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UNIVERSITY OF SAN DIEGO

Hahn School of Nursing and Health Science

DOCTOR OF PHILOSOPHY IN NURSING

Health Literacy and Health Promotion Behaviors Among Samoans

by

Katherine Tong, MSN, CFNP, PHN

A dissertation proposal presented to the

FACULTY OF THE HAHN SCHOOL OF NURSING AND HEALTH SCIENCE

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requirements for the degree

DOCTOR OF PHILOSOPHY IN NURSING

October 2011

Dissertation Committee

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Abstract

Limited health literacy is associated with failure to engage in health promotion behaviors. Few studies examine this relationship among Samoans. This study used a cross-sectional correlational design to determine health literacy levels and their relationship to health promoting behaviors in a southern California Samoan population.

Health literacy (Short form Test of Functional Health Literacy in Adults) and health promotion behaviors (Health Promotion Lifestyle Profile II) were measured in a convenience sample of 87 Samoans in southern California. Data analysis employed chi-square, t-test, and one- way ANOVA. Significant associations were found for health literacy and demographic characteristics of employment and marital status. Significant relationships were found for the demographic characteristics of age on spiritual growth, marital status on physical activity, and education on overall health promotion, nutrition, spiritual growth, and interpersonal relations subscale scores. There was a significant relationship between health literacy and the health promotion subscales for physical activity and interpersonal relations. Most participants were under age 65 and exhibited adequate health literacy. Further research is needed to examine the relationship of health literacy to health promotion in the older Samoan population.

Dedication

God gave me a purpose in life which is to teach, to serve, and to help others. I thank and praise God for giving me the opportunity and ability to complete my nurse practitioner and doctoral education. It is through His love and strength that I was able to overcome many adversities throughout this time and finish my dissertation. I could not do any of this without Him.

To my husband, Barney Tong, I am forever grateful to God that He brought you into my life. Without you, this would not have been possible. Thank you for your support, your love, your patience, and keeping me laughing throughout this entire process.

To my late father, Mr. Masao Takata, and to my mother, Mrs. Tomiko Takata, I thank you for instilling in me that it takes perseverance and hard work to achieve your dreams. Thank you for teaching me that higher education is important and to never stop learning.

To Danielle and Amanda Moncure (children), Nicole and Evan Tong (step-children), Dean Tassef (future son-in-law), and Judy and James Masutani, Jennifer, Jonathan, and Jamie De Rouen, Brittany and Sierra Stump (nieces and nephews), may you be motivated and encouraged to follow your dreams and know that you can accomplish anything. Reach for the stars!

To Mrs. Lily Masutani and Dr. Irene Takata-De Rouen (sisters), Mr. Ken Takata (brother), Dr. John De Rouen and Mr. David Masutani (brother-in-laws), Mrs. Betty Tong (mother-in-law), Mr. Bob Sands (father-in-law), and Ms. Karen Stump (sister-in-law), thank you for your love, prayers, and support.

In honor of the Samoan people, I thank you for your participation. This dissertation would not be possible without you.

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To my friends, the faculty, and staff at California State University, Fullerton (CSUF), thank you for encouraging me to complete this journey. For all who have contributed to this once in a life-time experience, thank you.

Introduction

Many years ago, I accompanied a wound care consultant to Hawaii. At one of the hospitals, I noticed many patients going into the hospital were amputees. I asked the hospital staff what nationality these patients were. A hospital spokesperson mentioned that they were Hawaiians, but mostly Samoans. I wondered why this population had health-related problems with obesity, cardiovascular, and diabetes. As a family nurse practitioner, I also noticed that many patients had trouble understanding how to take their medications, or following health-related instructions. I realized that not everyone was health literate. I wondered if health literacy was a problem with the Samoan population or was it a result of something else. I wondered if this population was following health promotion behaviors. This is how I came to develop my research topic of Health Literacy and Health Promotion Behaviors among Samoans.

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Chapter 1

Introduction

Health promotion is an important topic discussed in nursing schools, during health care visits, and at the national level because people need to have control over and improve their health (World Health Organization [WHO], 1998). Pender and colleagues (2006) defined health promotion as "behavior motivated by a desire to actively avoid illness, detect it early, or maintain functioning within the constraints of illness" (p. 7). Health promotion should start in childhood, paving the way for healthy habits that will sustain health for the rest of one's life (Mohamadian et al., 2011; Smith & Bashore, 2006). In addition, Pender, Murdaugh, and Parsons (2006) contended that health promotion is multidimensional and includes wellness in the individual, family, community, environment, and society.

Unfortunately, many people suffer from chronic diseases (e.g., heart disease, diabetes), and millions of dollars are spent taking care of these patients (Woolf, Jonas, Lawrence, & Kaplan-Liss, 2008). Preventing health problems before they progress to

end-stage disease is preferable. However, even though some people adhere to health promoting behaviors, many people do not. Woolf et al. discussed various reasons why some patients may not adhere to health promoting behaviors; some people do not care or want to change their habits, may be fearful of changing their habits, or lack access to preventive health care services. Although studies have discussed health promoting behaviors in African Americans, Hispanics, and Caucasians (Britigan et al., 2009; Egbert & Nanna, 2009; Parker & Ratzan, 2010), there is a paucity of studies that have examined these health promoting behaviors in Asian American Native Hawaiian Pacific Islanders (AANHPIs), including the Samoan population (McGarvey & Seiden, 2010). The Samoan population has higher incidence rates for obesity, smoking, and alcohol consumption than the white population (Office of Minority Health, 2011). What explains the increased incidence of health problems in the Samoan population? In part, they are the result of failure to engage in health promotion practices.

Studies have shown that limited health literacy is associated with a lack of knowledge of health promotion behaviors and underutilization of preventive health services (Centers for Disease Control & Prevention [CDC], 2009; Hughes, Hannon, Harris, & Patrick, 2010). Studies have also shown that limited health literacy is associated with low socioeconomic status, lower education levels, and minority populations (Cutulli & Bennett, 2009; Ferguson & Pawlak, 2011; Institute of Medicine [IOM], 2004). Unfortunately, these factors lead to health disparities in vulnerable groups, for example, in Asian Americans, Native Hawaiians, and Pacific Islanders (AANHPIs) (Kim & Keefe, 2010; Office of Minority Health, 2011; Ponce et al., 2009).

Although studies have linked limited health literacy to decreased health

promoting behaviors in African Americans, Hispanics, and Caucasians (Britigan et al., 2009; Egbert & Nanna, 2009; Parker & Ratzan, 2010), few studies have examined these relationships in AANHPIs, including the Samoan population (McGarvey & Seiden, 2010). The Samoan population has higher incidence rates for obesity, smoking, and alcohol consumption than the white population (Office of Minority Health, 2011). If limited health literacy is related to poor health outcomes in the Samoan population, we need to know how we can improve health literacy skills to increase health promotion behaviors.

Background and Significance

Major goals of the National Institute of Nursing Research (NINR, 2006) and "Healthy People 2020" (U.S. Department of Health and Human Services [USDHHS], 2010) are to eliminate existing health disparities and improve health literacy rates. Kathleen Sebelius, U. S. Department of Health and Human Services Secretary, asserted that the government is also committed to solutions, and in May of 2010, the National Action Plan to Improve Health Literacy was created to provide everyone equal access to understandable health information to promote good health (Baur, 2011; Office of Disease Prevention and Health Promotion, 2010; Somers & Mahadevan, 2010). Meeting these goals may reduce health care costs and contribute to better health outcomes. However, these goals cannot be met if people have limited health literacy. Limited health literacy can also contribute to medication errors, frequent use of emergency rooms, hospital readmissions, fragmented care, and miscommunication between patients and providers (IOM, 2004; Parker, Ratzan, & Lurie 2003; Wolf, Davis, Tilson, Bass, & Parker, 2006). Somers and Mahadevan (2010) estimated the cost of these errors to the U.S. economy to

be between \$106 billion and \$236 billion annually.

In 2003, the National Assessment of Adult Literacy (U.S. Department of Education, 2003) indicated that some people lack the skills to process information to make decisions regarding their health. For example, written information, such as brochures, is too challenging for some people to understand because it is written at a ninth grade level (Cutulli & Bennett, 2009; IOM, 2004). Some people cannot read pamphlets and, therefore, are not getting the message (Doak, Doak, & Root, 1996). The National Assessment of Adult Literacy reported that only 12% of the adult population is health literate. More than 77 million adults have basic or below basic health literacy levels. The IOM (2004) also published a report entitled "Health Literacy: A Prescription to End Confusion" that stated that millions of Americans cannot read complex texts. Some who can read and write have difficulty understanding and following directions, for example, taking medications (IOM, 2004). Everyone must understand and be able to process health information to make effective health-related decisions.

Moreover, appropriate evaluation is needed to determine how information reaches the general public. Brochures and pamphlets may be too difficult for some to understand. They should be written at a level that is more comprehensible to all patients. For instance, is the information provided accurate and written in a way that people can clearly understand? Patients should feel empowered to comprehend what is going on with their health. They will not be able to do this if they cannot understand what they read or what providers tell them. Nurses can help with these issues since they are the ones who give direct care to patients. They can see where patients have problems deciphering health-related information (Baur, 2011). Providers must enable patients to access, understand,

and use health information to engage in health promotion behaviors.

Pender's Health Promotion Model

Pender's Health Promotion Model (revised) is the conceptual framework guiding the proposed study. Pender's model predicts engagement in health-promoting behaviors (Pender et al., 2006) and arises from expectancy-value theory and social cognitive theory. The basic premise of expectancy-value theory is that people will not invest time and energy in a behavior that is of no value to them or impossible to achieve. Social cognitive theory explains how a person can participate in a health promotion behavior by learning from prior experiences and the behaviors of others. Environmental factors also play a role in social cognitive theory (Pender et al.). For example, a person may attempt to quit smoking if informed by another person how successful he or she was at quitting. The person will also be more successful in stopping smoking if the environment prohibits smoking.

The following paragraphs address each variable in Pender's Health Promotion Model. These variables include individual characteristics and experiences (prior related behavior and personal factors), behavior-specific cognitions and affect (perceived benefits of action, perceived barriers to action, perceived self-efficacy, activity-related affect), interpersonal and situational influences, immediate competing demands, commitment to a plan of action, and health promoting behavior (Pender et al., 2006).

Individual Characteristics and Experiences

Pender et al. (2006) noted that individual characteristics and experiences influence a person's health-related behavior. Individual characteristics and experiences include prior related behavior and personal factors. What a person has done in the past will predict current health promoting behaviors (Mohamadian et al., 2011; Pender et al., 2006; Smith & Bashore, 2006). Prior related behaviors are related to social cognitive theory and therefore, past behaviors determine whether or not someone will engage in a health promoting behavior. For example, people should see their dental hygienist for teeth cleaning every six months. However, some people choose not to utilize preventive dental services until they have a problem with their teeth, for example, pain.

Personal factors influencing health behavior in Pender and colleagues' model include biological (e.g., age, gender), psychological (e.g., self-esteem, self-motivation, personal competence, perceived health status, definition of health), and sociocultural factors (e.g., culture, ethnicity, socioeconomic status, education). Although personal factors can influence health behaviors, some personal factors, such as age and gender, cannot be changed. For example, an older person might think they are too old to exercise.

Examples of psychological factors influencing health include the following. A person might think he or she is too ill to engage in a health promotion behavior, such as exercise. Another person might lack the motivation to follow a low-fat low-cholesterol diet. The person may describe how bland low-fat foods taste. An example of a sociocultural factor influencing health behaviors includes low socioeconomic status; a person may state that he or she does not exercise because of the cost of a gym membership.

Behavior-Specific Cognitions and Affect

Under behavior-specific cognitions and affect, Pender et al. (2006) included perceived benefits of action, perceived barriers to action, perceived self-efficacy, and activity-related affect. If people see that engaging in a health promoting behavior has a positive outcome (perceived benefits of action), they are more likely to engage in that behavior. Pender et al. stated that these perceived benefits can be intrinsic or extrinsic. An example of an intrinsic benefit is feeling less fatigued and more energetic after exercising. Pender and colleagues described receiving either monetary rewards or social interactions in engaging in the health promoting behavior as examples of extrinsic benefits. For example, people who exercise and lose weight may receive praise on how they look.

Perceived barriers to action (negative outcomes) influence a person's decision to engage in health promoting behaviors. For example, people will not engage in a health promoting behavior if they feel they will gain nothing. Similarly, a person may feel that he or she does not have the time to exercise. Perhaps the person did not experience any weight loss and determined that exercise was a waste of time. Perceived self-efficacy exists when a person believes that he or she has the ability to do a certain behavior and, therefore, achieve desired health outcomes (Pender et al., 2006). If someone has high self-efficacy, this may lower perceived barriers to action.

Activity-related affect is how a person feels about engaging in a behavior and influences whether or not someone will engage in that behavior (Pender et al., 2006). One can have negative or positive feelings toward a behavior. For example, a person may comment on how good they felt after exercising. The same person might have

complained before exercising that he or she finds exercise boring. Later, however, the person might consider exercising again because of how it made him or her feel. This can in turn affect self-efficacy because the person feels empowered that he or she achieved the goal of running a mile.

Interpersonal Influences

Interpersonal influences, which include norms, social support, and modeling, may also help determine if someone will engage in a health-promotion behavior (Pender et al., 2006). For example, at a party, a norm might be that people should not drink and drive. This would be the expectation of those attending the gathering. An example of social support would be for family or friends to support smoking cessation. Imitating the behaviors of others would reflect modeling. For example, one might notice that a group of people meet on a regular basis to go hiking and see that this group of people is healthy, active, and feel and look good. This influences the observer to be like the hikers. Family, friends, and health care providers are the most common interpersonal influences on behavior (Pender et al.).

Situational influences are other variables that influence whether or not a person will engage in health promotion behaviors. Situational influences may include available options and environmental features. For example, available options might include access to care or whether or not there is an exercise gym close by (Pender et al., 2006). If people have to travel long distances for health care or have to rely on others for transportation, these influences may negatively affect whether or not they engage in health promotion behaviors.

Behavioral Outcomes

Pender et al. (2006) discussed the relevance of a commitment to a plan of action. If a person is truly committed to engaging in a health promotion behavior, he or she is more likely to keep doing the behavior over a prolonged period of time. Competing demands, another element of the model, refer to situations in which a person has little control over his or her behaviors. For example, plans to exercise at a specific date and time may be derailed when an out of town friend arrives unexpectedly and suggests lunch. Preferences operate in situations in which a person has a lot of control over his or her behaviors. For example, a person could choose to eat an unhealthy snack (e.g., French fries) or a healthy snack (e.g., an apple) (Pender et al.).

