those Affected by Limited Health Literacy

The last large national adult health literacy study was conducted in 2004 by the IOM, and the researchers reported that almost half of all Americans at that time (47%, or approximately 90 million adults), had limited health literacy, making it a challenge for them to function and navigate the health care system. More recently, the CDC (2014) noted that nine out of 10 adults in the United States have limited health literacy. Researchers have found the groups most commonly affected by limited health literacy includes individuals with low income, the minority population, immigrants, the senior citizen population, and people with disabilities (Greenhalgh, 2015; World Health Organization Regional Office for Europe, 2013). This is typically due to age, limited English proficiency, culture, and limited education, all of which usually lead to incomes that are equal to or less than poverty level (CDC, 2014; Greenhalgh, 2015). Although health literacy is associated with general literacy in most cases, this is not always an accurate gauge of health literacy (CDC, 2014). People with varying levels of education can have difficulty with health literacy, as it involves complex language, involving many body systems, requiring intricate health knowledge and understanding (CDC, 2014).

Stigma of Limited Health Literacy

Individuals with limited health literacy are often ashamed about their lack of health literacy knowledge and, in fear of judgment, actively attempt to hide this fact from health care professionals and their friends and families (Ali, Ferguson, Mitha, & Hanlon, 2014; Greenhalgh, 2015). Individuals with limited health literacy often limit their interactions with providers, ask fewer questions, and do not fully engage in their health care (Ali et al., 2014; Easton et al., 2013). Frequently, their noncompliance with medications and treatment is viewed as intentional, when it is more likely related to a lack of understanding due to limited health literacy (American College of Obstetricians and Gynecologists, 2016). These individuals may lack the confidence and knowledge to take care of their health but are not sure how to approach the issue. These factors provide a platform for poor self-management of health conditions and poor health outcomes for patients. Such a situation reinforces the need for provider education regarding health literacy to proactively address this vulnerable population's needs.

Health Literacy Research

A vast amount of health literacy research has been conducted primarily from the patient perspective, using health literacy instruments to identify those with limited health literacy and their demographic characteristics (Frosch & Elwyn, 2014). Health literacy instruments, such as the TOFHLA that measures the comprehension of health information, the REALM that measures the ability to pronounce health-related words correctly and thus a reading level, the Newest Vital Sign (NVS) that is a 6 question

instrument that assesses the ability to comprehend a nutrition label, and the brief health literacy screen (BHLS) which is a self-reported health literacy tool, were introduced in the early 1990s to measure health literacy (Collins et. al, 2012; Goodman et al., 2015; Heinrich, 2012). These instruments have been used to complete numerous studies over the years, leading to a consensus that limited health literacy has a negative impact on patients, their families, and the health care system as a whole (CDC, 2014).

The AMA (1999) conceded that limited health literacy is an obstacle to obtaining effective medical treatment and recommended the establishment of health literacy training for medical professionals, to train on the proper method of communicating with patients of limited health literacy. Although health literacy interventions, such as health literacy instruments and patient education programs, have increased in response to the health literacy issue, assessments of health care providers and the health care system's capacity to address limited health literacy is lacking (Altin et al., 2015; Frosch & Elwyn, 2014). Researchers agree it is imperative for healthcare professionals to better understand the plight of individuals with limited health literacy and become well-versed on the behaviors necessary to address health literacy in their patients as a routine part of the patient plan of care, so they are better able to support patients in the self-management of their health (CDC, 2014; Frosch & Elwyn, 2014; Harrington, Haven, Bailey, & Gerald, 2013).

Patient-Provider Communication

Although nurses typically play the role of communicator in patient care when it comes to the treatment plan, the relationship between provider and patient is extremely important for patient satisfaction. Effective communication between patient and provider is the key to successful patient treatment and outcomes (American College of Obstetricians and Gynecologists, 2014). When there is effective communication between these two parties, there is greater compliance to the prescribed treatment plan, better health outcomes for patients, and greater satisfaction with care (Tamura-Lis, 2013). Alternatively, patients who do not fully comprehend instructions are less likely to follow through with their outlined treatment plan appropriately, which leads to poor control of chronic diseases and poor health in general.

Communication between patient and provider can be challenging due to differences between the two, whether it be cultural, ethnic, or religious (American College of Obstetricians and Gynecologists, 2014). However, providers who communicate using approved methods of health literacy communication are taking the steps necessary to ensure patient adherence to their plan of care and greater self-control of chronic diseases (Haskard Zolnierek & DiMatteo, 2009). The provider-patient relationship typically begins with a patient-centered interview, where the provider aims to ascertain from the patient what major health complaint needs to be addressed and to obtain pertinent background information regarding the patient and their condition to determine the plan of action for their care (American College of Obstetricians and

Gynecologists, 2014). Thereafter, an approved communication technique, such as the teach-back method, should be employed to communicate the treatment plan to the patient.

Based on the strength of research conducted by Dewalt et al. (2010), the teach-back method was listed as one of the top 11 patient safety practices in health care. The teach-back method is a method of communication that seeks to confirm clear communication and patient understanding, by having the patient repeat the instructions given back to the provider (Tamura-Lis, 2013). This allows the provider to confirm that the instructions were communicated clearly to the patient. If the patient has difficulty repeating back instructions with the teach-back method, the provider can restate the information in an alternate manner and have the patient try again (Tamura-Lis, 2013). Tamura-Lis (2013) further stated that when conducted correctly, the teach-back method reduces the risk of miscommunication and ensures patient understanding of their care plan, which leads to greater adherence and self- management of their conditions. Patient-provider communication, when carefully considered, is an important factor in patient care over which providers have an element of control that can directly affect patient care and outcomes (Haskard Zolnierek & DiMatteo, 2009).

Health Literacy and Communication

Health literacy is a key aspect that plays a role in patient-provider communication (Coleman & Fromer, 2015). Many providers do not consider that patients may be of limited health literacy and may require additional attention when communicating medical information so that information is made understandable for them (CDC, 2014; Heinrich,

2012). Often in the primary care setting, health care providers lack awareness in health literacy and therefore do not recognize patients that cannot comprehend instructions (Heinrich, 2012). Couple that reality with the fact that instructions patients do happen to understand are forgotten immediately upon exiting the health care provider's office and a high-risk situation is created for the patient, leading to poor adherence to plan of care and poor health outcomes (Heinrich, 2012). Although the art of effective communication has been included as a mandatory process of medical training (Haskard Zolnierek & DiMatteo, 2009), the health literacy aspect specifically has not been addressed (Kaphingst et al., 2014). Limited health literacy is so prevalent today that health care facilities must have a plan for addressing this epidemic (Heinrich, 2012). If health care facilities are not prepared to assess the health literacy of patients as a routine part of care, a universal precaution approach must be taken (CDC, 2014; Lambert et al., 2014). This supports the need for providers to acquire the skills necessary to communicate with patients of limited health literacy in a manner that is non-demeaning, to foster a positive relationship and effectively address their health care needs (Easton et al., 2013; U.S. Department of Health and Human Services, Advisory Committee on Training in Primary Care Medicine and Dentistry, 2015).

Provider Perspective

Kromme, Ahaus, Gans, and van de Wiel (2016) found that providers considered communication effective when they had built a rapport with the patient and noted that building a positive rapport with the patient influenced communication and ultimately the

achievement of set goals for treatment. However, providers noted barriers to effective communication, such as time constraints due to requirements for increased productivity placed on them by the health care system, making it difficult to use effective communication techniques, such as the teach-back method (Harrington et al., 2013; Lambert et al., 2014). Additionally, Lambert et al. (2014) found that providers had inadequate knowledge regarding the issue of limited health literacy and its consequences on patient care (American College of Obstetricians and Gynecologists, 2014). On many occasions, providers' ratings of patient health literacy were inconsistent with the actual level of patient health literacy (Harrington et al., 2013). Both the providers' lack of understanding of health literacy and perceived barriers to effective communication create a challenge in the healthcare setting for both parties, patient and provider.

Research From Provider Perspective

There have been several studies regarding health literacy completed from the provider perspective. A study conducted by Macabasco-O'Connell and Fry-Bowers (2011) sought to understand the knowledge and perceptions of nurses regarding the role that limited health literacy plays with patients, the health care practice, and the overall health care system. The study was conducted using the NPHLS, which is a 47-item web-based survey developed from past health literacy investigations. The participating nurses reported on the techniques they used to communicate with patients of limited health literacy, and the nurses also reported on their perspectives regarding the likelihood of implementing health literacy education programs for providers, staff, and patients at their

clinics (Macabasco-O'Connell & Fry-Bowers, 2011). There were 76 participants included in the study from June 2010 to August 2010, and while 80% of the nurses responding reported that they had heard of the term health literacy, only 59% reported having any formal health literacy education (Macabasco-O'Connell & Fry-Bowers, 2011). Of the nurses surveyed, 48% believed that health literacy affects a patient's ability to understand health information, 38% believed that health literacy influences a patient's ability to access health care services, and 45% believed that health literacy interferes with a patient's ability to comply with treatment recommendations, including compliance with preventive services and prescriptions (Macabasco-O'Connell & Fry-Bowers, 2011). The findings from the study support the need for health literacy training for health care providers. Because many of the nurses reported being familiar with the term "health literacy" but had insufficient knowledge about the term's meaning. Moreover, the nurses had no reported knowledge of the impact that limited health literacy had on patients' ability to navigate the healthcare system, self-manage their health, or communicate effectively and no reported knowledge of the financial burden limited health literacy has on the health care system (Macabasco-O'Connell & Fry-Bowers, 2011). The NPHLS survey used in the Macabasco-O'Connell and Fry-Bowers 2011 study was also used in the current study; however, in the current study the instrument was used to gain perspectives from primary care physicians in a primary care setting who serve as gatekeepers for patient health.