Another example of competing preferences are when a person has an urge to do something different based on their preferences. For example, one may choose to go shopping instead of exercising (Pender et al., 2006). This is different from competing demands when family or work obligations derail a plan. Instead of exercising, people may choose to watch television. A person does not have any obligation or outside factors that prevent them from doing the health-related behavior. It is what they prefer to do that determines their behavior. All of these variables interact with each other. This model helps in understanding factors that determine whether or not someone will engage in health promotion behaviors.

Health Literacy

Although not included in Pender's model, health literacy is another variable that should be considered among factors influencing health-related behaviors. Figure 1 depicts an adaption of the model to include health literacy. Elements of health literacy

include abilities to read, write, comprehend, and understand numbers. People with limited health literacy may not participate in health promoting behavior because they cannot read or comprehend the health-related material. People who cannot read or understand health information will most likely not look at any health education literature (Nutbeam, 2008).

Nutbeam (2000) stressed the importance of health literacy and how health promotion behavior is related to health literacy. One cannot consider discussing health promotion behaviors without first looking at health literacy levels. By improving health literacy, people can understand what they need to do, make necessary lifestyle changes, and improve their overall health (Nutbeam, 2000). However, not only does health information have to be understood, access to health information has to be improved.

Limited health literacy is a major health care problem facing the United States. Although, many people can read and write, they often have difficulty understanding health care information. The concept of health literacy refers to people's ability to navigate the health care system and make informed decisions regarding their health care. Since nurses play an important role in educating and providing health care information to patients, it is imperative that nurses understand the challenges of those who have limited health literacy.

It is difficult to identify persons with limited health literacy. Doak, Doak, and Root (1996) noted in their book, "Teaching Patients with Low Literacy Skills," that one cannot tell from someone's appearance whether or not that person has limited health literacy. People who have limited health literacy "may be poor or affluent, native born or immigrant and they can be found everywhere" (Doak et al., 1996, p. 1). Although most Americans know how to navigate geographically, many lack the skills to manage their

health and navigate the health care system because of limited health literacy (Ferguson & Pawlak, 2011).

The stigma of shame is another problem compounding the issue of limited health literacy. Shame prevents people from admitting they cannot read, write, or understand or follow directions (IOM, 2004; Parikh, Parker, Nurss, Baker, & Williams, 1996). Some patients are embarrassed, so they try to hide the fact that they cannot read or write. Amazingly, some people never tell their spouses, children, or health care providers about their limited health literacy (Wolf, Williams, Parikh, Nowlan, & Baker, 2007). Cornett (2009) stated that some people with limited health literacy are verbally articulate, and, thus, it is difficult to see that a problem exists. Some patients give excuses, stating, for example, they forgot their glasses or they are too tired to read the health forms instead of admitting that they cannot read (Cornett).

Another barrier that can contribute to limited health literacy is related to the minority myth, that Asian Americans are considered healthier, richer, and better educated than whites (Kim & Keefe, 2010). In their article, Kim and Keefe noted that Asian Americans have limited health literacy leading to lower use of preventive health care services. Asian Americans have unreported barriers to health care in areas of language, culture, health literacy, health insurance, and immigrant status (Kim & Keefe). Prior studies on AANHPIs provide aggregated data, and the populations within these studies should be disaggregated to understand their specific needs and behaviors (Bitton, Zaslavsky, & Ayanian, 2010; Lee et al., 2009; Ponce et al., 2009; Taira et al., 2007; Takahashi et al., 2011). Therefore, this study of the Samoan population and the barriers they face is important.

As noted earlier, there is a paucity of studies on health promoting behaviors in Samoans. There are only a few studies of the Samoan population that link health literacy with health promoting behaviors. Further studies are needed since the Samoan population experiences increased incidence rates for diabetes and liver cancer. They also have high rates of smoking and alcohol consumption (Bitton et al., 2010). These trends lead to the following question: Does health literacy influence health promotion behaviors in the Samoan population?

Conceptual Framework

Figure 1. Health literacy and health promotion behaviors. Adapted from the Health Promotion Model by Pender, N. J., Murdaugh, C. L., & Parsons, M. (2006). *Health promotion in nursing practice* (5th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

Study Purpose

The purpose of this descriptive correlational study is to examine the relationship between health literacy and health promotion behaviors in a Samoan population living in southern California. The investigation will identify existing health literacy levels in this population and determine if there is a correlation between health literacy and health promoting behaviors.

Research Questions

The following research questions will be addressed in this study:

1. What is the level of health literacy in a Samoan population living in southern California?
2. What are the relationships among health literacy, health promotion behaviors, and selected patient characteristics (age, gender, marital status, educational level, household income, and employment) in a Samoan population living in southern California?

Conclusion

Improving health literacy can lead to better health outcomes and can improve social, economic and environmental factors influencing health. People need to understand and feel empowered to manage their health and take preventive measures by engaging in appropriate health promotion behaviors. Nutbeam (2008) stated that it is important to identify those who are at risk due to limited literacy. Therefore, it is important to know what the health literacy levels are in the Samoan population and how they are related to health promotion. Appropriate measures can then be taken to help those with limited health literacy and to engage in effective strategies to foster both health literacy and health promotion.

Chapter 2

Review of the Literature

This chapter will address definitions of health literacy, information on the prevalence and consequences of limited health literacy in Asian American Native Hawaiian Pacific Islanders (AANHPIs) and Samoans, and the overall health status of AANHPIs in general, and specifically of the Samoan population. Asian population studies that used Pender's health promotion model (Pender, Murdaugh, & Parsons, 2006) will also be discussed.

Defining Health Literacy

In 1974, Simonds first introduced the concept of health literacy when he discussed the importance of health education and health literacy for all students in the United States (Oldfield & Dreher, 2010). Simonds's definition of health literacy was very similar to the one developed by Ratzan and Parker, "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate decisions" (2000, p. vi). This definition has also been adopted by "Healthy People 2010" (U. S. Department of Health and Human Services, [USDHHS], 2000), "Healthy People 2020" (USDHHS, 2010), and the Institute of

Medicine (IOM, 2004).

Varying definitions of health literacy exist in the literature, and Egbert and Nanna (2009) reported confusion regarding the term. They maintained that a consistent definition is needed to support related research and practice. Peerson and Saunders (2009) also reported a lack of consensus on the definition of health literacy but stressed that health literacy is a "very complex thing to measure and to influence" (p. 292). Peerson and Saunders also noted that issues of health literacy need to be addressed; otherwise, health disparities and inequalities will continue to exist.

Egbert and Nanna (2009) addressed definitions of health literacy proposed by the World Health Organization (WHO) and the American Medical Association (AMA). WHO (1998) characterized health literacy as "the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health" (p. 10). The AMA (1999) described health literacy as "a constellation of skills, including the ability to perform basic reading and numerical tasks required to function in the health care environment" (p. 553). Nutbeam (2008) discussed the same health literacy definitions, and noted that the WHO definition "reflects a health promotion orientation" (p. 2074).

Although these definitions offer a general description of health literacy, health literacy means more than reading brochures, making appointments, or taking medications (Nutbeam, 2008). People must understand available health information and be empowered to make appropriate health-related decisions. Moreover, Nutbeam (2008) defined health literacy as either a risk or as an asset. Nutbeam (2008) stated that it is important to identify those who are at risk for limited health literacy by first assessing

their health literacy level with a screening tool, for example, the Test of Functional Health Literacy in Adults (TOFHLA). Appropriate access to health care services and effective communication between health care providers and patients can then occur.

As a result, patient education can be planned according to the patient's needs. Hopefully, this will lead to improved compliance and improved health outcomes for patients (Nutbeam, 2008). Health literacy is also an asset which builds upon the patient's previous knowledge. Nutbeam stated that those who have better health literacy will be more likely to engage in health promoting behaviors.

The Prevalence of Limited Health Literacy

Although Simonds coined the definition of health literacy in 1974 (Oldfield & Dreher, 2010), levels of health literacy in the U.S. population were not measured until the 1990s (Parker & Ratzan, 2010). The 1992 National Adult Literacy Survey (NALS) was the first effort to measure adult literacy in English in the United States (Nutbeam, 2008). A branch of the United States Department of Education, the National Center for Education Statistics, incorporated questions from the 1992 NALS survey in its 2003 National Assessment of Adult Literacy (NAAL), which included an evaluation of functional health literacy (Cutulli & Bennett, 2009). The NAAL defined health literacy "as the ability of US adults to use printed and written health-related information to function in society, to achieve one's goals, and to develop one's knowledge and potential" (White, 2008, p. viii).

The NALS study first assessed adult literacy in English in 1992 in over 26,000 adults and concluded that "half of U.S. adults have limited or low literacy skills" (Paasche-Orlow, Parker, Gazmararian, Nielsen-Bohlman, & Rudd, 2005, p.175). The

NAAL, conducted in 2003, consisted of a demographic questionnaire and 152 literacy tasks that included 28 health-related tasks. It was administered to 19,000 participants from the community and institutions in six states (Kentucky, Maryland, Massachusetts, Missouri, New York, and Oklahoma) (Cutulli & Bennett, 2009).

Due to the tedious nature of the study, the NAAL divided the 152 tasks into 13 blocks and participants only completed 40 tasks (Cutulli & Bennett, 2009; White, 2008). The NAAL split the 28 health-related tasks into three areas: clinical (e.g., taking medications), preventive (e.g., why mammogram screening is important), and navigational (e.g., how to find the radiology department and how to interpret the bill) (White, 2008). The NAAL's focus was to "evaluate the ability to read, comprehend, and apply written information and evaluate prose, document, and quantitative literacy" (Cutulli & Bennett, 2009, p. 28). Examples of prose literacy included brochures and instructional materials. Document literacy referred to an individual's ability to read, for example, a nutrition label. Finally, quantitative literacy involved "calculating medication doses from prescription instructions, check book balancing" (Cutulli & Bennett, 2009, p. 28), and so forth.

The NAAL results depicted whites and Asian Pacific Islanders (APIs) as having higher health literacy than blacks, Hispanics, and American Indian/Alaska Native. Cutulli and Bennett (2009) stated that 36% of the participants had basic or below basic health literacy skills. Higher health literacy was noted in participants with higher levels of education, those who had private health insurance, and those in excellent health. Those with lower health literacy tended to be men, the poor, participants for whom English was a second language, those with less than a high school education, and individuals over 65.

In addition, participants who had Medicare, Medicaid, or no health insurance coverage had lower health literacy levels than those with private insurance coverage (Cutulli & Bennett, 2009).

Those with low health literacy skills failed to seek out printed or nonprint sources for health care information. In conclusion, the 2003 NAAL determined that many adults are not health literate and would have difficulty navigating the existing health care system (Cutulli & Bennett, 2009). However, the results of this study are of limited value in the Samoan population since API populations were aggregated. To get a clearer picture of the extent of low literacy, the populations should be disaggregated. Subsequently, the U. S. Census Bureau (2010) separated Asian Americans and Native Hawaiian Pacific Islanders in the 2010 census, giving a more accurate picture of what health disparities subgroups face. In previous studies, populations of AANHPIs were aggregated, therefore painting an inaccurate picture or "model minority myth" of their overall health literacy rates, socioeconomic status, and health status (Ng, Lee, & Pak, 2007; Ngo & Lee, 2007).

In their seminal work, Williams and colleagues (1995) used a cross-sectional survey to examine whether or not 2,659 patients at two urban public hospitals displayed functional health literacy. Their sample included 979 patients from a hospital in Atlanta, Georgia and 913 English-speaking and 767 Spanish-speaking patients in Los Angeles, California. The Test of Functional Health Literacy in Adults (TOFHLA), the first instrument to measure basic reading and numeracy tasks needed to function in a health care setting, was used to determine health literacy levels. Spanish-speaking patients were given the Spanish TOFHLA-S (Williams et al., 1995).

Findings indicated that 665 (35.1%) of the 1892 English-speaking patients and

473 (61.7%) of the 767 Spanish-speaking patients could not perform basic reading tasks needed to function in the health care setting. For example, patients could not read or understand consent forms, and they could not read prescription labels or comprehend how to take medications correctly (Williams et al., 1995). Lower literacy scores were prevalent among older people and participants with limited education. However, Williams and colleagues also reported that "the number of years of school alone did not reliably identify functional health literacy" (p. 1579). A limitation of this study is that participants were predominantly African American, whites, and Latinos. Further studies on other populations, including AANHPIs, are needed.

Federman, Sano, Wolf, Siu, and Halm (2009) also addressed health literacy and cognitive performance in older adults. In their cross-sectional survey, they recruited 414 English- and Spanish-speaking independent community-dwelling adults over 60 years of age in New York City. The outcome measure of health literacy was the Short Test of Functional Health Literacy in Adults (S-TOFHLA). The S-TOFHLA, which consists of two reading passages, is similar to the TOFHLA except it takes only 7 minutes to administer (Federman et al., 2009).

Assessments of cognitive function included immediate and delayed recall (memory) using Story A of the Weschler Memory Scale II. The Animal Naming test assessed verbal fluency and the Mini-Mental State Examination (MMSE) assessed global function. Participants' demographic characteristics were compared with their health literacy levels. The Medical Outcomes Study 36-item Short Form Survey assessed health status. The relationship of cognition (abnormal immediate and delayed recall, abnormal verbal fluency, and abnormal MMSE) to health literacy levels was examined (Federman

et al., 2009).

Findings indicated 24.3% of the participants had inadequate health literacy. This study also found that inadequate health literacy was strongly associated with memory impairment and abnormal fluency (Federman et al., 2009). One limitation of this study was using a convenience sample because it was not representative of the entire population.

In a cross-sectional survey, Gazmararian and colleagues (1999) studied the prevalence of low health literacy among 3,260 Medicare enrollees at four locations in a managed care organization ($n = 853$ in Cleveland, Ohio; $n = 498$ in Houston, Texas; $n = 975$ in south Florida; and $n = 934$ in Tampa, Florida). Enrollees completed a demographic survey and the Short Test of Functional Health Literacy in Adults (S-TOFHLA). Cognitive impairment was measured using the Mini-Mental State Examination (MMSE). Findings indicated Cleveland participants, blacks, and Hispanics had lower health literacy levels. Generally, as people aged, their reading abilities diminished, and this affected their ability to manage their health care issues (Gazmararian et al., 1999).

Consequences of Limited Health Literacy

The World Health Organization (1998) identified the consequences of limited health literacy as both direct and indirect. For instance, "poor literacy can affect people's *health* directly by limiting their personal, social, and cultural development, as well as hindering the development of health literacy" (p. 10). Egbert and Nanna (2009) asserted that obtaining correct health information is needed, but that there are multiple challenges to obtaining this information. People can get health information from the Internet

provided they have access. They can also seek information from their providers.

However, challenges in accessing information are harder for those who are from a lower socioeconomic status, are from minorities groups, are less educated, and are over age 65. These researchers identified ways to improve communication with those who have low health literacy. For example, using plain language or teach-back methods can increase understanding of information (Egbert & Nanna).

Consequences of limited health literacy can also include medication errors. For instance, one problem of limited health literacy is patients' misunderstanding of prescription warning labels (PWLs). In a qualitative study, Wolf, Davis, Tilson, Bass, and Parker (2006) examined the reasons why patients misunderstand PWLs. Using structured interviews, 74 patients from Louisiana State University Health Services Center in Shreveport, who read at or below the sixth-grade level, were recruited and asked to look at eight PWLs and state what the PWLs meant. The researchers measured literacy by the "Rapid Estimate of Adult Literacy in Medicine (REALM), a reading recognition test of 66 health-related words" (Wolf et al., 2006, p. 1050).

Wolf and his colleagues (2006) determined the PWLs were misinterpreted by the majority of those surveyed with limited health literacy skills. "Multiple-step instructions, reading difficulty of text, the use of icons, the use of color, and message clarity were the common causes of label misinterpretation" (Wolf et al., 2006, p. 1054). The authors argued it is important to develop PWLs in different languages, thereby, addressing other cultures. Several important limitations were identified in this study: patients were English speaking, sample size was small, and the sampling was only from one place, thereby, limiting the generalizability of the findings.

Another problem related to literacy occurs when providers fail to recognize those with limited health literacy. Patients may suffer dire consequences when they do not understand the information given to them by health care providers. Rogers, Wallace, and Weiss (2006) looked at whether 18 family physicians could accurately predict who among 140 patients (122 Caucasians and 18 African-Americans) had limited health literacy. After administering the short form of the Test of Functional Health Literacy (S-TOFHLA) to the patients, findings indicated 24% had limited health literacy. The researchers asked the physicians to rate how well the patients understood the medical information provided on cancer prevention. Findings revealed that the physicians could not identify those with limited health literacy and, in fact, thought these patients understood the information given (Rogers et al., 2006).

This study exhibited several limitations. The study was conducted in a single family residency program and findings are not generalizable to the rest of the population. Participants were not randomly selected, and the physicians only rated patients' abilities to understand information rather than their health literacy (Rogers et al., 2006). It is imperative for providers to make sure that all patients understand health information given so they can make the best decisions. In addition, this study only examined Caucasians and African-Americans. Further studies should look at different racial and ethnic groups.

Parikh, Parker, Nurss, Baker, and Williams (1996) noted that people are "potentially jeopardizing their own treatment and well-being" (p. 38) when they do not admit that they cannot read or understand health information. In a cross-sectional study of 202 patients, Parikh and colleagues investigated the relationship of low health literacy

and the shame associated with it. They hypothesized that patients with low health literacy would not admit that they could not read due to shame.

The study used a demographic questionnaire, the Test of Functional Health Literacy in Adults (TOFHLA) and "questions regarding difficulty reading and shame" (Parikh et al., p. 34). Results showed that those with low health literacy included more males, those with lower than a high school education, and those over 60 years of age. Parikh and colleagues reported that "42.6% had inadequate or marginal functional health literacy" (p. 33). This study noted that people will not tell others about their low health literacy. Parikh et al. found that shame prevents people from admitting they have low health literacy. One limitation of this study was that the sample included primarily indigent African Americans and, therefore, a larger sample targeting different ethnic groups would be needed. It is important to identify people who are ashamed to admit they have low functional health literacy.

Measuring Health Literacy

Parker, Baker, Williams and Nurss (1995) developed the Test of Functional Health Literacy in Adults (TOFHLA) instrument to measure the functional health literacy of patients. Frank-Stromborg and Olsen (2004) noted that the TOFHLA is "an instrument designed to assess the ability of individuals to understand and act on common instructions given to patients" (p. 22). The TOFHLA includes 50 items for reading comprehension and 17 items for number comprehension. Target populations include Spanish- or English-speaking patients and thus the TOFHLA is available in English and Spanish (TOFHLA-S). Scores indicate inadequate, marginal, or adequate functional health literacy (Frank-Stromborg & Olsen). The proposed study will use the s-TOFHLA

because it is the instrument most often used in evaluating health literacy in health care research. It will also be used because of its sound psychometric characteristics.

Parker and colleagues (1995) stated that the TOFHLA is valid when compared to two other instruments, the Rapid Estimate of Adult Literacy in Medicine (REALM) and the Wide Range Achievement Test-Revised (WRAT- R). The REALM takes less than 3 minutes to administer, but it has limitations (Weiss et al., 2005). It does not assess a person's quantitative literacy or numeracy. The WRAT-R takes 20 to 30 minutes to administer. "Concurrent validity was tested by determining Spearman's rank correlation between the TOFHLA, the WRAT-R, and the REALM" (p. 539). Correlation coefficients for the TOFHLA for English-speaking patients with the REALM and the WRAT were 0.84 and 0.74, respectively. For Spanish-speaking patients, no data were provided for validity because the "REALM is not valid in Spanish and the WRAT-R is not available in Spanish" (Parker et al., 1995, p. 539).

Parker and colleagues (1995) also wrote that content validity was enhanced by using actual hospital medical texts for both the Reading Comprehension and the Numeracy subtests. Reliability of the TOFHLA was high. For English-speaking patients, the Spearman-Brown was 0.92, and the Cronbach's alpha was 0.98. For Spanish-speaking patients, the Spearman-Brown was 0.84, and the Cronbach's alpha was 0.98.

Measuring Health Promotion Behavior

This study will use the Health Promoting Lifestyle Profile II (HPLP II) instrument based on Pender's Health Promotion Model (Revised) (Pender et al., 2006) to measure health promotion behavior. This tool consists of 52-items and includes six subscales that measure physical activity, spiritual growth, health responsibility, interpersonal relations,

nutrition, and stress management (Pender et al.). Participants rate how frequently they practice behaviors related to each of these areas on a four point Likert-type scale (never, sometimes, often, and routinely). This instrument will be used because it has been tested and has demonstrated good reliability and validity in several studies (McElligot, Capitulo, Morris, & Click, 2010; Meihan & Chung-Ngok, 2011; Mohamadian et al., 2011).

There are other tools to measure health promotion, for example, the Index of Health Practices and the Personal Lifestyle Questionnaire (PLQ). The Index of Health Practices included seven items pertaining to sleeping habits, eating habits, exercise, alcohol consumption, and smoking habits. However, Frank-Stromberg and Olsen (2004) described the Index of Health Practices as limited in its usefulness because of its small number of items and lack of detail. The PLQ includes six subscales in the areas of exercise, substance use, nutrition, relaxation, safety and general health promotion. It was not used in this study because Cronbach's alphas were low, ranging from 0.24 to 0.75 (Frank-Stromberg & Olsen).

The Asian American Native Hawaiians Pacific Islander (AANHPI) Population

Although the United States Census lists nine categories of AANHPIs, there are many more groups that are not included (Ponce et al., 2009). Ponce and his colleagues wrote that in July, 2006, the United States Census Bureau estimated that there were more than 5.1 million AANHPIs in California, the largest population of AANHPIs in the United States. Ponce and colleagues reported that this number will increase, making "challenges for policymakers at the national, state, and local levels" (p. 4). They go on to argue these challenges are made more difficult by limited data on AANHPIs.

In previous studies, the AANHPI populations were often aggregated and thus these studies do not present an accurate picture of the multitude of ethnic groups within the AANHPI population (Ponce et al., 2009). Ponce et al.'s report discussed the health status of AANHPIs in relation to other racial and ethnic groups in California. Ponce et al. reported that Los Angeles County had the largest numbers of Native Hawaiians and Pacific Islanders (NHPIs) in the state, but the largest percentage was in Yuba County. This report also noted that Asian Americans were slightly older whereas NHPIs were younger compared to the overall California population.

Before discussing the health status of AANHPIs, it is important to discuss the "minority myth." Previous studies often depicted Asian Americans as being well-off, having good paying jobs, having insurance, and so forth (Kim & Keefe, 2010; Ponce et al., 2009). This is far from the truth, as will be illustrated in additional studies. Ponce and colleagues (2009) employed secondary data analyses to report on the health status of AANHPIs. They used information from the American Community Survey (ACS), California Health Interview Survey (CHIS), Vital Statistics, Tuberculosis Registry, Hepatitis B Disease Registry, California Cancer Registry, the National Cancer Institute Surveillance Epidemiology and End Results (NCI SEER), and the California Department of Education (Ponce et al., 2009).

Ponce et al. (2009) reported that a problem facing AANHPIs is that they lack one language, one culture, or one religion. Moreover, recent immigrants have limited English proficiency. Ponce et al.'s report discussed barriers to health care that AANHPIs face, which include providers who do not speak the same language and providers who are not sensitive to their cultures. Based on the different data sources examined, Ponce et al.

concluded that AANHPIs are disadvantaged with respect to education and economic status and are less likely than other groups to have health insurance and more likely to lack preventive health care services. According to their report, AANHPIs tended to have lower than high school education levels, had lower per capita income, and were underrepresented in the health professions. These researchers also reported that many NHPIs did not have a usual source of health care, including dental care, and had poor colorectal screening rates (Ponce et al., 2009).

Major health concerns within the NHPI population include smoking, physical inactivity, and obesity. Ponce and colleagues (2009) reported that 70% of NHPIs were overweight or obese. They also reported that some Samoan children have BMIs in the obese category. Other health concerns of Samoans included tuberculosis (TB) and Hepatitis B. This study also reported that 54% of Samoan men in the United States have liver cancer. Increased mortality related to diabetes, hypertension, and Alzheimer's disease are additional concerns for AANHPIs. However, Ponce and colleagues (2009) noted that there were limitations in the statistics on AANHPI subgroups because of limited data for accurate statistical analysis. This is why it is imperative to look at subgroups of AANHPIs to get a clearer picture of their overall health and health issues.

A retrospective study by Taira and colleagues (2007) indicated the need to examine Asian Americans and Pacific Islanders separately to look at the health-related disparities among the groups. Using multivariate regression, Taira and colleagues studied factors that predicted whether or not Asian Americans and Pacific Islanders were compliant with taking antihypertensive medications. Health plan administrative data collected from July 1999 through June 2003 included Japanese ($n = 13,836$), Filipino

($n = 3,812$), Chinese ($n = 2,280$), Korean ($n = 450$), part Hawaiian ($n = 3,746$), and white ($n = 3,920$) adults. The study also addressed age, gender, isle of residence, morbidity levels, comorbidity, and insurance coverage.

Part Hawaiians had lower levels of education and a greater prevalence of diabetes mellitus and congestive heart failure than the Japanese, Filipino, Chinese, Korean, and white population. Koreans, Hawaiians, and Filipinos were less likely than the Japanese, Chinese, and white population to adhere to their antihypertensive medications. Limitations of this study were that it only looked at data from a single health plan; therefore the results are not generalizable to other populations. It is important to disaggregate the data within AANHPI studies to indicate what disparities exist for the Samoan population and what interventions can help with adherence (Taira et al., 2007).

Liu, Tanjasiri, and Cockburn (2010) also argued for disaggregating data for Native Hawaiian Pacific Islanders (NHPIs). These authors contended that NHPIs are understudied and are not listed accurately in health statistics because study populations are not disaggregated. Therefore, there remain gaps in understanding their health disparities. Liu et al.'s study reexamined a 2007 study conducted with 272 cancer patients to determine how accurately NHPIs were identified in a population-based cancer registry. The authors found that it is difficult to classify and identify NHPIs. They also discussed challenges in identifying NHPIs within these registries (Liu et al., 2010). These challenges included poor response rates due to patients moving out of the area after diagnosis so they could not be located for the study or because of NHPI's unwillingness to participate in studies.

According to Bitton, Zaslavsky, and Ayanian (2010), studies should disaggregate

data for the Asian American (AA) and Pacific Islander (PI) populations because data tend to show that the health of AAPIs is better when the populations are studied together.

Aggregation does not show the true picture of the health disparities that PIs face. Bitton et al. (2010) analyzed the health risks, chronic diseases, and access to care among United States Pacific Islanders using a retrospective design examining data from 2005 through 2007. A random sample of, 2,609 Pacific Islanders, 17,892 Asians, and 894, 289 whites over 18 years of age completed the Behavioral Risk Factor Surveillance System (BRFSS) Surveys. Findings indicated PIs had much higher rates of obesity, hypertension, and diabetes than Asian Americans in general (Bitton et al., 2010). Since there is a paucity of studies with PIs, my study will examine the Samoan population and look at what health disparities they face.

The Samoan Population

The Samoan population has been characterized by their socioeconomic status, well-being, and biobehavioral risk factors, and the need for more population-based research with Samoans has been highlighted (McGarvey & Seiden, 2010). Samoans have immigrated to the United States since the 1950s. With a total of 37,498 Samoans, California has the largest Samoan populations in the United States, followed by Hawaii with 16,166; Washington state with 8,049; Utah with 4,532; Texas with 2,491; and Alaska with 1,670. Samoans are at high risk for poor health due to "poverty, low health literacy, and sociocultural influences on health care knowledge, attitude, and access" (McGarvey & Seiden, 2010, pp. 223-224). Moreover, it is difficult to obtain data on Samoans since the population is aggregated together with other AAPIs.

There are various reasons why Samoans may not engage in preventive services.

For example, in their qualitative study, Puaina, Aga, Pouesi and Hubbell (2008) discussed the influence of Samoan lifestyle (*fa' aSamoa*) on cancer prevention practices. Using qualitative content analysis, themes emerged from discussions with six focus groups, with a total of 60 Samoan men. These themes included the following:

1. Samoans consider *fa' aSamoa* to be an important part of Samoan life. This way of life includes traditions that the Samoan people follow. These traditions include the chief (*matai*) who is considered the head of the family (*aiga*) and village (*nu'u*). The *matai* is the one who coordinates funerals or weddings. These are considered family and village social functions (*fa' alavelave*). Other traditions include religious beliefs (*talitonuga*) and dietary habits (*mea' ai*). Church is very important to Samoans. Samoans believe illness occurs when people stray from the *fa'aSamoa* (Puaina et al., 2008).
2. Participants did not believe in the importance of preventive health services.
3. Recommendations from leaders such as the *matai* (chiefs) and *faifeau* (pastors) would improve cancer-screening practices. Although disease prevention is not a topic that is emphasized within Samoan culture, the authors suggested that Samoans would listen to what the chiefs and pastors would say about cancer screening practices (Puaina et al., 2008).

The study's sample size and its qualitative nature limit the generalizability of findings to the overall Samoan population.