A similar study conducted between July 2012 to January 2013 focused on medical trainees from two residency programs, in Maryland and Pennsylvania, and used a structured questionnaire with 5 questions that gained the medical trainees' perspectives on their health literacy knowledge and communication practices with patients of limited health literacy (Ali et al., 2014). The study included 40 physician assistant trainees, 17 Doctor of Medicine (MD) residents, and 17 rotating MD residents for a final count of 74 participants (Ali et al., 2014). The overall scores from the study revealed that less than 10% of participants were self-assured about their health literacy knowledge and the use of appropriate skills to identify and communicate with patients of limited health literacy, with only 20% reporting any formal education in health literacy (Ali et al., 2014). This study supports the need for education on health literacy and communication with patients of limited health literacy for medical professionals, which requires cooperation from higher education institutions to mandate health literacy education in their medical programs (Ali et al., 2014).

A cross-sectional online study conducted with family medicine residency programs in the United States aimed to examine the presence of physician health literacy education in residency programs (Coleman, Nguyen, et al., 2016). A 13-question survey was adapted for this study from a prior survey on health literacy teaching. Surveys were distributed to 444 residency program managers with 138 responses received. Of the 138 responses received, 58 respondents (approximately 42%) reported health literacy education as a required part of the teaching curriculum for residents (Coleman, Nguyen,

et al., 2016). The study supported the notion that health literacy education has been unsubstantially introduced as a mandatory part of medical school curriculum in the United States, although many of the respondents in this study agreed that health literacy training for residents would be beneficial (Coleman, Nguyen, et al., 2016).

Coleman and Fromer's (2015) study included a pre- and post- assessment of self-reported skills and knowledge of health literacy and communication behavior with patients with limited health literacy. The study included 58 of the 60 physician and non-physician employees of one health clinic; 45 employees completed both parts of the assessment for a 75% participation rate. After the pre-assessment, a 3.5-hour training was conducted regarding health literacy. The definition of health literacy, prevalence and impact of limited health literacy, benefits of a universal approach when communicating with patients, best practices, and communication techniques, including the teach-back method, were covered in the health literacy training. The post assessment conducted after this training revealed that 48% of participants overestimated their knowledge of health literacy (Coleman & Fromer, 2015), which further supports the need for health literacy education for medical professionals.

A recent cross-sectional study of physicians, pharmacists, and nurses in public hospitals in Malaysia sought to obtain information about the health literacy related knowledge, attitudes, and practices of the participants (Rajah, Hassali & Lim, 2017). There were 600 eligible respondents with 526 questionnaires completed for an 87.6% response rate. Of the 526 respondents, 34.2% were noted to have poor knowledge, while

more than half (51.9%) had a negative attitude regarding health literacy, with no substantial differences between occupations. Respondents who reported familiarity with the term or concept of health literacy scored higher on the health literacy knowledge scale and reported a more positive attitude towards health literacy. The results of the study substantiated inadequate health literacy knowledge and negative provider perception regarding health literacy and recommended future studies to improve providers' health literacy perspective (Rajah et al., 2017).

Summary

The review of the literature regarding health literacy reveals that limited health literacy affects everyone either directly or indirectly (U.S. Department of Health and Human Services, Advisory Committee on Training in Primary Care Medicine and Dentistry, 2015). Whether an individual has limited health literacy, knows someone with limited health literacy, or is employed in the healthcare field, the health literacy issue affects them. Health literacy is a public health issue that is not only a product of a patient deficit but is also a product of the increased complexity of the health care system, which increases the need for provider responsibility in doing their part to address the issue (Toronto & Weatherford, 2015; U.S. Department of Health and Human Services, Advisory Committee on Training in Primary Care Medicine and Dentistry, 2015). Providers must recognize that blaming patients for their lack of adequacy in health literacy is not beneficial. Whether the blame is on the educational system, the health care

system, or the individual patient is not important when the patient is sitting in the exam room in need of care.

Now that there is clarity on the health literacy issue as it relates to patient understanding and outcomes, a more conscious effort is necessary to ensure that providers treating this vulnerable population have the necessary health literacy knowledge to have a positive impact. This study provided an account of health literacy from the provider perspective and documented provider efforts to communicate effectively with patients who may be of limited health literacy. A quantitative cross-sectional study was conducted to gain insight into the correlation between physician health literacy knowledge and education, patient-physician communication, and primary care physicians' attitudes regarding health literacy, in hopes of acquiring statistical descriptions of trends and attitudes of the primary care physician population. Chapter 3 provides further details regarding the research methods used for this study.

Chapter 3: Research Method

Introduction

The purpose of this cross-sectional quantitative survey study was to gain primary care physicians' perspectives on the effect of health literacy in the successful treatment of patients. The IOM (2004) recommended that health literacy education be a required part of the medical and public health curriculum. Nevertheless, little has been done to ensure that health care providers treating patients with limited health literacy are educated on health literacy to have a full understanding of the importance of their role in positively influencing the health literacy issue (Coleman, Hudson, & Maine, 2013). In the study I intended to substantiate the importance of health literacy education for effective communication with and treatment of patients.

In this chapter I discuss the research design and rationale, including the study variables, the research questions, and the rationale for the chosen research design. I also describe the methodology, including the target population, sampling strategy, recruitment procedure, instrumentation, and data collection. To conclude the chapter, I explain the threats to validity, including internal and external validity, and ethical procedures.

Research Design and Rationale

I used a quantitative cross-sectional online survey to gain insight into primary care providers' health literacy knowledge as it relates to their communication techniques and attitudes regarding the role of health literacy in patient care. The independent variable in this study was health literacy knowledge and education, and the dependent

variables were communication techniques and attitudes regarding health literacy in patient care. The research design chosen was a descriptive cross-sectional study using the Primary Care Physician Health Literacy Survey delivered through SurveyMonkey. The method of administration of the survey was the Internet; participants were provided a uniform resource locator (URL) to access the survey at their leisure.

The advantages of the quantitative cross-sectional survey design were its inexpensiveness, ability to allow for a reduced response time, flexibility for respondent completion, and ease of both data collection and data export to a spreadsheet and statistical software, eliminating the need to manually enter data (McKenzie, Neiger, & Thackeray, 2016). These factors made the survey the most appropriate method for creating a statistical description of trends and attitudes of primary care physicians based on a sampling of the population. Quantitative data with an adequate sample size can provide an accurate picture of the population (McKenzie et al., 2016) and allow for generalization, which refers to the ability to transfer information to other populations (Lund, 2013).

Limitations of the study included the fact that not everyone invited to participate may have had access to the Internet to complete the electronic survey. Although Pew Research Center (2014) noted that 87% of adults in the United States use the Internet, some people may not have been comfortable enough on the Internet to access the survey for completion (McKenzie et al., 2016). There were also time and resource constraints as the study was conducted over a 3-month period and initially had an exceptionally low

response rate, making it challenging to meet the minimum sampling size in that time period. Additionally, there was only one researcher collecting and analyzing data, which was time consuming.

Research Questions and Hypotheses

The following research questions and their associated null and alternative hypotheses were addressed in this study:

RQ1: What is the association, if any, between primary care physicians' health literacy education (e.g., the formal education or training they have received), their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care?

$H_0$1: There is no association between primary care physicians' health literacy education (e.g., the formal education or training they have received), their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care.

H_a1: There is an association between primary care physicians' health literacy education (e.g., the formal education or training they have received), their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care.

RQ2: What is the association, if any, between the level of primary care physicians' health literacy knowledge, their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in

patient care?

$H_0$2: There is no association between the level of primary care physicians' health literacy knowledge, their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care.

H_a2: There is an association between the level of primary care physicians' health literacy knowledge, their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care.

Methodology

Population

The target population selected for this project consisted of primary care physicians who attended medical school in the United States and were actively employed in their profession in a primary care setting. According to the Kaiser Family Foundation (n.d.), there were over 465,000 primary care physicians in the United States as of October 2017. The participants for this study were initially recruited from the American Academy of Family Physicians (AAFP), whose members are mainly primary care clinicians. I obtained a mailing list from the AAFP's National Research Network to mail a postcard invitation to members requesting their voluntary participation in the web-based survey. The invitation included a paragraph with details of the study and a link to the survey website where they could anonymously complete the survey. Primary care

physicians were also recruited through SurveyMonkey. Physicians who did not meet the minimum participant requirements were excluded.

Sampling Strategy

Purposive sampling, which is used based on the necessary knowledge of the participants of the study, was employed in this study using the AAFP membership mailing list and SurveyMonkey to meet the necessary sample size (McKenzie et al., 2016). Essentially, the participants were recruited based on the purpose of the study. This type of sampling, which is also known as deliberate sampling, occurs when participants are excluded when they do not meet the recruiting requirements of the study (McKenzie et al., 2016). Any participants who met the inclusion criteria and were willing to complete the survey were invited to complete the survey. This was the most appropriate method to obtain a sample from the target population. Invitations to participate in the survey, which included details of the study, participation and exclusion criteria, as well as the link to the survey where it could be completed anonymously, were sent to numerous physicians. The data collection timeframe was approximately 3 months, with the first survey response received on October 8, 2019, and the final response on January 6, 2020, which allowed for the required sampling size to be reached. The inclusion criteria were that participants must have been currently practicing primary care physicians who graduated from medical school in the United States and currently practicing in their field. Exclusion criteria included health care providers who were not primary care physicians, providers not currently practicing in a primary care setting,

providers who did not attend medical school in the United States, and providers with a lack of English language proficiency.

Sampling Size

An adequate sample size improved the likelihood of obtaining a representative sample of primary care physicians in the United States. The sample size needed to be adequate to receive meaningful results, but it could not be so high that unnecessary recruitment was undertaken, causing a burden on participants (McCrum-Gardner, 2010). To adequately calculate the sample size necessary to answer the research questions, I conducted a power analysis using G*Power 3.1.9.3 software for the *F* test family using the one-way MANOVA statistical test. An a priori power analysis, which assumes a moderate effect size ($F = .25$), $\alpha = .05$ (5%), showed a maximum sample size of 100 participants to achieve a power of .99 or a minimum sample size of 44 participants to achieve a power of .80. A sample size between 44 and 100 was adequate for this study. The sample size obtained for this study was 90 participants.