Takahashi and his colleagues (2011) recommended another screening for Asians/Pacific Islanders (APIs). Hepatitis B virus (HBV) infection is prevalent among Asians/Pacific Islanders. However, the authors noted that the focus of most research is on

Asians, not on Pacific Islanders. The authors examined the findings of a community needs assessment from a convenience sample of 297 Pacific Islanders (Guamanians/Chamorros, Samoans, and Tongans) living in southern California. The study purpose was to determine Pacific Islanders' knowledge of screening and vaccination for Hepatitis B and identify what health sources they trusted for this information. The researchers offered questionnaires in participants' languages of choice (English or native language). Interestingly, health information from friends was more predictive of HBV screening participation than formal health-related information. In addition, current employment was a determining factor in whether or not they would receive HBV screening. One limitation of this study was their use of a small convenience sample, making the multivariate analysis results inconclusive (Takahashi et al., 2011).

Similarly, Levy-Storms and Lubben (2006) examined influences on health among older Samoan women. Specifically, they described how family and non-family social networks influenced health promotion behaviors in three age groups (50 to 59 years, 60 to 69 years, and 70+ years). Using a cross-sectional survey design, the researchers interviewed a random sample of 290 migrant Samoan women who attend Samoan churches in Los Angeles County. Measures included questions regarding overall health status, mental health, physical health, preventive health behaviors, background characteristics (e.g., age, education, employment history, and health knowledge and health beliefs), acculturation and access, and social support networks.

Using multivariate logistic regression analysis, the authors found that family positively affected chronic-disease-related health behaviors. Samoan women 70 years of age and older were more likely to get blood pressure screenings and diabetic screenings,

but were less likely to get a Pap smear or a mammogram than younger women. Findings also indicated that older Samoan women would not add salt to their diet, but younger women would add salt. Conversely, older Samoan women would not have mammograms but the younger women would (Levy-Storms & Lubben, 2006).

Non-family members positively affected lifestyle-related health behaviors. For example, Samoan women would exercise and try to lose weight as a result of non-family influences. There were no differences between the 50 to 59 and 60 to 69 year age groups, except in losing weight. The authors also reported Samoan women thought there was no problem with their weight. These women perceived increased weight as a sign of good health and wealth. One limitation of this study was that the health behaviors were not measured in detail (Levy-Storms & Lubben, 2006).

Asian Studies of Health Literacy and Health Promotion

Previous research has examined the relationship of health literacy to health promotion but in different populations. In a cross-sectional survey, Chang (2010) explored the relationship of health literacy, self-reported health status, and health promoting behaviors in a purposive sample of 816 male and 781 female Taiwanese high school students. Methods included a demographic questionnaire addressing how they “felt” about their current health status and if they had been diagnosed with any disease. Chang measured health literacy rates using the Chinese version (short form) of the Test of Functional Health Literacy in Adolescents (c-sTOFHLAd) and measured health promoting behaviors using a Chinese translation of the Health Promotion Lifestyle Profile (HPLP). The Cronbach's alpha for the HPLP was 0.95 demonstrating a high level of internal consistency. Cronbach's alphas for the six subscales (self-actualization, health

responsibility, exercise, nutrition, interpersonal support, and stress management) ranged from 0.80 to 0.91 (Chang).

Study results indicated that Taiwanese high school students with low health literacy had lower scores on health-promoting behaviors in areas of nutrition and interpersonal relations. However, this study also showed that there was no statistically significant difference between those with high or low health literacy in the areas of exercise, stress management, health responsibility, and self-actualization. Limitations of this study included a purposive sample of high school students, therefore possibly not reflecting diversity of health literacy levels. Chang also noted that a longitudinal study is needed to look at how health literacy affects health behaviors in students of various ages. Chang concluded that it is imperative to include health literacy in health education programs to encourage health-promoting behaviors among high school students.

Brown, Teufel, and Birch (2007) also looked at health literacy, perception of health, and health promoting behaviors in 9- to 13-year-old students ($n=1178$) who attended eleven health education centers in seven states (Illinois, Indiana, Michigan, North Carolina, Ohio, Pennsylvania, and Wisconsin). These researchers asked students their age, gender, and eight additional questions regarding health literacy. Students entered their responses using electronic keypads (Brown et al., 2007). The authors found students had difficulty understanding information and felt that there was not much they could do to improve their health. Therefore, after instruction on a health-related topic, students were unmotivated to follow health recommendations.

Limitations of this study were that sampling was nonrandom, limiting the generalizability of results. Whites had greater representation than Asian/Pacific Islanders.

Future research must explore why adolescents think health information is difficult to understand and look at sources where they obtain health information (Brown et al., 2007). Future research should look at Samoan adolescents and their perceptions of health and seek explanations for high obesity rates.

Wu and Pender (2002) looked at Pender's Health Promotion Model and physical activity in Taiwanese adolescents. These researchers mentioned an example of competing demands related to physical activity in Taiwanese adolescents. These Taiwanese adolescents had little control when they wanted to participate in physical activity. When their parents or any authority figure would request something, Taiwanese adolescents had to forgo their activities and do what their elders wanted them to do first. Therefore, Wu and Pender (2002) reported that these outside demands competed with students' participation in physical activity. This study also noted that strengthening of self-efficacy in Taiwanese adolescents is needed, so they can feel confident in participating in physical activity. A limitation of this study was the cross-sectional data; a longitudinal study was recommended to look at strategies to increase physical activity in this population (Wu & Pender, 2002). Future studies should look at the Samoan population and the factors that influence their participation in physical activity.

Conclusion

This chapter looked at the review of the literature regarding the definitions of health literacy, information on the prevalence and consequences of limited health literacy in Asian American Native Hawaiian Pacific Islanders (AANHPIs) and Samoans and the overall health status of AANHPIs in general, and specifically of the Samoan population. Asian population studies that used Pender's Health Promotion model were reviewed. The

review of the literature showed that overall health literacy is low and that Samoans have a variety of health problems (e.g. cardiovascular disease, obesity). However, data are too often aggregated. Research with other Asian populations indicated that health promotion and health literacy are linked, but there is limited data for the Samoan population.

Chapter 3

Methods

The purpose of this research study is to examine the relationships between health literacy, health promotion behaviors, and selected patient characteristics in a Samoan population living in southern California. This chapter will present the research methodology, including the research design, sampling plan (sample, sample size, setting), data collection measures, and procedures and plan for data analysis. Protection of human subjects is also addressed.

Research Questions

The research questions for this study are as follows:

1. What is the level of health literacy in a Samoan population living in southern California?
2. What are the relationships among health literacy, health promotion behaviors, and selected participant characteristics (age, gender, marital status, educational level, household income, and employment) in a Samoan population living in southern California?

Design

A descriptive cross-sectional correlational design will be used for the proposed study. This quantitative study will use a non-experimental design because no treatments or changes will be implemented (Polit & Beck, 2006). It is considered non-experimental because health literacy, one of the independent variables, will not be manipulated. A descriptive correlational study will describe variables and relationships between health literacy and health promotion behaviors in a Samoan population in southern California.

Setting and sample. The study will take place at a church in southern Orange County, California. This church was chosen because they have a large Samoan population. Samoan attendees number between 50 and 100 people. Access to the population will be gained first from the priest in charge of the church. A letter of support which grants permission to collect data will be obtained. It will be stressed that no disruption of church-related activities will occur.

Recruiting strategies. The principal investigator (PI) will hand out a flyer (Appendix A) at the church explaining the study. Participants who want to be in the study and who meet the inclusion criteria will contact the PI by telephone. A power analysis was conducted to determine the appropriate sample size. To obtain a smaller sampling error and statistical significance, a larger sample size will be utilized (Polit & Beck, 2006). The level of significance or p value is set at 0.05 to decrease the chances of a Type I error. Power of 80% will decrease the chance of a Type II error. Cohen's formula for calculating sample size defines a moderate effect size as an R^2 of 0.13 (Munro, 2005). A convenience sample size of 125 participants will permit testing for statistical significance and reduce the chances for a Type I or Type II error (Polit & Beck, 2006).

To account for attrition, a sample of 155 persons will be recruited.

Subject inclusion/exclusion criteria. Inclusion criteria for study subjects are as follows:

1. Female or male Samoans living in southern California,
2. Over 18 years of age,
3. Able to speak English or comprehend directions from translators,
4. Willing to participate in all aspects of the research study including completion and submission of questionnaires, study visits, and telephone calls.

Exclusion criteria include: receiving treatment for psychiatric disorders other than mood or anxiety disorders or inability to comprehend or understand directions, even with translators.

Data collection procedures. After giving informed written consent (Appendix B), the participants will complete the Demographic Data Questionnaire (Appendix C), the short form of the TOFHLA (s-TOFHLA) (Appendix D) and the Health Promoting Lifestyle Profile (HPLP-II) (Appendix E). The Demographic Data Questionnaire (Appendix C) was adapted from the US Census Bureau (2010) and identifies individual characteristics describing the sample. The questionnaire consists of seven items addressing age, gender, marital status, educational level, household income, and employment.

Short-form Test of Functional Health Literacy in Adults (s-TOFHLA). The short Test of Functional Health Literacy in Adults (s-TOFHLA) (Appendix D) is an abbreviated form of the Test of Functional Health Literacy (TOFHLA), a test developed by Parker and colleagues (1995) to measure functional health literacy levels. The s-TOFHLA was created by Baker and colleagues in 1999 and consists of four numeracy items and two reading passages, decreased from the 17 multiple-choice numeracy items and three reading passages in the TOFHLA. The administration time for the s-TOFHLA was also reduced to 7 minutes instead of 22 minutes (Baker, Williams, Parker, Gazmararian, & Nurss, 1999). Participants will not be informed that this is a timed test and when 7 minutes have elapsed, they will be told to stop taking the test (Nurss, Parker, Williams, & Baker, 2001). The s-TOFHLA also eliminates the need for visual acuity screening and will be administered using the large print version, in 14 point font (Nurss et al., 2001).

The s-TOFHLA is scored on a scale of 0 to 36. Participants are categorized as having adequate health literacy if the s-TOFHLA score is 23–36, marginal health literacy if it is 17–22, and inadequate health literacy if the score is 0–16 (Morris, MacLean, & Littenberg, 2006). Numeracy items address whether or not participants can read a prescription. The timed reading comprehension tests use the modified Cloze procedure, a test used to measure understanding of the material. Participants will read sentences that have missing words and choose which of four words presented would fit best in the sentence. They will circle the letter (either a, b, c, or d) in front of the word they feel would fit the best.

Baker et al. (1999) noted that the reliability and validity of the s-TOFHLA is

similar to the TOFHLA, but it takes less time to administer. Numerous studies have demonstrated that the s-TOFHLA is a reliable and valid instrument (Morris et al., 2006). This instrument has a Cronbach's alpha of 0.98, which shows high internal consistency (Baker et al., 1999; Morris et al., 2006). Also, Cronbach's alpha coefficients will be used to determine the internal consistency reliability of the s-TOFHLA in this population and compare this with that reported in previous studies.

Health promotion behaviors. The Health Promotion Lifestyle Profile II (HPLP-II) instrument (Appendix E), based upon the Health Promotion Model (revised) by Pender and colleagues (2006), will be used to measure health promotion behaviors. Developed initially in 1987 as the Health Promoting Lifestyle Profile (HPLP) by Pender, the instrument included seven subscales that predicted health-promoting behaviors (Walker, Sechrist, & Pender, 1987).

In 1996, the HPLP was revised to six subscales and became the HPLP II. The six subscales include physical activity, spiritual growth, health responsibility, interpersonal relations, nutrition, and stress management (Walker & Hill-Polrecky, 1996). This is a self-administered questionnaire including 52 items on an ordinal scale. A Likert-type scale, scored from 1 to 4 (Never [N] =1, Sometimes [S] =2, Often [O] =3 and Routinely [R] =4), will measure overall health-promoting lifestyle. An overall score for health promoting lifestyle will be calculated by obtaining the mean of the individual's responses to the 52 items. The six subscale scores will be obtained by calculating the mean of the participants' responses on the subscale items (Walker et al., 1987).

Higher scores indicate more health-promoting behaviors. The HPLP II will be used because it has a higher Cronbach's alpha coefficient than the previous HPLP. A

Cronbach's alpha of 0.94 demonstrated internal consistency (Carlson, 2000). Frank-Stromberg and Olsen (2004) reported that the HPLP II has high internal consistency and the Cronbach's alpha coefficient was 0.943. They also noted that the subscales had acceptable Cronbach's alpha coefficients ranging from 0.793 to 0.872.

All of the instruments will be administered by the PI in a private room at the church following informed consent. Participants will first be given the demographic questionnaire. They will check off the answers that apply to them regarding age, gender, and so forth. Next, the s-TOFHLA will be administered. The PI will provide instructions on how to fill out the s-TOFHLA as described above. Only the text passages will be shown and if participants inquire about the score columns, they will be told that they are for use in the office (Nurss et al., 2001). The HPLP-II will be administered last. Participants will be asked to circle responses of never (N), sometimes (S), often (O), or routinely (R) about their present way of life or personal habits (Walker et al., 1987).

If the participant does not read English, an interpreter will read the question to him or her in the Samoan language. Interpreters will be solicited from the church but first the interpreter must demonstrate facility in English. Data will be collected at one point in time with this cross-sectional study (Creswell, 2009). The Demographic Data Questionnaire takes about 5 to 10 minutes; the s-TOFHLA takes about 7 minutes, and the revised HPLP-II takes about 30 minutes to complete. After participants have completed all the measures, everything will be collected and put into an envelope.

Data Analysis. Data analysis will include descriptive and inferential statistics. The software package *Statistical Package for Social Sciences*, version 19 will be used to analyze the data. The statistical tests that will be used for each research question are

described below.

Question 1. What is the level of health literacy in a Samoan population living in southern California? Health literacy is the independent variable and participants will be assigned to one of the three categories, inadequate (0-16), marginal (17-22), or adequate (23-36) health literacy based on the results of the s-TOFHLA. Descriptive statistics will examine the frequency distributions, percentages, means, and standard deviations of the variables (Polit & Beck, 2006).

Question 2. What are the relationships among health literacy, health promotion behaviors, and selected patient characteristics (age, gender, marital status, educational level, household income, and employment) in a Samoan population in southern California? Descriptive statistics will determine the frequency distributions, percentages, mean, and standard deviation for patient characteristics. These characteristics include (a) gender, (b), marital status, (c) educational level, (d) household income, and (e) employment. Sociodemographic differences (age, gender, etc.) between the three health literacy groups (inadequate, marginal, and adequate) will be determined using chi square (Munro, 2005).

Multiple linear regression will be used to examine the association of health literacy and demographic variables (e.g., gender, marital status, educational level, household income, and employment) with health promotion. For the regression analysis, two dummy variables will be created for health literacy (i.e., inadequate vs. adequate health literacy, marginal vs. adequate health literacy). Dummy variables will also be created for categorical demographic variables as required.