Recruitment Procedures

I recruited the participants of the study using the membership mailing list from the AAFP as well as SurveyMonkey recruitment. I obtained a mailing list from the AAFP's National Research Network to mail a postcard invitation to members requesting their voluntary participation in the web-based survey. The invitation included details of the study and a link to the survey website where participants could anonymously complete the Primary Care Physician Health Literacy Survey. Participants were provided

informed consent on the landing page of the survey weblink, which they had to acknowledge prior to entering the survey for completion. Participants recruited through AAFP were provided a mailed invitation prior to accessing the survey that contained information briefly describing the purpose of the study, including the name of the researcher, the name of the university with which the researcher was affiliated, and the inclusion criteria. The landing page of the survey link contained the informed consent document, which provided participants with a description of the study, information about the researcher, statement of procedures, and an explanation of the voluntary nature of the study, including the information that participants were free to leave at any time during the study without consequence. Completion of the study served as implied consent. The use of e-mail invitations has been shown to be a factor in low response rates for electronic survey research studies when compared to mailed invitations (Bandilla, Couper, & Kaczmirek, 2012). It has also been shown that mailed prenotification of an upcoming survey, using a postcard or letter, further improves response rates (Bandilla et al., 2012). However, after mailing 1,500 postcard invitations, 20 responses were received after 4 weeks, which is a 1.3% response rate (calculated as $\frac{20}{1500} x\ 100$), only 12 (<1%) were viable for the study. Thereafter, the additional participants necessary for the study were recruited through SurveyMonkey.

Instrumentation

The primary instrument used for this study was the NPHLS created by Macabasco-O'Connell and Fry-Bowers (2011). The NPHLS was initially a 47-item web-

based survey developed from past health literacy investigations. The survey was used to investigate the health literacy knowledge and education as reported by nurses, the communication techniques used by nurses to communicate with patients of limited health literacy, and the participating nurses' perspectives regarding the likelihood of implementing health literacy education programs at their clinics for providers, staff, and patients (Macabasco-O'Connell & Fry-Bowers, 2011). For the purposes of this study, the survey was shortened to 31 questions after adjusting for the target audience of this study, which was primary care physicians. The instrument consisted of three major sections: health literacy education, communication techniques, and perceptions about health literacy as related to patient care. The health literacy knowledge scale was measured with a validated self-administered questionnaire used in a 2017 study (Rajah et al., 2017). This questionnaire was employed in a cross-sectional study that sought information about the health literacy related knowledge, attitudes, and practices of physicians, pharmacists, and nurses in public hospitals in Malaysia (Rajah et al., 2017). The KAP conceptual framework was employed to guide the use of these instruments since the aim was to gather information about primary care physicians' knowledge, attitudes, and practices regarding health literacy, which included both their attitudes or perceptions about how health literacy affects their patients' treatment as well as their communication practices with patients.

Macabasco-O'Connell and Fry-Bowers (2011) developed the NPHLS specifically for their study by combining pre-existing reliable surveys used in previous studies of

professional literacy awareness to create the details of their survey. Previous investigations into community health practices were adapted to develop the questions regarding the use of health literacy interventions in the professional environment as well as the perceived effectiveness of these interventions (Macabasco-O'Connell & Fry-Bowers, 2011). The researchers corresponded with the creators of the previous instruments prior to creating the NPHLS instrument. Content validity of the instrument was established through review of the survey by experts in the nursing field (Macabasco-O'Connell & Fry-Bowers, 2011). The health literacy knowledge related section of the survey was adapted from a separate study that was tested for reliability and validity. An internal consistency reliability obtained for knowledge of health literacy, consisting of 8 questions, was 0.76 measured by KR-20 (Rajah et al., 2017).

A combination of both of these surveys was the most appropriate for this study in that the goal of this study was to gain insight on primary care physicians' health literacy knowledge and education as it relates to their communication techniques and attitudes regarding the role of health literacy in patient care, therefore questions in this survey were directed to the primary care physician population. Permission was received from the NPHLS instrument developer to use the survey (see Appendix B) with the agreement that raw data will be submitted to further validate the instrument and e-mailed permission was obtained from the author Retha Rajah (see Appendix C).for the health literacy knowledge scale portion.

Health Literacy Education Scale

The health literacy education scale was a 1-item scale that inquired whether the physician has had formal education in health literacy. The response was collected on a dichotomous scale with a nominal response level of measurement. The percentage of participants who reported health literacy education was used to measure the health literacy education scale.

Health Literacy Knowledge Scale

Eight true or false general health literacy knowledge questions made up the health literacy knowledge scale. The health literacy knowledge questions were adapted from the instrument used in Rajah et al.'s 2017 health literacy study. The response format was true/false, or participants could skip the question. A score of 0 was assigned for false responses, while a score of 1 was assigned for true responses. The correct responses were calculated and summed into a total score. The scores were categorized by either good knowledge or poor knowledge. Scores equal to or above the mean were considered good knowledge while those that fell below the mean were considered poor knowledge.

Attitudes Regarding Health Literacy

The healthcare provider attitudes regarding health literacy were measured on a 6-item scale to determine physician perception of the degree, if any, that limited health literacy affects their patients. The "none" and "I don't know" responses were considered a negative attitude response and assigned a 0 value, while the "A little," "A moderate amount," "Quite a bit," and "A great deal" responses were assigned a score. The

responses were calculated and summed into a total score. The scores were categorized by either negative or positive attitude. Scores equal to or above the mean were considered positive while those that fell below the mean were considered negative.

Communication Strategies

Patient-provider communication was measured on a 14-item scale regarding communicating with patients with potential limited health literacy. The first 6 items inquired about the frequency at which physicians ask patients questions to determine their level of health literacy. The "never" responses received a 0 value while the "rarely," "sometimes," "often," and "always" responses were assigned scores. The next 8 items measured the reported use of one or more scientifically proven communication techniques to communicate with patients. The participants selected the communication techniques they employed to assist patients with limited health literacy, including orally reviewing written instructions with patient; having patient repeat instructions or demonstrate back to provider to check understanding; describing medical conditions, treatments and instructions in layman's terms; providing the patient with health education materials; providing the patient with health education materials designed specifically for patients with low health literacy; referring patient to other services such as patient educator; and encouraging patients to bring a family member or friend to appointments. A score of 0 was assigned for responses not selected as well as the "do not use special techniques" and "not aware of special techniques" responses were not assigned a value. A score of 1 was assigned for each communication technique selected, with particular

attention paid to the teach-back method, the approved communication technique listed as one of the top 11 patient safety practices in health care based on the strength of research conducted by DeWalt et al. (2010). The responses were calculated and summed into a total score. Scores equal to or above the mean were considered good communication while those that fell below the mean were considered poor communication.

Data Collection and Analysis

Data were collected via SurveyMonkey with a self-administered and self-reported multiple-choice survey that participants accessed in private and at their leisure. Submitted surveys were evaluated and screened for completeness. The data were transferred from SurveyMonkey to a Microsoft Excel spreadsheet and thereafter the Statistical Package for the Social Sciences (SPSS) software was used for data analysis. Descriptive statistics, including frequencies, mean, and percentages, were used to demographically describe the sample, including years in practice, gender, population served, and employment status as variables. Additionally, specific data analysis was conducted to answer the research questions guiding this study. The questions and data analysis plans follow.

To answer RQ1 regarding whether there is an association between primary care physicians' health literacy education, the use of effective health literacy communication strategies, and attitudes towards the role of health literacy in patient care, a one-way MANOVA test was used. The independent variable was health literacy education and the

dependent variables were communication techniques and attitudes towards health literacy.

To answer RQ2 regarding whether there is an association between the level of primary care physicians' health literacy knowledge, the use of effective health literacy communication strategies, and attitudes towards the role of health literacy in patient care, a one-way MANOVA test was conducted. The independent variable was health literacy knowledge and the dependent variables were communication techniques and attitudes towards health literacy.

The one-way MANOVA technique was conducted to determine if there is an association between the independent variables and the two dependent variables. This analysis was most appropriate because there were multiple independent variables and two continuous dependent variables. The analysis of variance, or ANOVA, technique was not selected due to the number of dependent variables.

Threats to Validity

External

External validity is the generalizability or the level at which research results can be generalized and transferred beyond the current study, such as in other settings with other populations (Yilmaz, 2013). Threats to external validity include the potential for sampling or participation bias (Yilmaz, 2013). In this study, because the recruitment was essentially a quota sampling, there may have been a tendency for participants who were aware of health literacy to complete the study, which could have led to an uncertain

picture of health literacy in the target population due to lack of representativeness of the target population and decreased ability to generalize results.

Internal

Internal validity refers to the accuracy of the study results (Yilmaz, 2013). There were several threats to the internal validity of this study. There was a threat of participation bias, as there was a possibility that participants chose to complete the study because of their familiarity with the health literacy concept, potentially leading to a disproportionate number of participants with health literacy education and thus a non-representative sample (Yilmaz, 2013). There was also danger of instrument reactivity, as participants were self-reporting their responses and might have under-reported or over-reported based on the sensitivity of certain questions on the survey (Cohen, Manion, & Morrison, 2013).

Ethical Procedures

Researchers must ensure they are performing procedures with good ethical practice (Cohen et al., 2013). However, considering procedural ethics is not enough; researchers must additionally ensure the purpose of the research, method, content, data collection, and reporting also abide by ethical principles (Cohen et al., 2013). A chief ethical predicament is the cost/benefits ratio, which requires researchers balance the demands of the study with participant rights and values that may be impacted by the research (Cohen et al., 2013). The researcher must ensure the study is beneficial to all involved parties and causes no harm to participants. Although this study involved an

Internet-based survey, the same ethical rules applied as with manual surveys, including informed consent and confidentiality. Institutional Review Board approval was also sought prior to completion of this study.

Safeguarding Data

I was responsible for conducting data analysis and ensured that data was safeguarded. Participant identification was protected by their ability to submit the survey anonymously, and any demographic information shared with the researcher was covered by the confidentiality agreement. Electronic data was saved in a password-protected file, and hardcopies were locked in a file in the researcher's possession. Any information shared was purely to accomplish the goal of the study.

Summary

This chapter provided a description of the cross-sectional quantitative survey research design used in this study. The target population was primary care physicians. Recruitment was conducted through the AAFP organization and SurveyMonkey, and a combination of two health literacy instruments were used to create the primary care physician health literacy survey. The threats to validity and ethical considerations were also described in this chapter. Chapter 4 will provide a detailed account of the results of the data that was collected through the procedures outlined in this chapter.

Chapter 4: Results

Introduction

My aim for this chapter was to provide an explanation of the data collection methods used to meet the minimum sampling size, how the data was analyzed, the descriptive statistics used, the results of the analysis, and a summary of the findings. The chapter begins with a recap of the research questions, moves on to a description of the data collection methods employed, next outlines the descriptive statistics used, then details the data analysis, and finally provides the results of analysis.

Research Questions and Hypotheses

The research questions and their associated null and alternate hypotheses that follow were addressed in this study:

RQ1: What is the association, if any, between primary care physicians' health literacy education (e.g., the formal education or training they have received), their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care?

$H_0$1: There is no association between primary care physicians' health literacy education (e.g., the formal education or training they have received), their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care.

H_a1: There is an association between primary care physicians' health literacy education (e.g., the formal education or training they have

received), their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care.

RQ2: What is the association, if any, between the level of primary care physicians' health literacy knowledge, their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care?

$H_0$2: There is no association between the level of primary care physicians' health literacy knowledge, their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care.

H_a2: There is an association between the level of primary care physicians' health literacy knowledge, their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care.

Data Collection

A membership mailing list of 3,000 member names was obtained from the AAFP, whose members are mainly primary care clinicians. The data collection timeframe was approximately three months, from October 4, 2019, to January 6, 2020. Postcard invitations were mailed to 1,500 members between October 4, 2019, and November 5, 2019, which rendered a return of 19 complete surveys by November 14, 2019. The first survey response was received on October 8, 2019, and the final response was received on

January 6, 2020. Considering the low return rate of less than 1% from the postcard invitations, SurveyMonkey was also used to recruit for this study to meet an adequate sampling size for completion of this study. The inclusion criteria were currently practicing primary care physicians who graduated from medical school in the United States and were fluent in English. Exclusion criteria was health care providers who were not primary care physicians, who were not currently practicing in a primary care setting, who did not attend medical school in the United States, or who lacked English language proficiency. The final sample size used in this data set was 90, which was 90% of the maximum sample size of 100.

Descriptive Statistics

The sample consisted of 90 primary care physicians, all of whom were currently practicing in the primary care setting, had graduated from medical school in the United States, and were proficient in English. As shown in Table 1, of the 90 primary care physicians who participated, a majority were Caucasian/White (n = 49) and men (n = 55). Additionally, a majority reported being in practice for 0-5 years (n = 27) followed by 20 or more years of practice (n = 25). Many of the primary care physicians served the adult population (n = 55) and worked full time hours (n = 68). Many of the physicians (n = 62) reported that their practice did not have a health literacy program or intervention in place.

Table 1

Descriptive Statistics for Demographic Variables

Variable	*n*	%
Patient population		
General pediatrics	18	20.0
Adolescents	3	3.3
Young adults	9	10.0
Adults	55	61.1
Women only	2	2.2
Geriatrics	3	3.3
Work hours		
Full time	68	75.6
Part time	22	24.4
Years of practice		
0 – 5	27	30.0
5 – 10	14	15.6
10 – 15	16	17.8
15 – 20	8	8.9
20+	25	27.8
Sex		
Male	55	61.1
Female	35	38.9
Race		
American Indian	1	1.1
Asian	16	17.8
Black/African American	15	16.7
Hispanic/Latino	7	7.8
Multi-racial	1	1.1
Native Hawaiian/Pacific Islander	1	1.1
White	49	54.4

Dependent and Independent Variables

A majority of the primary care physicians, 57.8% (*n* = 52), reported receiving education in health literacy (e.g. the formal education or training they received), and even more of the primary care physicians had good health literacy knowledge (*n* = 61), as shown in Table 2. Furthermore, many participants (*n* = 81) specifically recognized the REALM and TOFHLA as health literacy assessment tools. The mean score for the dependent variable attitudes regarding health literacy was 15.51, with a minimum score of 2 and a maximum score of 24, while the mean score for the dependent variable health literacy communication strategies was 16.62, with a minimum score of 7 and a maximum score of 28, as shown in Table 3. Scores equal to or above the mean were considered positive while those below the mean were considered negative. When noting the specific communication techniques employed, most of the primary care physicians, approximately 76% (*n* = 68), reported that they described medical conditions, treatments, and instructions in layman's terms as a communication technique with their patients, while 2.22% (*n* = 2) reported they were not aware of special techniques or did not use special techniques for each of these categories (see Table 4).

Table 2

Descriptive Statistics for Independent Variables

Variable	*n*	%
Health literacy education		
No	38	42.2
Yes	52	57.8
Health literacy knowledge		
Poor	29	32.2
Good	61	67.8

Table 3

Descriptive Statistics for Dependent Variables

Variable	*M*	*SD*	Range	Cronbach's alpha
Attitudes regarding health literacy score	15.51	5.18	2 – 24	0.87
Communication strategies score	16.62	4.34	7 – 28	0.54

Table 4

Descriptive Statistics for Communication Techniques Reported

Answer choices	*n*	%
Orally review written instructions with patient	57	63.33
Have patients repeat instructions back to you to check understanding	40	44.44
Describe medical conditions, treatments, and instructions in layman's terms	68	75.56
Provide the patient with health education materials	50	55.56
Provide the patient with health education materials designed specifically for patients with low health literacy	36	40.00
Have patient demonstrate instructions back to you to check understanding	42	46.67
Refer patient to other services such as patient educator	31	34.44
Encourage patients to bring a family member or friend to appointments	41	45.46
Do not use special techniques	2	2.22
Not aware of special techniques	2	2.22

Note: $N = 90$

Sample Representativeness

Purposive sampling was used to recruit participants for this study. The sample of 90 actively employed primary care physicians, who graduated from medical school in the United States, can be logically assumed as representative of the population. The effect size (F = .25), α = .05 (5%) showed a maximum sample size of 100 participants was necessary to achieve a power of .99 while a minimum sample size of 44 participants was necessary to achieve a power of .80. Therefore, a sample size between 44 and 100 was adequate for this study.

Tests of Assumptions

Before testing the research questions, I tested the assumptions of MANOVA. I tested these assumptions with boxplots of the dependent variables at each level of the independent variables (see Figures 2–5). SPSS marks outliers with an asterisk (*). There were no outliers noted. Additionally, the dependent variables should be normally distributed. This was tested with the Shapiro-Wilk test for each level of the independent variables. A nonsignificant p value would indicate the assumption was met. The assumption of normality was met for all but one level of the independent variables (see Tables 5 and 6).

Homogeneity of variance was tested with Box's M test for each independent variable. The Box's M test was nonsignificant for RQ1, $F(3,603196) = .21$, $p = .89$, revealing no distortion in the alpha levels of the test. Therefore, the assumption was met for RQ1. The Box's M test was nonsignificant for RQ2, $F(3,69561) = 1.46$, $p = .22$,

revealing no distortion of alpha levels on the test. Therefore, the assumption was met for RQ2. Because all assumptions were met, the MANOVA could be conducted for analysis of the research questions.

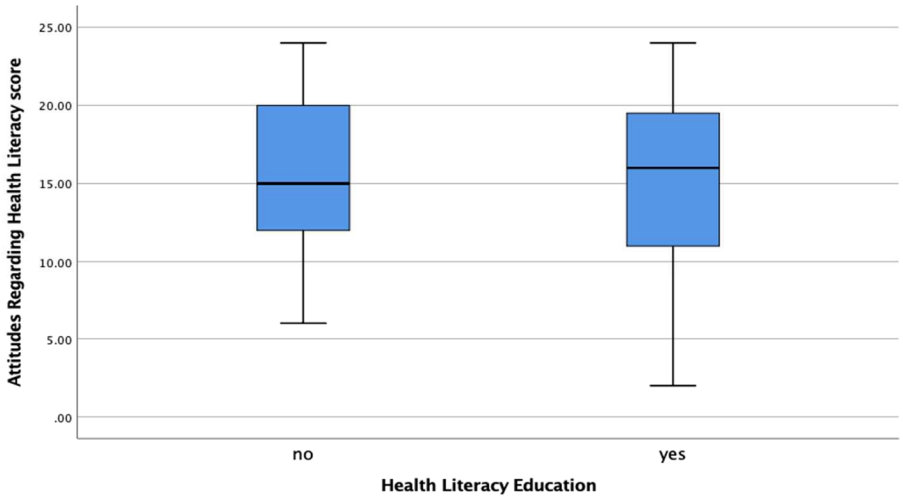

Figure 2. Testing for health literacy education and attitudes regarding health literacy.