Protection of Human Subjects

Ethical considerations will be addressed. Participants will not be put at risk and will be treated with respect (Creswell, 2009). Institutional Review Board (IRB) approval will be obtained from the University of San Diego (USD). This will be done in compliance with the institution's ethical standards and federal regulations to protect human subjects' right. The IRB for USD will receive an information sheet about the study for approval. Also, the PI will obtain a letter on official letterhead from the priest at the church granting permission to collect data.

After receiving permission, the information sheet will be posted on the bulletin board at the church. The PI will also pass out the flyers at the church following church services. Participants will be given an information sheet, and then, if they agree to participate, give informed written consent for this study. The individual demographic questionnaire, the s-TOFHLA, and the HPLP-II will be kept together in one packet for each participant. However, data will be coded with a random number or pseudonym. No real names will be written on the questionnaires. All questionnaires will be kept confidential and kept locked in a secure file cabinet in the PI's house. Since this study is non-experimental, there should be no risks to participants. However, the participants may find questions in questionnaires distressing. Sometimes when people are asked to think about their feelings, they feel sad or anxious. Participants will be encouraged to call the Orange County Mental Health Hotline if they want to talk to someone if they feel seriously distressed. Participants may feel shame about low health literacy and may choose not to answer questions. At any time, participants may choose to drop out of the study.

Conclusion

This chapter presented the descriptive correlational design that will be used to examine the relationships among functional health literacy, selected patient characteristics, and health promotion behaviors in a Samoan population living in southern California. The research methodology, including the sampling plan (sample, sample size, setting), data collection procedures, measures, including validity and reliability, and data analysis plan were presented. Strategies for the protection of human subjects were also addressed.

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Appendices

Appendix A
Recruitment Flyer

August 25, 2011

Dear prospective participant,

My name is Katherine Tong and I am a Registered Nurse completing a dissertation for a PhD in Nursing at the Hahn School of Nursing and Health Science at the University of San Diego. I am asking for your participation in a study I am conducting to examine the ability to read and write in English and understand information about health, and the activities Samoans do to protect or improve their health.

The purpose of this research is to look at the ability to read and write and whether or not this influences Samoans' health promoting behaviors.

If you decide to participate in this study, you will be asked to answer questions about yourself (age, gender, marital status, education, employment, and income), questions about your ability to understand health information, and about health-related activities. All of this should take about an hour. You will answer these questionnaires in a private room at the church.

Participation in this study is entirely voluntary; you do not have to participate unless you want to. If you participate, I will give you a \$15.00 Target gift card after you answer the questions. You will receive this even if you decide not to answer all the questions.

Any information you provide is strictly confidential and data collected from you will be assigned a random number. Your real name will not be used. Further information regarding confidentiality and anonymity will be provided in a consent form prior to your filling out the questionnaires. By reading and signing the consent form, you will give permission to fill out the questionnaires.

Your answers to these questionnaires are very valuable to this research and nursing. Please contact me by December 1, 2011, if possible, to arrange a time at the church to complete these questionnaires. Please contact me at (949) 525-5190 for more information or email me at ktong@sandiego.edu.

Sincerely,

Katherine Tong

Appendix B
University of San Diego
Institutional Review Board
Research Participant Consent Form

For the research study entitled:

Health Literacy and Health Promotion among Samoans in Southern California

I. Purpose of the research study

Katherine Tong is a doctoral student in the Hahn School of Nursing and Health Science at the University of San Diego. You are invited to participate in a research study she is conducting. The purpose of this research study is to explore the ability to read and understand health information and how this affects health promoting behaviors in Samoans.

II. What you will be asked to do

If you decide to be in this study, you will be asked to complete three questionnaires that ask you questions about your age, gender, marital status, education, income, and employment, your ability to read and write, and whether or not you do certain activities to improve your health. Your participation in this study will take a total of 60 minutes.

III. Foreseeable risks or discomforts

There are no foreseeable risks to participating in this study. Sometimes when people are asked to think about their feelings, they feel sad or anxious. If you feel sad or anxious while answering the questions and would like to talk to someone about your feelings at any time, you can call toll-free, 24 hours a day: Orange County Mental Health Hotline at 1-800-832-1200

IV. Benefits

While there may be no direct benefit to you from participating in this study, the indirect benefit of participating will be knowing that you helped researchers better understand why people do or do not do things to support good health.

V. Confidentiality

Any information provided and/or identifying records will remain confidential and kept in a locked file and/or password-protected computer file in the researcher's office for a minimum of five years. All data collected from you will be coded with a number or pseudonym (fake name). Your real name will not be used. The results of this research project may be made public and information quoted in professional journals and meetings, but information from this study will only be reported as a group, and not individually.

VI. Compensation

If you participate in the study, the researcher will give you a \$15 Target gift card. You will receive this compensation even if you decide not to answer all the questions.

VII. Voluntary Nature of this Research

Participation in this study is entirely voluntary. You do not have to do this, and you can refuse to answer any question or quit at any time. Deciding not to participate or not answering any of the questions will have no effect on any benefits you're entitled to, like activities at the church. **You can withdraw from this study at any time without penalty.**

VIII. Contact Information

If you have any questions about this research, you may contact either:

1) Katherine Tong

Email: ktong@sandiego.edu

Phone: (949) 525-5190

2) Dr. Mary Jo Clark

Email: clark@sandiego.edu

Phone: (619) 260-4574

I have read and understand this form, and consent to the research it describes to me. I have received a copy of this consent form for my records.

Signature of Participant

Date

Name of Participant (**Printed**)

Signature of Investigator

Date

Code number _____

Appendix C**Demographic Data Questionnaire****(Adapted from 2010 U.S. Census Bureau)**

Please answer the following questions:

Age

☐ 18-21☐ 22-34☐ 35-44☐ 45-54☐ 55-64☐ 65 and over

Gender

☐ Male☐ Female

Marital Status

☐ Single☐ Married☐ Widowed☐ Divorced☐ Separated

Educational level

☐ No schooling☐ Elementary school☐ High school☐ Some college credit, less than 1 year☐ Associate degree☐ Bachelor's degree☐ Master's degree☐ Doctoral degree

Household income

☐ Less than \$10,000☐ \$10,000 to \$19,999☐ \$20,000 to \$29,999☐ \$30,000 to \$39,999☐ \$40,000 to \$49,999

_____ \$50,000 to \$59,999
_____ \$60,000 to \$69,999
_____ \$70,000 to \$79,999
_____ \$80,000 to \$89,999
_____ \$90,000 to \$99,999
_____ \$100,000 to \$149,999
_____ \$150,000 and above

Employment

_____ Part time work
_____ Full time work
_____ Not working
_____ Retired

Appendix D

Short Test of Functional Health Literacy in Adults

Test of Functional Health Literacy in Adults

Short Test of Functional Health Literacy in Adults (STOFHLA)

STOFHLA
Large Print Version
English, 14 point font

Short Test of Functional Literacy in Adults
STOFHLA
READING COMPREHENSION

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

PREFACE THE READING COMPREHENSION EXERCISE WITH:

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

STOP AT THE END OF 7 MINUTES

PASSAGE A: X-RAY PREPARATION

PASSAGE B: MEDICAID RIGHTS AND RESPONSIBILITIES

PASSAGE A

A1	(1)	(0)
a.		
b.		
c.		
d.		

A2	(1)	(0)	A3	(1)	(0)
a.			a.		
b.			b.		
c.			c.		
d.			d.		

A4	(1)	(0)	A5	(1)	(0)
a.			a.		
b.			b.		
c.			c.		
d.			d.		

Sub-Total

PASSAGE A

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

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

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

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

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

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

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

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

A6	(1)	(0)	A7	(1)	(0)
a.			a.		
b.			b.		
c.			c.		
d.			d.		

A8	(1)	(0)	A9	(1)	(0)
a.			a.		
b.			b.		
c.			c.		
d.			d.		

A10	(1)	(0)	A11	(1)	(0)
a.			a.		
b.			b.		
c.			c.		
d.			d.		

Sub-Total

THE DAY BEFORE THE X-RAY.

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

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

with coffee or tea.

After _____, you must not _____ or drink

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

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

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

A12	(1)	(0)
a.		
b.		
c.		
d.		

A13	(1)	(0)	A14	(1)	(0)
a.			a.		
b.			b.		
c.			c.		
d.			d.		

A15	(1)	(0)	A16	(1)	(0)
a.			a.		
b.			b.		
c.			c.		
d.			d.		

Sub-Total

THE DAY OF THE X-RAY.

Do not eat _____.

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

Do not _____, even _____.

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

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

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

B17 (1) (0)

a.
b.
c.
d.

B18 (1) (0)

a.
b.
c.
d.

B19 (1) (0)

a.
b.
c.
d.

B20 (1) (0)

a.
b.
c.
d.

B21 (1) (0)

a.
b.
c.
d.

B22 (1) (0)

a.
b.
c.
d.

B23 (1) (0)

a.
b.
c.
d.

Sub-Total

PASSAGE B

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

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

I _____ to provide the county information to _____ any

a. agree	a. hide
b. probe	b. risk
c. send	c. discharge
d. gain	d. prove

statements given in this _____ and hereby give permission to

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

the _____ to get such proof. I _____ that for

a. inflammation	a. investigate
b. religion	b. entertain
c. iron	c. understand
d. county	d. establish

Medicaid I must report any _____ in my circumstances

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

B24 (1) (0)	B25 (1) (0)
a.	a.
b.	b.
c.	c.
d.	d.

B26 (1) (0)	B27 (1) (0)
a.	a.
b.	b.
c.	c.
d.	d.

B28 (1) (0)	B29 (1) (0)
a.	a.
b.	b.
c.	c.
d.	d.

B30 (1) (0)
a.
b.
c.
d.

B31 (1) (0)	B32 (1) (0)
a.	a.
b.	b.
c.	c.
d.	d.

Sub-Total

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

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

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

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

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

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

hearing by writing or _____ the county where I applied.

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

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

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

B33 (1) (0)	B34 (1) (0)
a.	a.
b.	b.
c.	c.
d.	d.

B35 (1) (0)	B36 (1) (0)
a.	a.
b.	b.
c.	c.
d.	d.

READING COMPREHENSION
RAW SCORE

Sub-Total

_____ a different application form. _____, we will use

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

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

the _____ on this form to determine your _____.

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

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

(

Short Test of Functional Health Literacy in Adults (STOFHLA)

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

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

Date ____/____/____

Name _____ M ____ F

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

Hospital or Health-care Setting _____

City, State _____

Short Form Administered: ____English ____Spanish

STOFHLA - Score

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

--

Functional Health Literacy Level:

0 - 16 -- Inadequate Functional Health Literacy

17 - 22 -- Marginal Functional Health Literacy

23 - 36 -- Adequate Functional Health Literacy

July 1995
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Appendix E

Health Promotion Lifestyle Profile II (HPLP II)

LIFESTYLE PROFILE II

DIRECTIONS: This questionnaire contains statements about your *present* way of life or personal habits. Please respond to each item as accurately as possible, and try not to skip any item. Indicate the frequency with which you engage in each behavior by circling:

N for never, **S** for sometimes, **O** for often, or **R** for routinely

	NEVER	SOMETIMES	OFTEN	ROUTINELY
1. Discuss my problems and concerns with people close to me.	N	S	O	R
2. Choose a diet low in fat, saturated fat, and cholesterol.	N	S	O	R
3. Report any unusual signs or symptoms to a physician or other health professional.	N	S	O	R
4. Follow a planned exercise program.	N	S	O	R
5. Get enough sleep.	N	S	O	R
6. Feel I am growing and changing in positive ways.	N	S	O	R
7. Praise other people easily for their achievements.	N	S	O	R
8. Limit use of sugars and food containing sugar (sweets).	N	S	O	R
9. Read or watch TV programs about improving health.	N	S	O	R
10. Exercise vigorously for 20 or more minutes at least three times a week (such as brisk walking, bicycling, aerobic dancing, using a stair climber).	N	S	O	R
11. Take some time for relaxation each day.	N	S	O	R
12. Believe that my life has purpose.	N	S	O	R
13. Maintain meaningful and fulfilling relationships with others.	N	S	O	R
14. Eat 6-11 servings of bread, cereal, rice and pasta each day.	N	S	O	R
15. Question health professionals in order to understand their instructions.	N	S	O	R
16. Take part in light to moderate physical activity (such as sustained walking 30-40 minutes 5 or more times a week).	N	S	O	R
17. Accept those things in my life which I can not change.	N	S	O	R
18. Look forward to the future.	N	S	O	R
19. Spend time with close friends.	N	S	O	R
20. Eat 2-4 servings of fruit each day.	N	S	O	R
21. Get a second opinion when I question my health care provider's advice.	N	S	O	R
22. Take part in leisure-time (recreational) physical activities (such as swimming, dancing, bicycling).	N	S	O	R
23. Concentrate on pleasant thoughts at bedtime.	N	S	O	R
24. Feel content and at peace with myself.	N	S	O	R
25. Find it easy to show concern, love and warmth to others.	N	S	O	R

	NEVER	SOMETIMES	OFTEN	ROUTINELY
26. Eat 3-5 servings of vegetables each day.	N	S	O	R
27. Discuss my health concerns with health professionals.	N	S	O	R
28. Do stretching exercises at least 3 times per week.	N	S	O	R
29. Use specific methods to control my stress.	N	S	O	R
30. Work toward long-term goals in my life.	N	S	O	R
31. Touch and am touched by people I care about.	N	S	O	R
32. Eat 2-3 servings of milk, yogurt or cheese each day.	N	S	O	R
33. Inspect my body at least monthly for physical changes/danger signs.	N	S	O	R
34. Get exercise during usual daily activities (such as walking during lunch, using stairs instead of elevators, parking car away from destination and walking).	N	S	O	R
35. Balance time between work and play.	N	S	O	R
36. Find each day interesting and challenging.	N	S	O	R
37. Find ways to meet my needs for intimacy.	N	S	O	R
38. Eat only 2-3 servings from the meat, poultry, fish, dried beans, eggs, and nuts group each day.	N	S	O	R
39. Ask for information from health professionals about how to take good care of myself.	N	S	O	R
40. Check my pulse rate when exercising.	N	S	O	R
41. Practice relaxation or meditation for 15-20 minutes daily.	N	S	O	R
42. Am aware of what is important to me in life.	N	S	O	R
43. Get support from a network of caring people.	N	S	O	R
44. Read labels to identify nutrients, fats, and sodium content in packaged food.	N	S	O	R
45. Attend educational programs on personal health care.	N	S	O	R
46. Reach my target heart rate when exercising.	N	S	O	R
47. Pace myself to prevent tiredness.	N	S	O	R
48. Feel connected with some force greater than myself.	N	S	O	R
49. Settle conflicts with others through discussion and compromise.	N	S	O	R
50. Eat breakfast.	N	S	O	R
51. Seek guidance or counseling when necessary.	N	S	O	R
52. Expose myself to new experiences and challenges.	N	S	O	R

Appendix F

Letter of Support

GRACE MISSION CENTER

CHURCH OF THE NAZARENE
37th E Mountain View, Long Beach, CA 90803
E-mail: Gracemissioncenter@hotmail.com
Phone: 562-422-1845, Cell: 562-235-4298

WIN SOULS & MAKE 12 DISCIPLES

Saturday, February 04, 2012

Re: Letter of Support for Katherine Tong

To Whom It May Concern:

Church Board

Mataese Solia
Fuluula Sagale
Filipo Lesatele
Ohioto Tulaepa
Ataata M. Taula
Taulagia Keil
Feret Mose
Leo Lui
Trina Teloma
Failelei Lafaele

President/Chairman
Rev. Jaracz Lafaele

Secretary
Elisapeta Taula
Treasurer
Samasoni Sagale

My name is Jaracz Lafaele, a senior pastor and church president of the GraceMission-Center, writing on behalf of our church family here in Long Beach. We are a five year old multicultural church serving the northern side of Long Beach.