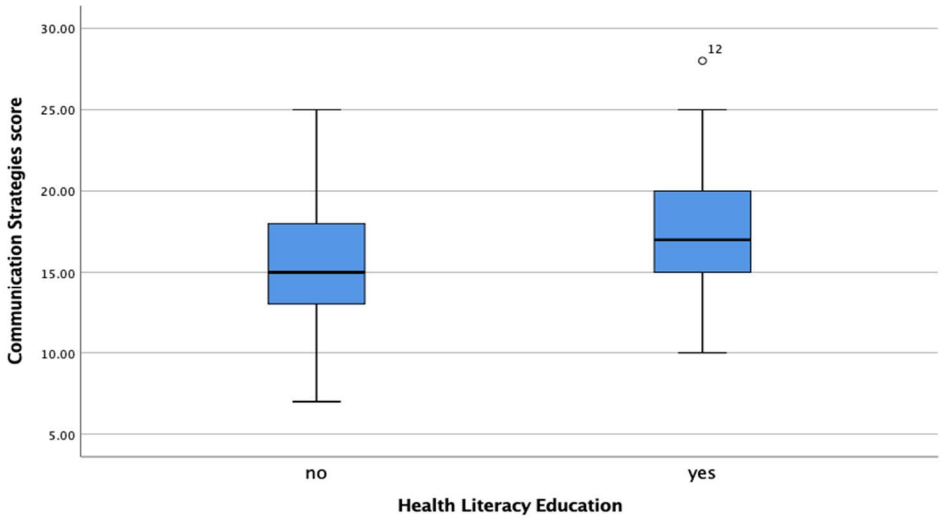

Figure 3. Testing for health literacy education and communication strategies.

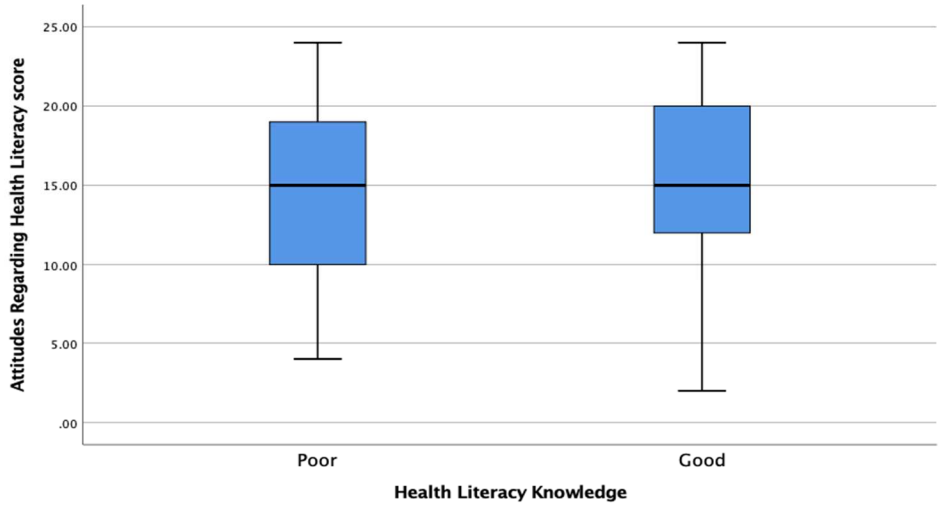

Figure 4. Testing for health literacy knowledge and attitudes regarding health literacy.

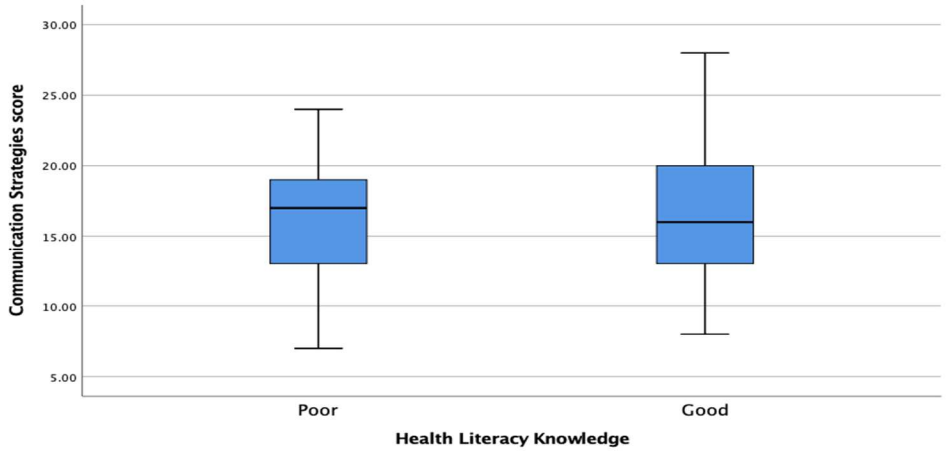

Figure 5. Testing for health literacy knowledge and communication strategies.

Table 5

Normality Tests for Research Question 1

Variable	Statistic	*df*	*p* value
Attitudes regarding health literacy score			
Health literacy education = No	.120	38	.188
Health literacy education = Yes	.089	52	.200
Communication strategies			
Health literacy education = No	.118	38	.200
Health literacy education = Yes	.107	52	.200

Table 6

Normality Tests for Research Question 2

Variable	Statistic	*df*	*p* value
Attitudes regarding health literacy score			
Health literacy knowledge = Poor	.146	29	.116
Health literacy knowledge = Good	.088	61	.200
Communication strategies			
Health literacy knowledge = Poor	.101	29	.200
Health literacy knowledge = Good	.160	61	.000

Results of the Analysis

As previously stated, SPSS was used to conduct the data analysis. There were two research questions that needed to be answered. The statistical test used to identify the presence of associations was the MANOVA. The MANOVA analysis was selected because there were multiple independent variables and two continuous dependent variables. This test was most suitable to determine the relationship, if any, between the independent variables and the two dependent variables, while the ANOVA would not have been appropriate due to the number of dependent variables.

Research Question 1

RQ1: What is the association, if any, between primary care physicians' health literacy education (e.g., the formal education or training they have received), their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care?

$H_0$1: There is no association between primary care physicians' health literacy education (e.g., the formal education or training they have

received), their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care.

H_a1: There is an association between primary care physicians' health literacy education (e.g., the formal education or training they have received), their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care.

Variables:

- Independent Variable (IV): health literacy education.
- Dependent Variables (DV): attitudes towards health literacy scores and communication strategy scores.

The results of the MANOVA for research question 1 are displayed in Table 7. Mean scores are displayed in Table 8. There was no significant difference in attitudes regarding health literacy based on health literacy education, $F(1, 88) = .00$, $p = .99$. Mean score for attitudes regarding health literacy was 15.5111, with a minimum score of 2 and a maximum score of 24, which is 64% of the maximum score. Additionally, there was no significant difference in the communications strategies based on health literacy education, $F(1, 88) = 3.92$, $p = .05$. Mean score for communication strategies was 16.6222, with a minimum score of 7 and a maximum score of 28, which is approximately 60% of the maximum score.

Table 7

Results of MANOVA for Research Question 1

Source	Dependent variables	*SS*	*df*	*MS*	*F*	*p* value
Health literacy education	Attitudes regarding health literacy score	0.01	1	0.01	0.00	.99
	Communication strategies score	71.59	1	71.59	3.92	.05
Error	Attitudes regarding health literacy score	2384.48	88	27.10		
	Communication strategies score	1605.57	88	18.25		
Total	Attitudes regarding health literacy score	2384.49	89			
	Communication strategies score	1677.16	89			

Table 8

Median Scores of Dependent Variables Based on Health Literacy Education

Variable	*M*	*SD*
Attitudes regarding health literacy score		
Health literacy education = No	15.50	4.91
Health literacy education = Yes	15.52	5.41
Communication strategies		
Health literacy education = No	15.58	4.21
Health literacy education = Yes	17.38	4.31

Research Question 2

RQ2: What is the association, if any, between the level of primary care physicians' health literacy knowledge, their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care?

$H_0$1: There is no association between the level of primary care physicians' health literacy knowledge, their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care.

H_a1: There is an association between the level of primary care physicians' health literacy knowledge, their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care.

Variables:

- Independent Variable (IV): health literacy knowledge scores.
- Dependent Variables (DV): attitudes towards health literacy scores and communication strategy scores.

The results of the MANOVA for research question 2 are displayed in Table 9. Mean scores are displayed in Table 10. There was no significant difference in attitudes regarding health literacy based on health literacy knowledge, $F(1, 88) = .31$, $p = .58$. Mean score for attitudes regarding health literacy was 15.5111, with a minimum score of

2 and a maximum score of 24, which is 64% of the maximum score. There was no significant difference in communications strategies based on health literacy knowledge, $F(1, 88) = .33$, $p = .57$. Mean score for communication strategies was 16.6222, with a minimum score of 7 and a maximum score of 28, which is approximately 60% of the maximum score.

Table 9

Results of MANOVA for Research Question 2

Source	Dependent variables	*SS*	*df*	*MS*	*F*	*p* value
Health literacy knowledge	Attitudes regarding health literacy score	8.37	1	8.37	.31	.58
	Communication strategies score	6.21	1	6.21	.33	.57
Error	Attitudes regarding health literacy score	2376.12	88	27.00		
	Communication strategies score	1670.95	88	18.99		
Total	Attitudes regarding health literacy score	2384.49	89			
	Communication strategies score	1677.16	89			

Table 10

Mean Scores on Dependent Variables Based on Health Literacy Knowledge

Variable	*M*	*SD*
Attitudes regarding health literacy score		
Health literacy knowledge = Poor	15.07	5.59
Health literacy knowledge = Good	15.72	5.00
Communication strategies		
Health literacy knowledge = Poor	16.24	3.95
Health literacy knowledge = Good	16.80	4.53

Summary

The purpose of this study was to provide insight into the health literacy knowledge and education of primary care physicians and determine the association, if any, between their attitudes or perceptions about the impact of limited health literacy on their patients and their use of health literacy communication techniques. A quantitative cross-sectional online survey was used to gain insight into primary care physicians' health literacy knowledge and education, their patient-provider communication techniques, and their attitudes towards health literacy in patient care. The data from the survey was exported from SurveyMonkey to Microsoft Excel, coded, and thereafter imported to SPSS for data analysis. A one-way MANOVA was the primary test used to answer the research questions. The sample consisted of 90 primary care physicians, all of whom were currently practicing in the primary care setting and had graduated from medical school in the United States.

For RQ1, there was no significant difference in attitudes regarding health literacy based on health literacy education, $F(1, 88) = .00$, $p = .99$. Additionally, there was no significant difference in the communication strategies used based on health literacy education, $F(1, 88) = 3.92$, $p = .05$. Therefore, the null hypothesis was not rejected, as there was no association between the level of physicians' health literacy knowledge, their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care.

For RQ2, there was no significant difference in attitudes regarding health literacy based on health literacy knowledge, $F(1, 88) = .31$, $p = .58$. There was also no significant difference in use of communication strategies based on health literacy knowledge, $F(1, 88) = .33$, $p = .57$. Therefore, the null hypothesis was not rejected, as there was no association between the level of physicians' health literacy knowledge, their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care.

The key findings, interpretations, and limitations of the study will be discussed in Chapter 5, and an overview of the study and the significance of the research will be provided. In addition, recommendations for future research will be proposed, as will the implications for positive social change.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this study was to provide insight into the health literacy education and health literacy knowledge of primary care physicians involved in patient care and to determine whether there is an association between either of these to the providers' perceptions of the impact of limited health literacy on patient care or the providers' use of health literacy communication techniques. The concept of health literacy was first introduced in the 1970s (Lambert et al., 2014; Mancuso, 2009). The AMA (1999) conceded that limited health literacy was an obstacle to obtaining effective medical treatment, ran health literacy campaigns to distribute health literacy resources to physicians, and recommended the establishment of health literacy training on the proper method of communicating with patients of limited health literacy for medical professionals. Health literacy education was recommended as a mandatory part of the medical and public health school curriculum by the IOM in 2004. Although there are indications that health literacy education has received increased attention since that time, limited action has been taken to address this recommendation (Coleman, Hudson, & Maine, 2013; Coleman, Nguyen, et al., 2016). In this study, I used a quantitative cross-sectional study to obtain information regarding primary care physicians' health literacy education and knowledge. Additionally, this study investigated the association, if any, between health literacy education and knowledge variables as they related to primary care physicians' attitudes regarding the importance of health literacy in patient care and

patient-provider communication, or more specifically, the use of health literacy communication techniques.

Interpretation of the Findings

This study was designed to evaluate health literacy education, health literacy knowledge, communication techniques, and attitudes towards the role of health literacy in patient care of actively employed primary care physicians who graduated from medical school in the United States. There were two research questions addressed in this study. The first research question was as follows:

RQ1: What is the association, if any, between primary care physicians' health literacy education (e.g., the formal education or training they have received), their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care?

$H_0$1: There is no association between primary care physicians' health literacy education (e.g., the formal education or training they have received), their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care.

H_a1: There is an association between primary care physicians' health literacy education (e.g., the formal education or training they have received), their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care.

The results for research question one revealed that the null hypothesis could not be rejected, and the alternative hypothesis could not be accepted. There was no statistically significant association noted between primary care physicians' health literacy education and the use of effective health literacy communication strategies or attitudes towards the role of health literacy in patient care.

The following was the second research question addressed in this study:

RQ2: What is the association, if any, between the level of primary care physicians' health literacy knowledge, their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care?

$H_0$2: There is no association between the level of primary care physicians' health literacy knowledge, their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care.

H_a2: There is an association between the level of primary care physicians' health literacy knowledge, their use of effective health literacy communication strategies, and their attitudes towards the role of health literacy in patient care.

The results for RQ2 revealed that the null hypothesis could not be rejected, and the alternative hypothesis could not be accepted. There was no statistically significant association noted between primary care physicians' health literacy knowledge and the use

of effective health literacy communication strategies or attitudes towards the role of health literacy in patient care.

Though the results of this study revealed no statistically significant association between variables, the descriptive statistics for the health literacy education and health literacy knowledge and communication variables provided additional insight. In this study, approximately 58% (n = 52) of primary care physicians reported receiving formal health literacy education or training. Macabasco-O'Connell and Fry-Bowers (2011), who developed the survey instrument used for the current study, sought to understand the knowledge and perceptions of nurses regarding the role of limited health literacy in relation to patients, the health care practice, and the overall health care system. Similar to this study, 59% (58% in this study) reported formal health literacy education or training (Macabasco-O'Connell & Fry-Bowers, 2011). Ali et al. (2014) reported similar findings in their study of medical trainees from two residency programs in the United States. The researchers found that only 20% reported any formal education in health literacy. A study was conducted on family medicine residency programs in the United States to determine how many, if any, of these programs required health literacy education as part of their curriculum. Of the 138 participants who completed the survey, approximately 42% (n = 58) reported that health literacy education was taught as a mandatory part of the curriculum (Coleman, Hudson, & Maine, 2016). Macabasco-O'Connell & Fry-Bowers, (2011) and Ali et al. (2014) found similar results to those of this study.

The number of physicians with what was considered adequate health literacy knowledge in this study (equal to or above the mean) was approximately 68% (n = 61), which is slightly more that those who reported health literacy education or training 58% (n = 52). This difference could indicate that some form of informal health literacy knowledge was gained outside formal education or training. Coleman and Fromer (2015) conducted a study of 103 physician and nonphysician employees of one health clinic. The authors included a pre- and post- assessment of self-reported skills and knowledge of health literacy and communication behavior. The study revealed that 48% of participants overestimated their knowledge of health literacy, which further supports the need for health literacy communication for medical professionals (Coleman & Fromer, 2015).

Additionally, in a recent cross-sectional study of physicians, pharmacists, and nurses in public hospitals in Malaysia, Rajah et al. (2017) sought to obtain information about the health literacy related knowledge, attitudes, and practices of the participants. The health literacy knowledge section of that survey was used for the current study. Similar to this study, the results of Rajah et al.'s study revealed 34.2% of participants had poor health literacy knowledge (approximately 32% in this study). In addition, the authors found health literacy knowledge to be inadequate, and negative provider perceptions regarding health literacy was noted and like this study, the researchers recommended future studies to improve providers' health literacy perspective (Rajah et al., 2017). Moreover, considerably more—90% (n = 81)—specifically recognized the REALM and the TOFHLA as health literacy assessment tools, which could also mean

there was some familiarity with health literacy from informal methods apart from formal health literacy education or training.

Additional insight was gained upon analysis of the descriptive statistics for health literacy communication techniques. For instance, less than half of the primary care physicians in this study—44% (n = 40)—reported that they have patients repeat instructions back to them to check understanding, which is also known as the teach-back method. The lack of use of the teach-back method is a cause for concern because the teach-back method is noted as the communication practice of choice in the top 11 patient safety practices for health care in the universal precautions' toolkit (DeWalt et al., 2010). When practiced, the teach back method can significantly reduce the risk of miscommunication and ensure patient understanding of their prescribed care plan, which ultimately leads to better compliance and health outcomes (Tamura-Lis, 2013). Additionally, the percentage of physicians who reported using the teach-back method—approximately 44% (n = 40)—was notably less than both the number who reported health literacy education or training—approximately 58% (n = 52)—as well as the number of physicians noted to have adequate health literacy knowledge, approximately 68% (n = 61). It can be argued that the number of physicians using the teach-back method should be consistent with either the level of health literacy education or their health literacy knowledge. Furthermore, the most commonly reported communication technique was describing medical conditions, treatments, and instructions in layman's terms, at approximately 76% (n = 68). However, the use of this

communication method essentially assumes that the information is being put in terms the patient will understand, without the added benefit of the teach-back method. This supports the notion that health care providers may be encountering barriers to effective communication from either a lack of awareness of the potential limited health literacy of their patients or time constraints aimed at increasing productivity, both of which are preventing them from placing the necessary focus on communication needed to ensure that information is understandable to patients (CDC, 2014; Harrington et al., 2013; Heinrich, 2012; Lambert et al., 2014). The least commonly used communication technique was referring patients to other services for health literacy assistance, at 34.44% (n = 31), such as a patient educator, which aligns with the approximately 68% of physicians (n = 62) who reported their practice did not have a health literacy program or intervention in place. A previous study conducted with nurses in the United States found that few of the participants' practice locations had health education programs designed for limited health literacy patients (22%) or a health literacy specialist (4%; Macabasco-O'Connell & Fry-Bowers, 2011). Additionally, the mean score for communication strategies was 16.6222, with a minimum potential score of 7 and a maximum potential score of 28. This is equal to a score of approximately 60% (on a scale 100) and not considered a passing score; therefore, the mean is lower than expected.

The descriptive statistics related to primary care physicians' perceptions regarding the role health literacy plays in patient care provided additional insight. The mean score for attitudes regarding health literacy was 15.5111, with a minimum potential score of 2

and a maximum potential score of 24, which is 64% of the maximum score. More specifically, when questioned regarding their perceptions of the degree that limited health literacy interferes with their English-speaking patients' ability to:

- understand health information, 18.89% of participants (*n* = 17) reported a great deal while 22.22% reported a little (*n* =20);
- obtain appropriate health services, 16.67% of participants reported a great deal (*n* = 15) while 21.11% reported a little (*n* = 19); and
- follow through on recommended treatments, 24.44% of participants reported a great deal (*n* = 22) while 15.56% reported a little (*n* = 14).

Additionally, when it came to the primary care physicians' perceptions of the degree that limited health literacy interferes with their non-English speaking patients' ability to

- understand health information, 29% of participants (*n* = 29) reported a great deal while 5.56% reported a little (*n* = 5);
- obtain appropriate health services, 30% of participants reported a great deal (*n* = 27) while 14.44% reported a little (*n* = 13); and
- follow through on recommended treatments, 42.22% of participants (*n* = 38) reported a great deal while 10% reported a little (*n* = 9).