More than 150 Samoans have full membership with our church family (50% from the Islands and another 50% born and raised here in the United States).

On February 2, 2012, Katherine Tong visited us to discuss her interest in making our Samoan members the focus of her PhD research project. The meeting went well. I believe her research, if everything goes well as planned, will benefit the Samoan community greatly.

Please accept this note as a letter of support for Katherine Tong's effort. We are ready to work with her when she's ready.

I am available at any time should you wish to contact us for more information.

Sincerely,

Jaracz Lafaele
(Senior Pastor)

Permission to use HPLP II

COLLEGE OF NURSING
Community-Based Health Department

985330 Nebraska Medical Center
Omaha, NE 68198-5330
402/558-6382
Fax: 402/558-6379

Dear Colleague:

Thank you for your interest in the *Health-Promoting Lifestyle Profile II*. The original *Health-Promoting Lifestyle Profile* became available in 1987 and has been used extensively since that time. Based on our own experience and feedback from multiple users, it was revised to more accurately reflect current literature and practice and to achieve balance among the subscales. The *Health-Promoting Lifestyle Profile II* continues to measure health-promoting behavior, conceptualized as a multidimensional pattern of self-initiated actions and perceptions that serve to maintain or enhance the level of wellness, self-actualization and fulfillment of the individual. The 52-item summated behavior rating scale employs a 4-point response format to measure the frequency of self-reported health-promoting behaviors in the domains of health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations and stress management. It is appropriate for use in research within the framework of the Health Promotion Model (Pender, 1987), as well as for a variety of other purposes.

The development and psychometric evaluation of the English and Spanish language versions of the original instrument have been reported in:

- Walker, S. N., Sechrist, K. R., & Pender, N. J. (1987). The Health-Promoting Lifestyle Profile: Development and psychometric characteristics. *Nursing Research*, 36(2), 76-81.
- Walker, S. N., Volkan, K., Sechrist, K. R., & Pender, N. J. (1988). Health-promoting lifestyles of older adults: Comparisons with young and middle-aged adults, correlates and patterns. *Advances in Nursing Science*, 11(1), 76-90.
- Walker, S. N., Kerr, M. J., Pender, N. J., & Sechrist, K. R. (1990). A Spanish language version of the Health-Promoting Lifestyle Profile. *Nursing Research*, 39(5), 268-273.

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A copy of the instrument (English and Spanish versions), scoring instructions, an abstract of the psychometric findings, and a list of publications reporting research using all versions of the instrument are available for download.

Sincerely,

Susan Noble Walker, EdD, RN, FAAN
Professor Emeritus

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TEST OF FUNCTIONAL HEALTH LITERACY IN
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Manuscripts

Concept Analysis: Health Literacy

Katherine Tong, PhD, RN, CFNP

Dr. Mary Jo Clark, PhD, RN

Abstract

Health literacy is the ability to understand health information and make appropriate health decisions. Unfortunately, millions of Americans have limited health literacy. The consequences of limited health literacy, including medical errors, underutilization of preventive services, poor patient navigation, and miscommunication, have cost the health care system billions of dollars. Multiple definitions of the concept of health literacy exist; a consistent definition is needed to reduce confusion (Egbert & Nanna, 2009) and promote effective policy formulation. The attributes, model cases and related cases, antecedents, consequences, and empirical referents of health literacy, derived using Walker and Avant's method (2005) of concept analysis, are described in this paper. The concept of health literacy and its implications must be understood to support related nursing research, policy development, and practice.

Keywords: concept analysis, health literacy, nursing

Health literacy is the ability to understand health information and make appropriate health-related decisions. Unfortunately, millions of Americans have limited health literacy. In a report commissioned by the Institute of Medicine (IOM), Somers and Mahadevan (2010) concluded that only 12 % of the U.S. adult population is health literate. The IOM (2004) published a report entitled "Health Literacy: A Prescription to End Confusion," which stated that millions of Americans cannot read complex texts. Some who can read and write have difficulty understanding and following directions, for example, taking medications.

Medical errors, underutilization of preventive health care services, frequent use of emergency rooms, hospital readmissions, fragmented care/poor patient navigation, and miscommunication between patients and providers have cost the health care system billions of dollars. Somers and Mahadevan (2010) estimated the annual cost of these consequences to the U. S. economy at \$106 to \$236 billion.

Analyzing the Concept of Health Literacy

The purpose of this paper is to provide an analysis of the concept of health literacy. The concept of health literacy and implications of limited health literacy are significant and must be understood for future nursing research, policy development, and practice. Using Walker and Avant's method (2005), this paper will: (a) address uses of the concept, (b) define its attributes, (c) describe model cases and related cases, (d) identify antecedents and consequences, and (e) define empirical referents.

Identification of Uses of the Concept

In a concept analysis, one first reviews the many uses of the concept of interest (Walker & Avant, 2005). Before describing the concept of health literacy, we first need

to define the words "health" and "literacy" separately. Freedictionary.com defined health as a "state of being bodily and mentally vigorous and free from disease" (Health, n.d.a). Similarly, Merriam-Webster's online dictionary defined health as "being sound in body, mind, and spirit and free from disease and pain" (Health, n.d.b). Literacy was defined as "the ability to read and write" in freedictionary.com (Literacy, n.d.a). Merriam-Webster's online dictionary listed "reading and writing ability" but also included "knowledge about a particular subject" in the definition of literacy (Literacy, n.d.b). The thesaurus also provided synonyms for the words health and literacy but not for the concept of health literacy. Some of the synonyms for health (Health, n.d.c) included well-being, good condition, and top form. The thesaurus provided synonyms for the word literacy, which included "articulacy, education, knowledge, learning and proficiency" (Literacy, n.d.c).

Similar definitions were provided for the combined concept of "health literacy." Health literacy was defined in freedictionary.com (Health literacy, n.d.) as the "ability to understand and process health information to make effective health-related decisions, take medications, and follow health-related directions." "Taber's Cyclopedic Medical Dictionary" (Venes, 2009) had a similar definition but included "health promotion and effective communication." Providers must enable patients to properly access, understand, and use health information to engage in health promotion behaviors.

The concept of health literacy first appeared in the literature in the mid 1970s with Simonds's discussion of health education and health literacy for all U. S. students (Oldfield & Dreher, 2010). Varying definitions of health literacy exist in the literature, and Egbert and Nanna (2009) reported confusion regarding the term. They maintained that a consistent definition is needed to support related research, policy development, and

practice. Peerson and Saunders (2009) also reported a lack of consensus on the definition of health literacy but stressed that health literacy is a "very complex thing to measure and to influence" (p. 292).

Egbert and Nanna (2009) addressed definitions of health literacy proposed by the World Health Organization (WHO) and the American Medical Association (AMA). WHO (1998) characterized health literacy as "the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health" (p. 10). The AMA (1999) described health literacy as "a constellation of skills, including the ability to perform basic reading and numerical tasks required to function in the health care environment" (p. 553).

Ratzan and Parker defined health literacy as "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate decisions" (2000, p. vi). This definition has been adopted by "Healthy People 2010" (U. S. Department of Health and Human Services, [USDHHS], 2000), "Healthy People 2020" (USDHHS, 2010), and the Institute of Medicine (IOM, 2004). The National Network of Libraries of Medicine (n.d.) defined health literacy as "not simply the ability to read. It requires a complex of reading, listening, analytical, and decision-making skills, and the ability to apply these skills to health situations" (para 3).

Although these definitions offer a general description of health literacy, health literacy means more than reading brochures, making appointments, or taking medications (Nutbeam, 2008). People must understand available health information and be empowered to make appropriate health-related decisions. Moreover, Nutbeam

characterized health literacy as either a risk or an asset, and emphasized the importance of identifying those at risk for limited health literacy and assessing health literacy levels using screening instruments, such as the Test of Functional Health Literacy in Adults (TOFHLA). Appropriate access to health care services and effective communication between health care providers and patients can then occur. Nutbeam stressed that as an asset, those with adequate health literacy levels make better health-related decisions than those without.

Defining Attributes of the Concept

Walker and Avant (2005) stated that “determining the defining attributes is the heart of concept analysis” (p. 68). These attributes are the characteristics of the concept which are stressed repeatedly in the review of the literature. The defining attributes of the concept of health literacy that appear consistently include basic numeracy and reading skills, comprehension skills, knowledge, and the ability to make appropriate health-related decisions.

Identification of Model Cases

The concept of health literacy can be illustrated with model cases or examples that incorporate all of its defining attributes (Walker & Avant, 2005). For example, JT, a 45-year-old Japanese female, exercises by walking a couple of times a week. She has a bachelor's degree in math and a master's degree in education. Currently, she works as a high school math teacher. Over the years, she gained some weight and acknowledged that she was not following a healthy diet. She had headaches and attributed them to reading a lot and working at the high school. Her blood pressure was high when she went to see her physician. Her physician prescribed an antihypertensive medication for her and

recommended that she increase her exercise and eat a healthier diet, lower in fat, and cholesterol. JT is always reading and receiving information regarding healthy habits. JT increased her exercise regimen and followed the diet that her physician recommended. She took her blood pressure medication once a day as recommended. During her follow-up visits with the physician, she discussed any questions she had and told him what she was doing. The physician was pleased to see that her blood pressure was lower at follow-up visits. Both JT and her physician were happy that she had lost five pounds at her most recent visit.

JT demonstrated all of the defining attributes of adequate health literacy. JT acknowledged that she had a problem and sought medical care from her physician, which demonstrated that she was able to make appropriate health-related decisions. An avid reader, she always sought out information to improve her health and thus reflects the attribute of knowledge. Her ability to read what was on her medication bottle, how many pills to take, and how many times she should take her medications demonstrated numeracy and reading skills. At her follow-up visit, JT exhibited the signs (lower blood pressure and five pound weight loss) that she has knowledge and comprehension skills by following her physician's recommendations on diet, exercise, and medications.

Identification of Additional Cases

It is sometimes difficult to define a concept because it overlaps with other related or similar concepts (Walker & Avant, 2005). Examination of two other types of cases, borderline and related cases, may serve to help in identifying instances of the concept of interest. Borderline cases incorporate some of the defining attributes but not all of them. The following is an example of a borderline case. SB, a 55-year-old African American

male accountant, has a family history of colon cancer. His father died at a young age from colon cancer. SB saw his physician only occasionally. For example, he needed a follow-up visit with his physician to remove stitches after he cut his hand slicing vegetables in the kitchen. He mentioned to his physician that he noticed blood in his stool on several occasions. His physician ordered a colonoscopy. Unfortunately, on the day of the colonoscopy, SB was sent home without having it done because he was not adequately prepared for the exam. SB did not understand the directions on how to prepare for the colonoscopy and the nurses commented that they could not understand how someone with his intelligence could not adequately follow the directions. The nurses went over the directions with him. However, SB was upset because he did not have the colonoscopy and decided that it was not worth returning to have it done. He could not afford to lose the time from work. Even though SB is literate, he does not have adequate health literacy skills. He demonstrated that he does not have the ability to make good health-related decisions. He was able to read, but not comprehend, the colonoscopy instructions and lacked an understanding of the importance of the test.

AK, a 75-year-old Hispanic seamstress, was diagnosed with Type 2 diabetes several years ago. She respects her physician and says, "I do everything he tells me to do." She rarely misses an appointment with him, takes Metformin 500 mg by mouth twice a day, and checks her sugar every day. Following her physician's recommendations, she tries to walk every day for about 30 minutes to one hour and watches what she eats carefully. However, she has not read the diabetes related materials given to her by the medical office and does not understand the reasons for the treatment. Therefore, this case exemplifies a related concept, compliance, rather than health literacy.

Contrary cases also help to identify a concept by providing an example of something that is not an instance of the concept (Walker & Avant, 2005). The following excerpt provides an example of a contrary case for the concept of health literacy.

RL, a 92-year-old Caucasian man with a history of alcohol abuse, was taken to the emergency room because he complained of chest pain and shortness of breath. He dropped out of school in 5th grade and does not read or write well, including not being able to calculate simple math problems. Unfortunately, he has no communication with family members and has been homeless for years. RL nodded his head yes when the nurses asked him if he understood what they were telling him about his medications. But he did not. He was embarrassed to admit he did not understand and therefore, did not ask questions and left the emergency room overwhelmed. He did not remember what they told him to do and did not understand or comprehend the directions on the medication bottles. RL continued to drink heavily and subsequently took more than the recommended dosage of his blood pressure medication and was admitted to the hospital. RL does not demonstrate the defining attributes of health literacy. He demonstrates poor numeracy and reading skills and poor comprehension skills by taking the wrong dosage of medications. He makes poor health-related decisions by continuing to drink alcohol and not engaging in health promotion behaviors.

Identification of Antecedents and Consequences

Walker and Avant (2005) stated that antecedents "are those events or incidents that must occur prior to the occurrence of the concept" (p. 73). Basic literacy and a health-related experience are antecedents to health literacy. A person must be able to read, write a simple sentence, and do basic math to be considered literate. Effective

communication skills, which include the ability to speak and listen, are another component of literacy. The 2003 National Assessment of Adult Literacy (NAAL) defined literacy as "the ability to use printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential" (National Center for Education Statistics, n.d.). A person must have knowledge or understand what he or she reads. People who do not have basic literacy will not comprehend health-related information or understand what their provider is telling them. In addition, a person has to have a health-related experience before health literacy is relevant. The following example elucidates the antecedents of health literacy.