The aforementioned results reveal that many of the primary care physicians in this study did not believe their patients were greatly affected by limited health literacy. In fact, when questioned about the degree that limited health literacy interferes with their

English-speaking patients' ability to understand health information, obtain appropriate health services, and follow through on recommended treatments, less than 25% of participants reported feeling that patients were greatly affected. As compared to their non-English speaking patients, where participants reported feeling that less than half, specifically 42%, of patients were greatly affected. This is problematic because a recent study by the CDC (2014) found that nine out of 10 adults in the United States have limited health literacy. In addition to the participant perceptions about the level of interference from limited health literacy , 42% of physicians (n = 38) reported using their "gut feeling" or intuition often, while 14.44% of physicians (n = 13) reported always using their "gut feeling" as a clinician to assess health literacy. This approach is troublesome because it can lead to erroneous perceptions of the level of a patient's health literacy, assuming that patients with higher education also have higher levels of health literacy. However, limited health literacy has been reported in people with adequate early education as well as higher education (World Health Organization Regional Office for Europe, 2013).

Although determination of an association rather than a linear relationship was the aim of the study, the KAP model, which was the conceptual framework for this study, specifies that knowledge leads to attitude and thereafter practice. The KAP conceptual framework assumes that a linear relationship exists between knowledge, attitudes, and practices (Muleme et al., 2017). The KAP model variables for this study were the knowledge, awareness, and/or familiarity regarding health literacy, which informs or

influences attitudes regarding the role that health literacy plays in patient care, and thereafter the communication practices, if any, that primary care physicians employ to address the potential limited health literacy of their patient populations. The findings in this study disconfirm the alternative hypotheses that health literacy education and knowledge are associated with perceptions regarding health literacy and patient-provider communication techniques.

Limitations of the Study

The limitations of this study include the potential for subjective bias based on the perceptions of the primary care physicians as well as their reports of health literacy education, with no objective evidence to document whether any formal health literacy education was completed. In addition, because the survey was self-reported, the responses were subject to reporting bias. Also, a temporal relationship cannot be established with the cross-sectional design.

The mean scores used to determine positive and negative categories were lower than expected. The mean score for attitudes regarding health literacy was 15.5111, with a minimum potential score of 2 and a maximum potential score of 24, this is 64% of the maximum score. Additionally, the mean score for communication strategies was 16.6222, with a minimum potential score of 7 and a maximum potential score of 28, this is equal to 60% of the maximum score. All mean scores were less than 70%, which is considered low on the 100-point grading scale.

Though the NPHLS instrument used for this study had been used previously, it is still being further validated (Macabasco-O'Connell & Fry-Bowers, 2011), which means more testing of the instrument is required and results may not be generalizable to the entire primary care physician population based on this study alone. In exchange for use of the NPHLS instrument, raw data from this study will be submitted to the authors of the NPHLS study to assist in further validation of the NPHLS instrument, which provides an opportunity for its future development.

Recommendations for Further Research

Future research with a larger sample study is recommended in order to achieve a greater representative sample as well as to improve providers' health literacy perspective. Finding ways to increase the physician response rate, such as incentives for participation, may be beneficial in the collection of a larger sample size that could be more generalizable to the target population. Further research that considers cultural and linguistic competence is important. Understanding the barriers to health literacy knowledge, education, and the use of health literacy communication techniques is paramount to making a difference in the patient experience. A disconnect was noted between the variables in this study in that 58% of physicians reported receiving health literacy education and 68% had good health literacy knowledge, but only 44% reported the use of the teach back method for patient-provider communication. Therefore, determining the reasons physicians who have had health literacy education and/or have adequate health literacy knowledge are not engaging patients with health literacy

communication techniques, such as the teach-back method, to ensure patient understanding and compliance with patient care instructions is necessary. Furthermore, a majority of participants, specifically 90% (n = 81), explicitly recognized the REALM and the TOFHLA as health literacy assessment tools. This could indicate some form of informal health literacy knowledge gained outside formal education or training which warrants further investigation.

Social Implications

Primary care physicians have an opportunity to improve patient health outcomes by improving their communication with their patients, to ensure understanding and consequently compliance with treatment plans. Health literacy education for health care providers can have a positive effect on patient care. However, that is only part of the answer. Consciously and consistently putting health literacy communication techniques into practice is another part. By universally and proactively addressing the health literacy shortcomings in patients, primary care physicians are better able to cater to the communication needs of their patients. This will result in more confident and empowered patients that are more capable of managing their health conditions. The patient-provider partnership will also be improved, all of which leads to an improvement in patient health outcomes.

Conclusion

Health disparities continue to be a significant public health issue in this country, and limited health literacy is noted as one of the underlying factors (CDC, n.d.). Patients

must be able to understand health instructions to comply with them, manage their health, and navigate the health care system. Health literacy education for physicians can have a positive impact on patient health outcomes. Clear communication between physicians and patients is vital for success in patient care. Achieving clear communication requires that physicians not only be familiar with the existence of limited health literacy in patients but also have the health literacy knowledge to become a better partner in patient care. Because medical professionals cannot truly understand the struggles that patients with limited health literacy face unless they know about health literacy themselves. There is nothing that can be done to change a patient's level of health literacy once they are in the exam room. Physicians must not judge but be prepared to meet patients where they are, when it comes to their level of health literacy, to build a successful partnership in their health care. Taking the additional time upfront with patients to ensure that they understand instructions can go a long way towards patient compliance and can not only improve patient health outcomes but also make managing patient care easier. This requires medical professionals make a conscious effort to slow down in the exam room and give patients the time and compassion they would want for themselves and their loved ones. In a lot of cases, the patient's life, or at the very least their quality of life, depends on it. This can seem like a big ask with the great demand placed on physicians by regulatory organizations, such as the Center for Medicare & Medicaid Services (CMS). These regulatory demands can be a cause of frustration for physicians who are trying to provide quality patient care, employ a full staff, and are trying to keep the lights

on. Nevertheless, what continues to be true is that limited health literacy has a significantly negative impact on patients and the health care system. Unfortunately, this negative impact means that knowledgeable medical professionals must become informal patient advocates, when necessary. Persistence and patience grounded in empathy and care for patients are vital for a positive change. If we continue on the current course, without taking any additional action, both parties will continue to lose.

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Appendix A: Primary Care Physician Health Literacy Survey

1) **Are you a Primary Care Physician?**
   ☐ Yes ☐ No
2) **Are you currently practicing in the Primary Care Setting?**
   ☐ Yes ☐ No
3) **Did you graduate from medical school in the United States?**
   ☐ Yes ☐ No
4) **Choose the population you care for a majority of the time.**
   ☐ General Pediatrics (0-21) ☐ Adolescents ☐ Young Adults ☐ Adults ☐ Women only ☐ Geriatrics (over 65)
5) **How much do your work?**
   ☐ Full time (> 36 hours/week) ☐ Part Time (<36 hours/week) ☐ Not working/Unemployed ☐ Retired
6) **How many years of Practice as a Physician?**
   ☐ 0-5 years ☐ 5-10 years ☐ 10-15 years ☐ 15-20 years ☐ 20+ years
7) **Please select your gender.**
   ☐ Female ☐ Male
8) **Please mark the group which you primarily identify yourself:**
   ☐ American Indian ☐ Asian ☐ Black/African American ☐ Hispanic/Latino ☐ Multi-Racial ☐ Native Hawaiian/Pacific Islander ☐White ☐ Other
9) **Have you received any formal education specific to dealing with patients with low health literacy?**
   ☐ Yes ☐ No
10) **Health literacy is the degree to which a person has the capacity to obtain, process, and understand basic health information and service to make appropriate decisions.**
   ☐ True ☐ False
11) **Limited health literacy refers to the condition in which a person is unable to comprehend health related information or instruction and may fail to make appropriate decisions regarding their care.**
   ☐ True ☐ False
12) **Limited health literacy can cause minor issues to become major concerns.**
   ☐ True ☐ False
13) **Limited health literacy drains resources from patients, employers, and physicians.**
   ☐ True ☐ False
14) **Rapid Estimate of Adult Literacy in Medicine (REALM) and Test of Functional Health Literacy are health literacy assessment tools.**
   ☐ True ☐ False
15) **Analyzing types of questions asked by patients and monitoring their vocabulary and speech are verbal cues to identify patient's health literacy.**
   ☐ True ☐ False
16) **Non-verbal cues to identify patients' health literacy are interpreting their body and facial expressions.**
   ☐ True ☐ False

17) Assessing patients' health literacy helps healthcare providers to be more effective educators.

☐ True ☐ False

18) To what degree does low health literacy interfere with your English-speaking patients' ability to understand health information?

☐ None ☐ A Little ☐ A moderate amount ☐ Quite a bit ☐ A great deal ☐ I don't know

19) To what degree does low health literacy interfere with your English-speaking patients' ability to obtain appropriate health services?

☐ None ☐ A Little ☐ A moderate amount ☐ Quite a bit ☐ A great deal ☐ I don't know

20) To what degree does low health literacy interfere with your English-speaking patients' ability to follow through on recommended treatments?

☐ None ☐ A Little ☐ A moderate amount ☐ Quite a bit ☐ A great deal ☐ I don't know

21) To what degree does low health literacy interfere with your non-English speaking patients' ability to understand health information?

☐ None ☐ A Little ☐ A moderate amount ☐ Quite a bit ☐ A great deal ☐ I don't know

22) To what degree does low health literacy interfere with your non-English speaking patients' ability to obtain appropriate health services?

☐ None ☐ A Little ☐ A moderate amount ☐ Quite a bit ☐ A great deal ☐ I don't know

23) To what degree does low health literacy interfere with your non-English speaking patients' ability to follow through on recommended treatments?

☐ None ☐ A Little ☐ A moderate amount ☐ Quite a bit ☐ A great deal ☐ I don't know

24) Does your practice site have a health literacy program or intervention in place?

☐ Yes (If yes, complete 24a-g) ☐ No

24a) **If you have formal staff training in techniques to better assist patients with low health literacy, how effective has this program been?**

☐ Not effective ☐ Somewhat effective ☐ Effective ☐ Very effective ☐ Extremely effective

☐ Not applicable

24b) Does your practice site provide patients with health education materials that are designed specifically for patients with low health literacy?

☐ Yes ☐ No

24c) If you have health education materials designed for patients with low health literacy, how effective has this program been?

☐ Not effective ☐ Somewhat effective ☐ Effective ☐ Very effective ☐ Extremely effective

☐ Not applicable

24d) Does your practice site have Intensive, individualized health education session(s) for patients with low health literacy?

☐ Yes ☐ No

24e) If you have intensive health education session(s) for patients with low health literacy, how effective has this program been?

☐ Not effective ☐ Somewhat effective ☐ Effective ☐ Very effective ☐ Extremely effective

☐ Not applicable

24f) Does your practice site have a dedicated low health literacy specialist?

☐ Yes ☐ No

24g) How effective has this program been?

☐ Not effective ☐ Somewhat effective ☐ Effective ☐ Very effective ☐ Extremely effective

☐ Not applicable

25) How often do you ask a patient for the last grade they completed?

☐ Never ☐ Rarely ☐Sometimes ☐Often ☐Always

26) How often do you have patients repeat instructions back to you?

☐ Never ☐ Rarely ☐Sometimes ☐Often ☐Always

27) How often do you ask a patient if they understand instructions or have any questions?

☐ Never ☐ Rarely ☐Sometimes ☐Often ☐Always

28) How often do you ask a patient if they have difficulty reading medical information or completing medical forms?

☐ Never ☐ Rarely ☐Sometimes ☐Often ☐Always

29) How often do you formally assess health literacy with a validated questionnaire?

☐ Never ☐ Rarely ☐Sometimes ☐Often ☐Always

30) How often do you use your "gut feeling" as a clinician to assess health literacy?

☐ Never ☐ Rarely ☐Sometimes ☐Often ☐Always

31) Please select the special methods or techniques you use to assist your patients who have low health literacy. Check all that apply.

☐ Orally review written instructions with patient

☐ Have patient repeat instructions back to you to check understanding

☐ Describe medical conditions, treatments and instructions in layman's terms

☐ Provide the patient with health education materials

☐ Provide the patient with health education materials designed specifically for patients with low health literacy

☐ Have patient demonstrate instructions back to you to check understanding

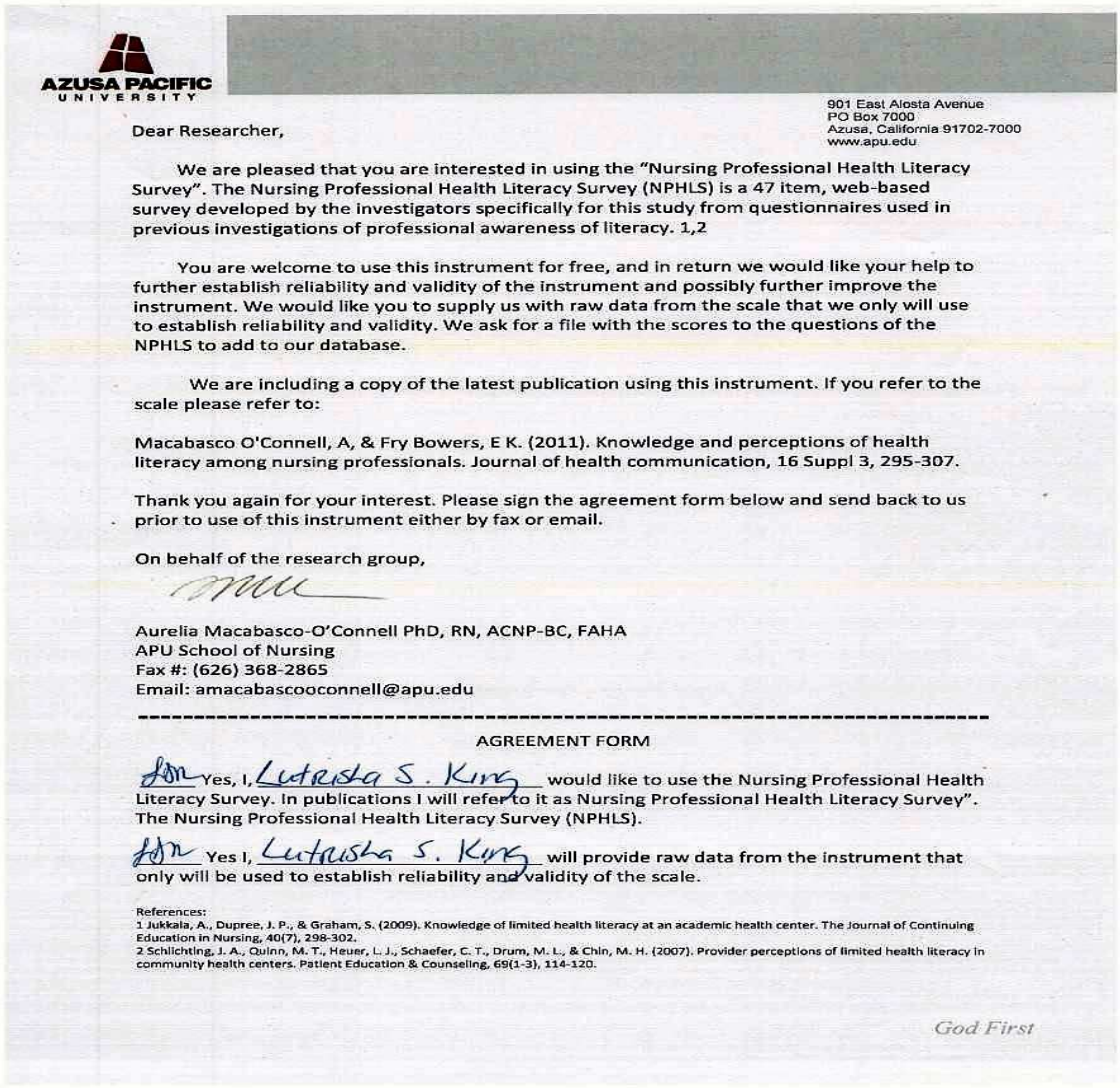
☐ Refer patient to other services such as patient educator

☐ Encourage patients to bring a family member or friend to appointments

☐ Do not use special techniques

☐ Not aware of special techniques

Appendix B: Nursing Professional Health Literacy Survey Permission Letter



AZUSA PACIFIC UNIVERSITY

901 East Alosta Avenue
PO Box 7000
Azusa, California 91702-7000
www.apu.edu

Dear Researcher,

We are pleased that you are interested in using the "Nursing Professional Health Literacy Survey". The Nursing Professional Health Literacy Survey (NPHLS) is a 47 item, web-based survey developed by the investigators specifically for this study from questionnaires used in previous investigations of professional awareness of literacy. 1,2

You are welcome to use this instrument for free, and in return we would like your help to further establish reliability and validity of the instrument and possibly further improve the instrument. We would like you to supply us with raw data from the scale that we only will use to establish reliability and validity. We ask for a file with the scores to the questions of the NPHLS to add to our database.

We are including a copy of the latest publication using this instrument. If you refer to the scale please refer to:

Macabasco O'Connell, A, & Fry Bowers, E K. (2011). Knowledge and perceptions of health literacy among nursing professionals. Journal of health communication, 16 Suppl 3, 295-307.

Thank you again for your interest. Please sign the agreement form below and send back to us prior to use of this instrument either by fax or email.

On behalf of the research group,

Aurelia Macabasco-O'Connell PhD, RN, ACNP-BC, FAHA
APU School of Nursing
Fax #: (626) 368-2865
Email: amacabascooconnell@apu.edu

AGREEMENT FORM

Yes, I, Lutrisha S. King would like to use the Nursing Professional Health Literacy Survey. In publications I will refer to it as Nursing Professional Health Literacy Survey". The Nursing Professional Health Literacy Survey (NPHLS).

Yes I, Lutrisha S. King will provide raw data from the instrument that only will be used to establish reliability and validity of the scale.

References:
1 Jukkala, A., Dupree, J. P., & Graham, S. (2009). Knowledge of limited health literacy at an academic health center. The Journal of Continuing Education in Nursing, 40(7), 298-302.
2 Schlichting, J. A., Quinn, M. T., Heuer, L. J., Schaefer, C. T., Drum, M. L., & Chin, M. H. (2007). Provider perceptions of limited health literacy in community health centers. Patient Education & Counseling, 69(1-3), 114-120.

God First

Appendix C: Health Literacy Knowledge Scale Permission E-mail

Request on the questionnaire on heal… 1

Request on the questionnaire on health literacy for study purpose in other setting.

retha rajah <rethamuthu@gmail.com>

Sun 9/30/2018 2:28 AM

Lutrisha King

questionaire version 8.pdf

345 KB

---------- Forwarded message ---------

Dear Lutrisha,

Attached is the questionnaire that developed and validated for the purpose of the my study for your reference.

Hope it can help your research in your targeted setting.

Regards

Retha Rajah

Appendix D: SurveyMonkey Permission Letter

SurveyMonkey Inc.
www.surveymonkey.com

For questions, visit our Help Center
help.surveymonkey.com

Re: Permission to Conduct Research Using SurveyMonkey

To whom it may concern:

This letter is being produced in response to a request by a student at your institution who wishes to conduct a survey using SurveyMonkey in order to support their research. The student has indicated that they require a letter from SurveyMonkey granting them permission to do this. Please accept this letter as evidence of such permission. Students are permitted to conduct research via the SurveyMonkey platform provided that they abide by our Terms of Use, a copy of which is available on our website.

SurveyMonkey is a self-serve survey platform on which our users can, by themselves, create, deploy and analyze surveys through an online interface. We have users in many different industries who use surveys for many different purposes. One of our most common use cases is students and other types of researchers using our online tools to conduct academic research.

If you have any questions about this letter, please contact us through our Help Center at help.surveymonkey.com.

Sincerely,

SurveyMonkey Inc.