PC, a 21-year-old Malaysian female, states she has never visited a physician. Overall, PC was healthy growing up and her mother took care of her whenever she had a health-related problem. Shortly after PC finished high school, her mother died of breast cancer. Her father sent her to the United States to get a college education. PC was excited to learn that she was accepted into a nursing program to become a registered nurse (RN). She demonstrates basic literacy skills because she is able to read, write, and do basic math skills. She loves to read about health-related problems, for example, women's health issues. A month ago, PC noticed a lump on her right breast, which was getting larger and painful. PC knew she needed to see someone because of her mother's history with breast cancer. She told the receptionist why she needed to be seen and an appointment was scheduled for her to see a nurse practitioner (NP). PC was able to navigate the health care system because she had basic literacy. She was nervous about her first health-related experience because she did not know what to expect. However, PC felt better after she met with the NP. PC listened and her questions were answered. She followed the NP's

recommendations, which included a breast ultrasound, performing a monthly self-breast exam, and when to report abnormal findings. Therefore, basic literacy and a health-related experience are antecedents to health literacy. Without these antecedents, one cannot have health literacy.

Consequences occur as a result of the occurrence of the concept (Walker & Avant, 2005). Increased health-care knowledge, reduced medical errors, utilization of preventive health care services, less use of emergency rooms, fewer hospital readmissions, better patient navigation, and improved communication between patients and providers are consequences of adequate health literacy. JT, the 45-year-old Japanese female mentioned earlier, exemplifies the consequences of adequate health literacy. She acknowledged her headache was not normal and realized she needed an evaluation by her physician. She knew how to navigate the health care system by calling and setting up an appointment to see her physician. During her appointments, JT asked questions and told her physician how she was doing, which demonstrated effective communication. She followed his recommendations for exercise and diet, and subsequently lowered her blood pressure and lost weight. JT demonstrated that she can read and follow directions, for example, taking medications, which reduced the possibility of her making a medication error. She understood what she needed to do to improve her health, which showed adequate health literacy.

Definition of Empirical Referents

The final step in concept analysis is identifying empirical referents which "demonstrate the occurrence of the concept itself" (Walker & Avant, 2005, p. 73). Empirical referents for health literacy reflect approaches to measurement of the concept.

The National Adult Literacy Survey (NALS) first assessed adult literacy in English in 1992 in over 26,000 adults (Paasche-Orlow, Parker, Gazmararian, Nielsen-Bohlman, & Rudd, 2005). The National Center for Education Statistics, incorporated questions from the 1992 NALS survey in its 2003 National Assessment of Adult Literacy (NAAL), which included an evaluation of functional health literacy (Cutulli & Bennett, 2009). The NAAL examined clinical tasks (e.g., taking medications), preventive tasks (e.g., why mammography screening is important), and navigational tasks (e.g., how to find the radiology department and how to interpret the bill) (White, 2008). The NAAL also assessed how well people could read and understand health-related information by evaluating prose literacy (e.g., documents and instructional materials), document literacy (e.g. the individual's ability to read a nutrition label), and quantitative literacy (e.g., the individual's ability to calculate medication dosages) (Cutulli & Bennett, 2009; White, 2008).

Several instruments measure health literacy levels including the Rapid Estimate of Adult Literacy in Medicine Revised (REALM-R), the Wide Range Achievement Test-Revised (WRAT- R), the Newest Vital Sign (NVS), the Test of Functional Health Literacy in Adults (TOFHLA) and the short form of the TOFHLA (s-TOFHLA). The REALM-R is a shortened version of the REALM, an 8-item instrument that measures literacy levels, evaluating how well adults can read in a medical setting. The REALM-R takes less than 3 minutes to administer, but it does not assess a person's quantitative literacy or numeracy (Weiss et al., 2005).

The WRAT-R is a 57-item test that takes 5 minutes or less to administer and tests for reading, spelling, and mathematical ability. A limitation of the WRAT-R is that it is

not available in Spanish (Bass, Wilson, & Griffith, 2003; Parker, Baker, Williams, & Nurss, 1995). The NVS takes 3 minutes to administer and consists of a nutrition label with 6 questions to assess literacy and numeracy. It is available in both English and Spanish. However, Weiss and colleagues noted that the Spanish version lacked the validity of the English version.

Parker and colleagues (1995) developed the Test of Functional Health Literacy in Adults (TOFHLA) instrument to measure patients' functional health literacy. The s-TOFHLA, developed by Baker, Williams, Parker, Gazmararian, and Nurss (1999), is an abbreviated form of the TOFHLA). The s-TOFHLA consists of two reading passages, reduced from 17 multiple-choice numeracy items and three reading passages in the original TOFHLA. The administration time for the s-TOFHLA was also reduced from 22 minutes to 7 minutes. The s-TOFHLA is scored on a scale of 0 to 36, with s-TOFHLA scores of 23 to 36 indicating adequate health literacy, 17 to 22 indicating marginal health literacy, and 0 to 16 indicating inadequate health literacy (Baker et al.). Frank-Stromberg and Olsen (2004) noted that the s-TOFHLA is most often used in evaluating health literacy in health care research because of its sound psychometric characteristics.

Implications for Research, Practice, and Policy Formation

Multiple definitions of health literacy cause confusion and make it difficult to identify those with limited health literacy. Doak, Doak, and Root (1996) noted that one cannot tell from someone's appearance whether or not the person has limited health literacy. People who have limited health literacy "may be poor or affluent, native born or immigrant and they can be found everywhere" (Doak et al., p. 1). The review of the literature also indicated that years of education do not correlate with adequate health

literacy, that those who can function at work or at home may have marginal or inadequate health literacy levels (National Network of Libraries of Medicine, n.d.; Paasche-Orlow et al., 2005).

Patients with limited health literacy are often ashamed to admit their deficiency (Wolf et al., 2007), making it difficult for providers to recognize people with low health literacy. Rogers and colleagues (Rogers, Wallace, & Weiss, 2006) studied the ability of physicians to tell whether or not patients understood information provided on cancer prevention and found they were not able to effectively identify those with limited health literacy.

Therefore, further research is needed to understand how to identify those with limited health literacy, how to get people to admit they have problems reading or understanding information, and how health care professionals can better identify and assist those with limited health literacy. A consistent definition of health literacy and better screening instruments are needed.

Policies requiring health care organizations to educate providers regarding limited health literacy and its prevalence and consequences should be mandated. Furthermore, these policies should outline solutions to decrease limited health literacy levels within the populations served. For example, incorporation of health literacy strategies could be made an element of Joint Commission accreditation of health care institutions and of Medicare and Medicaid approval processes.

Moreover, health care professionals need to stay current on and support legislative initiatives related to health literacy. In caring for individual patients, providers can also employ strategies, such as the teach-back method, to minimize the potential negative

consequences of low health literacy. Policy initiatives are also needed to promote incorporation of content related to health literacy in professional education curricula.

Conclusion

Improving health literacy can lead to better health outcomes and improve social, economic and environmental factors influencing health. Villaire and Mayer (2009) noted that health literacy is a shared responsibility of patients and health care professionals and that better understanding translates into better outcomes and, ultimately, lower costs.

Therefore, health care professionals, including nurses, need to better understand the concept of health literacy, including its definitions, prevalence, implications, and the instruments used to measure health literacy levels. Nurses can help address issues of limited health literacy since they are the ones providing direct care to patients. They can determine when patients have problems deciphering health-related information (Baur, 2011) and take steps to enhance understanding. Further nursing research, policy development, and practice interventions are needed to reverse the consequences of limited health literacy.

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Creating a Health Literate America: Is Change Possible?

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Abstract

Health literacy is the ability to understand health information and make appropriate health-related decisions. Unfortunately, millions of Americans have limited health literacy. The consequences of limited health literacy, including medical errors, underutilization of preventive services, poor patient navigation, and miscommunication, have cost the health care system billions of dollars. By addressing the issues of limited health literacy, organizations can help decrease health disparities, reduce health care costs, and improve health for all Americans.

Keywords: Limited health literacy, health disparities

Creating a Health Literate America: Is Change Possible?

The prevalence and consequences of limited health literacy (LHL) are well documented. Peerson and Saunders (2009) noted that issues of health literacy need to be addressed; otherwise, health disparities and inequalities will continue to exist. Why is LHL a continuing problem in the United States and worldwide despite recommended solutions and policies? Parker, Ratzan, and Lurie (2003) stated that "creating a health-literate America may not be easy, but it is the right goal for health policy" (p. 147). In the following paragraphs, the link between limited health literacy, health disparities, and implications for health policy are discussed.

Defining Health Literacy

The concept of health literacy first appeared in the literature in the mid 1970s with Simonds's discussion of health education and health literacy for all U. S. students (Oldfield & Dreher, 2010). Varying definitions of health literacy exist in the literature, and Egbert and Nanna (2009) reported confusion regarding the term. They maintained that a consistent definition is needed to support related research, policy development, and practice. Peerson and Saunders (2009) also reported a lack of consensus on the definition of health literacy but stressed that health literacy is a "very complex thing to measure and to influence" (p. 292).

Egbert and Nanna (2009) addressed definitions of health literacy proposed by the World Health Organization (WHO) and the American Medical Association (AMA). WHO (1998) characterized health literacy as "the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health" (p. 10). The AMA (1999)

described health literacy as "a constellation of skills, including the ability to perform basic reading and numerical tasks required to function in the health care environment" (p. 553). The 2003 National Assessment of Adult Literacy (NAAL), defined health literacy "as the ability of US adults to use printed and written health-related information to function in society, to achieve one's goals, and to develop one's knowledge and potential" (White, 2008, p. viii).

Ratzan and Parker defined health literacy as "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate decisions" (2000, p. vi). This definition has been adopted by "Healthy People 2010" (U. S. Department of Health and Human Services, [USDHHS], 2000), "Healthy People 2020" (USDHHS, 2010), and the Institute of Medicine (IOM, 2004).

Although these definitions offer a general description of health literacy, health literacy means more than reading brochures, making appointments, or taking medications (Nutbeam, 2008). People must understand available health information and be empowered to make appropriate health-related decisions. Moreover, Nutbeam characterized health literacy as either a risk or an asset, and asserted the importance of identifying those at risk for limited health literacy and assessing health literacy levels using screening tools, such as the Test of Functional Health Literacy in Adults (TOFHLA). Appropriate access to health care services and effective communication between health care providers and patients can then occur. Nutbeam stressed that as an asset, those with adequate health literacy levels make better health-related decisions than those who do not.

It is difficult, however, to identify persons with limited health literacy. Doak, Doak, and Root (1996) noted that one cannot tell from someone's appearance whether or not the person has limited health literacy. People who have limited health literacy "may be poor or affluent, native born or immigrant and they can be found everywhere" (Doak et al., p. 1). Although most Americans know how to navigate geographically, many lack the skills to manage their health and navigate the health care system because of limited health literacy (Ferguson & Pawlak, 2011).

The stigma of shame is another problem related to limited health literacy. Shame prevents people from admitting they cannot read, write, or understand or follow directions (Institute of Medicine, [IOM], 2004). Some patients are embarrassed, so they try to hide the fact that they cannot read or write. Amazingly, some people never tell their spouses, children, or health care providers about their limited health literacy (Wolf et al., 2007). Cornett (2009) noted that some people with limited health literacy are verbally articulate, thus, it may be difficult to see that a problem exists. Some patients with limited health literacy may give excuses, such as having forgotten their glasses or being too tired to read the health forms rather than admit that they cannot read.

Prevalence of Limited Health Literacy

Although the concept of health literacy was first discussed in the mid 1970s-, (Oldfield & Dreher, 2010), levels of health literacy in the U.S. population were not measured until the 1990s (Parker & Ratzan, 2010). The 1992 National Adult Literacy Survey (NALS) was the first effort to measure adult literacy in English in the United States (Nutbeam, 2008). The NALS assessed English language literacy in over 26,000 adults and concluded that half of them had limited literacy (Paasche-Orlow, Parker,

Gazmararian, Nielsen-Bohlman, & Rudd, 2005). The National Center for Education Statistics, incorporated questions from the 1992 NALS survey in its 2003 National Assessment of Adult Literacy (NAAL), which included an evaluation of functional health literacy (Cutulli & Bennett, 2009). The NAAL consisted of a demographic questionnaire and 152 literacy tasks, including 28 health-related tasks administered to 19,000 participants from communities and institutions in six states (Kentucky, Maryland, Massachusetts, Missouri, New York, and Oklahoma) (Cutulli & Bennett, 2009).

The NAAL split the 28 health-related tasks into three areas: clinical tasks (e.g., taking medications), preventive tasks (e.g., why mammography screening is important), and navigational tasks (e.g., how to find the radiology department and how to interpret the bill) (White, 2008). The NAAL assessed how well people could read and understand health-related information by evaluating prose, document, and quantitative literacy (Cutulli & Bennett, 2009). Examples of prose literacy included brochures and instructional materials. Document literacy referred to an individual's ability to read, for example, a nutrition label. Finally, quantitative literacy reflected, for example, whether individuals could calculate medication dosages. Due to the tedious nature of the study, the NAAL divided the 152 tasks into 13 blocks and participants only completed 40 tasks (Cutulli & Bennett, 2009; White, 2008).

The 2003 National Assessment of Adult Literacy indicated that some people lack the skills to process information to make decisions regarding their health (U. S. Department of Education, 2003). For example, written information, such as brochures, are too challenging for some people to understand because they are written at a ninth grade level (Cutulli & Bennett, 2009; IOM, 2004). Some people cannot read pamphlets

and, therefore, are not getting their message (Doak et al., 1996). Those with low health literacy skills failed to seek out printed or nonprint sources of health care information. The 2003 NAAL concluded that many adults are not health literate and would have difficulty navigating the existing health care system (Cutulli & Bennett, 2009).

The IOM (2004) also published a report entitled "Health literacy: A Prescription to End Confusion" that stated that millions of Americans cannot read complex texts. Some who can read and write have difficulty understanding and following directions, for example, taking medications. In a report commissioned by the IOM, Somers and Mahadevan (2010) concluded that only 12 % of the U.S. adult population is health literate.

Consequences of Limited Health Literacy

The World Health Organization (1998) identified the consequences of limited health literacy and noted that poor literacy in general limits people's personal, social, and cultural development, and contributes to low health-related literacy. People cannot follow health promotion practices if they do not understand basic health information. Egbert and Nanna (2009) asserted that obtaining correct health information is essential, but that there are multiple challenges to obtaining this information. People can get health information from the Internet provided they have access. However, people also need to know that information on the Internet is not always reliable or correct. They can also seek information from their providers. However, challenges in accessing information are harder for those from a lower socioeconomic status, or minority groups, those who are less educated, and those over 65 years of age. The researchers identified ways to improve communication with people with LHL. For example, using plain language or teach-back

methods can increase understanding of information (Egbert & Nanna).

Consequences of LHL can also include medication errors. For example, patients can misunderstand prescription warning labels (PWLs) because of limited health literacy. A qualitative study examining reasons why patients misunderstand warning labels found that the PWLs were misinterpreted by the majority of those surveyed who had low health literacy skills. The investigators noted that "multiple-step instructions, reading difficulty of text, the use of icons, the use of color, and message clarity were the common causes of label misinterpretation" (Wolf, Davis, Tilson, Bass, & Parker, 2006, p. 1054). They stressed the importance of developing warning labels in different languages.

Problems occur when providers fail to recognize those with limited health literacy. Patients may suffer dire consequences when they do not understand information received from health care providers. Rogers, Wallace, and Weiss (2006) examined family physicians' abilities to identify patients with low literacy skills. Administration of the short form of the Test of Functional Health Literacy (S-TOFHLA) indicated that 24% of the patients had limited health literacy. The physicians, however, were not able to identify those with low literacy and, in fact, thought these patients understood the information provided. It is imperative that providers make sure that all patients understand health information so they can make informed decisions. This study involved Caucasians and African-Americans. Further studies should look at other racial and ethnic groups.

People are jeopardizing their health when they do not admit that they cannot read or understand health information. Parikh and colleagues (1996) investigated feelings of shame attached to low health literacy in African-Americans. The study used a

demographic questionnaire, the Test of Functional Health Literacy in Adults (TOFHLA) and questions addressing reading difficulties and feelings of shame. Approximately 42% of participants had low health literacy levels. Those with low health literacy were more often male, over 60 years of age, and had less than a high school education. The authors found that shame prevents people from admitting they have low health literacy.

Limited health literacy can contribute to medication errors, underutilization of preventive health care services, frequent use of emergency rooms, hospital readmissions, fragmented care/poor patient navigation, and miscommunication between patients and providers (IOM, 2004; Wolf et al., 2006). Somers and Mahadevan (2010) estimated the annual cost of these consequences to the United States economy at \$106 billion to \$236 billion.

Weitz (2010) discussed medical errors made by health care professionals. These errors included giving drugs that were incompatible with each other or giving a drug to the wrong patient. As stated earlier, medical errors can also be made by patients who cannot read prescription warning labels due to limited health literacy (Wolf et al., 2006). Similarly, patients may not engage in preventive health behaviors. The patient is often blamed for not adhering to a treatment plan or blamed for his or her health care situation (Weitz, 2010), yet noncompliance may actually reflect poor understanding of instructions or treatment plans.

Consent issues, regarding whether or not subjects agreed to participate in research studies, and whether or not they understood the risks and benefits, was another area discussed by Weitz (2010). How can those with LHL understand and give informed consent? At a conference, one individual stated that she could not read. Unfortunately,

she consented to have a surgery without reading or understanding what she was signing. She was horrified to later learn that she had consented to a hysterectomy; something she would never have done had she understood what she was signing (Cordell, 2011).

Villaire and Mayer (2009) brought up an excellent point in their article entitled, *"Health Literacy: The Low-Hanging Fruit in Health Care Reform."* How can millions of Americans with limited health literacy understand their health care plan and make decisions if they lack the ability to read, write, and understand basic instructions? Villaire and Mayer also noted that health care reform should not center on cost issues or cutting services but should focus on "empowering people to use these services more efficiently" (p. 50). If people understand how to manage their own health and how to navigate the system efficiently, this could lead to better understanding, greater compliance, better outcomes, and ultimately, lower health care costs. The formula is simple, yet our health care system still expends billions of dollars in medical care due to problems resulting from limited health literacy.

Organizations Committed to Improving Health Literacy

Major goals of the National Institute of Nursing Research (NINR, 2006) and "Healthy People 2020" [USDHHS], 2010) are to eliminate existing health disparities and improve health literacy rates. In May of 2010, the National Action Plan to Improve Health Literacy was developed to provide equal access to understandable health information to promote good health (Office of Disease Prevention and Health Promotion, 2010). In order to reduce health care costs and improve health outcomes, we need better communication between providers and patients, need written materials that are understandable, and need to improve reading skills for those with limited health literacy.

Many organizations are committed to improving health literacy levels. The Agency for Health Care Research and Quality (AHRQ), the National Institutes of Health (NIH), the American Nurses Association, and the Food and Drug Administration (FDA), have all identified problems resulting from limited health literacy. AHRQ (2011) has developed a health literacy universal precautions toolkit to help others recognize those with limited health literacy. However, as studies show, limited health literacy continues throughout our country.

Policy Initiatives

Representative Thomas Sawyer, an advocate for literacy, sponsored the National Literacy Act of 1991 (H.R. 751), which was signed by President George Bush and became law. It included the following goal statement:

To enhance the literacy and basic skills of adults, to ensure that all adults in the United States acquire the basic skills necessary to function effectively and achieve the greatest possible opportunity in their work and in their lives, and to strengthen and coordinate adult literacy programs (para 1)

In addition, recognizing that government documents, for example, tax documents, were too difficult to understand, Representative Bruce Braley introduced the Plain Writing Act of 2010 (H.R. 946), which required federal agencies to write government documents in clear language. This was passed unanimously by Congress and signed by President Obama. Both of these bills addressed basic literacy and did not include provisions related to health literacy per se.

To address the issue of health literacy, Senator Norm Coleman introduced the National Health Literacy Act of 2007, a bill "to ensure that all Americans have basic

health literacy skills to function effectively as patients and health care consumers" (para 1). Unfortunately, the bill was never passed.

President Obama's 2010 Patient Protection and Affordable Care Act (ACA) will provide insurance to millions of people by 2014. The ACA includes provisions regarding health literacy but this is not a priority issue in the legislation. Only Sections 3501, 3506, 3507, and 5301 make direct references to health literacy (Somers & Mahadevan, 2010). The provision title for Section 3501 is "Health Care Delivery System Research; Quality Improvement Technical Assistance" which specifies that research addressing media and formats be made available to those with different levels of health literacy. Section 3506 addresses awarding grants and contracts to help providers educate patients with different levels of health literacy. Section 3507, "Presentation of Prescription Drug Benefit and Risk Information," would determine whether or not adding information to prescription labels and print information would benefit patients and providers. Finally, Section 5301, "Training in Family Medicine, General Internal Medicine, General Pediatrics, and Physician Assistantship," would provide grants to train providers in effective culturally competent communication with patients, and including those with low literacy levels.

The federal government has to make improving health literacy a top priority. Parker, Ratzan and Lurie (2003) discussed using pre-existing tools, for example, the Medicare Current Beneficiary Survey and the National Health Interview Survey to measure health literacy levels. Some organizations have taken steps to address limited health literacy and have started implementing strategies to increase health literacy levels. There is also a need for consensus on the definition of health literacy. Federal legislation is needed to provide solutions to increase health literacy. It is important not only to

discuss the problems associated with LHL but to act decisively to resolve problems.

Potential Solutions

As noted earlier, Simonds introduced the discussion of health education and health literacy in the mid 1970s (Oldfield & Dreher, 2010). Health literacy should start early, during elementary school. Health care professionals, such as nurses, are sometimes frustrated with policy decisions, but fail to become involved in their development. Some of their reasons for noninvolvement include time constraints, heavy workloads, and difficulties asserting their viewpoints (Aries, 2011). Nurses give patients written and verbal instructions. However, how many patients really understand what is being said to them or what is written out for them? Ludwick (2009) stated that "nurses working in clinical, educational, administrative, research, and political positions will all be needed to increase health literacy in the United States (US) and around the world" (p. 10). Therefore, it is imperative that nurses and other health care professionals get involved at the policy making level.

Health care professionals need to find solutions to decrease health disparities, promote health, and reach a consensus on how to address inadequate health literacy across all cultures. Frist (2005), however, stated that solutions to these problems should start first at the community, rather than federal level, and incorporate cultural traditions regarding health care. He stressed the importance of policies to increase health literacy levels and the need for providers to learn additional languages.

Policies are needed to make all reading materials understandable. As noted earlier, medication errors can be decreased if prescription warning labels are written in different languages. Policies are also needed that require health care organizations to

educate their employees regarding limited health literacy and its prevalence and consequences and to outline solutions to decrease limited health literacy levels within the populations served. For example, incorporation of health literacy strategies could be made an element of Joint Commission accreditation of health care institutions and of Medicare and Medicaid approval processes.

In addition, health care professionals need to stay current on and support legislative initiatives related to health literacy. In caring for individual patients, providers can also employ strategies, such as the teach-back method, to minimize the potential negative consequences of low health literacy. Policy initiatives are also needed to promote incorporation of content related to health literacy in professional education curricula.

Conclusion

Many organizations are not only committed to improving limited health literacy levels, but have recommended strategies, for example, the teach-back method, to improve communication. The IOM report, *"The Future of Nursing: Leading Change, Advancing Health,"* released in October, 2010, called for nurses to get involved in policy making and with the legislative process to promote effective changes. Nursing schools should include health literacy and strategies to improve health literacy levels in their curricula (Sand-Jecklin, Murray, Summers, & Watson, 2010). If limited health literacy is not addressed, health disparities and inequalities will continue to exist (Peerson & Saunders, 2009). We need first to identify those with limited health literacy and then design information strategies that take health literacy into account. Hopefully, this will lead to improved health outcomes for patients and lower societal costs.

As noted by Villaire and Mayer (2009), "working toward greater comprehension in health care is a shared responsibility" (p. 57). Health care professionals need to work together to first recognize those with limited health literacy and to provide solutions to increase health literacy levels. Existing health care information needs to be written at a level that patients can understand. It is vital that health care professionals are culturally appropriate when addressing peoples' language and reading skills from different cultures (Villaire & Mayer, 2009). Even though the TOFHLA is the most widely used research instrument to measure health literacy because of its psychometric characteristics, further research is needed on improving measurement of health literacy levels.

It is possible to create a health literate America. As Parker, Ratzan and Lurie (2003) noted, however, it will not be easy but is essential if we want to decrease health disparities, reduce health care costs, and improve health for all Americans.

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A Correlational Study of Health Literacy and Health Promotion Behaviors among

Samoans in Southern California

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Abstract

Limited health literacy is associated with failure to engage in health promotion behaviors. Few studies examine this relationship among Samoans. This study used a cross-sectional correlational design to determine health literacy levels and their relationship to health promoting behaviors in a southern California Samoan population.

Health literacy (Short form Test of Functional Health Literacy in Adults) and health promotion behaviors (Health Promotion Lifestyle Profile II) were measured in a convenience sample of 87 Samoans in southern California. Data analysis employed chi-square, t-test and one- way ANOVA. Significant associations were found for health literacy and demographic characteristics of employment and marital status. Significant relationships were found for the demographic characteristics of age on subscale scores for spiritual growth, marital status on physical activity, and education on overall health promotion, nutrition, spiritual growth, and interpersonal relations. There was a significant relationship between health literacy and the health promotion subscales for physical activity and interpersonal relations. Most participants were under age 65 and exhibited adequate health literacy. Further research is needed to examine the relationship of health literacy to health promotion in the older Samoan population.

Key words health literacy, health promotion, Samoans

Introduction

Health promotion is an important topic discussed in nursing schools, during health care visits, and at the national level because people need to have control over and improve their health. Pender et al. (2006) defined health promotion as "behavior motivated by a desire to actively avoid illness, detect it early, or maintain functioning within the constraints of illness" (p. 7). Health promotion is a multidimensional concept addressing wellness at individual, family, community, and societal levels. Promotion of health should start in childhood, paving the way for healthy habits that will sustain health for the rest of one's life (Mohamadian et al., 2011; Smith & Bashore, 2006).

Unfortunately, millions of dollars are spent annually on chronic disease care (Woolf et al., 2008), when preventing health problems and halting the progression to end-stage disease is preferable. While some people engage in health promoting behaviors, many do not. Reasons for not engaging in health promotion include fear, unwillingness to change habits, or lack of access to preventive health care services (Woolf et al.).

Although studies have discussed health promoting behaviors in African Americans, Hispanics, and Caucasians (Britigan et al., 2009; Egbert & Nanna, 2009; Parker & Ratzan, 2010), few studies examined health promotion behaviors in Asian American Native Hawaiian Pacific Islanders (AANHPIs), including the Samoan population (McGarvey & Seiden, 2010). The Samoan population has higher incidence rates for obesity, smoking, and alcohol consumption than the white population (Office of Minority Health, 2011) making health promotion particularly important. In part, the increased incidence of health problems in this population is the result of failure to engage

in health promotion practices.

Limited health promotion has been associated with a lack of knowledge of health promotion behaviors and underutilization of preventive health services (Centers for Disease Control & Prevention [CDC], 2009; Hughes et al., 2010). Although studies have linked health literacy to decreased health promoting behaviors in African Americans, Hispanics, and Caucasians (Britigan et al., 2009; Egbert & Nanna, 2009; Parker & Ratzan, 2010), few studies have examined those relationships in AANPHIs, including the Samoan population (McGarvey & Seiden, 2010).

Literature Review

Major goals of the National Institute of Nursing Research (NINR, 2006) and "Healthy People 2020" (U.S. Department of Health and Human Services [USDHHS], 2010) include eliminating existing health disparities and improving health literacy rates. Meeting these goals may reduce health care costs and contribute to better health outcomes. However, these goals cannot be met if people have limited health literacy. Limited health literacy contributes to medication errors, frequent use of emergency rooms, hospital readmissions, fragmented care, and miscommunication between patients and providers (Institute of Medicine [IOM], 2004; Parker et al., 2003; Wolf et al., 2006). Somers and Mahadevan (2010) estimated the annual cost of these outcomes to the U.S. economy at \$106 to \$236 billion.

In 2003, the National Assessment of Adult Literacy (U.S. Department of Education, 2003) indicated that many people lacked the skills required to make informed health-related decisions. For example, written information, such as brochures, is difficult for some people to understand because it is written at a ninth grade level (Cutulli &

Bennett, 2009; IOM, 2004). Some people cannot read pamphlets and, therefore, are not getting their intended messages (Doak et al., 1996). The National Assessment of Adult Literacy indicated that only 12% of the adult population was health literate, and approximately 77 million adults have basic or below basic health literacy levels. The IOM (2004) also published a report entitled "Health Literacy: A Prescription to End Confusion" stating that millions of Americans cannot read complex texts. Some who can read and write have difficulty understanding and following directions, for example, taking medications. Understanding and processing health information is essential to making appropriate health-related decisions. In May of 2010, the National Action Plan to Improve Health Literacy was developed to provide equal access to understandable information that promotes health (Somers & Mahadevan, 2010). Nurses have a role in achieving the goals of improved health literacy and can identify and assist patients with health literacy issues (Baur, 2011).

Purpose and Research Questions

This study was designed to address the following research questions related to the relationship of health literacy to health promotion behaviors in a Samoan population.

1. What is the level of health literacy in a Samoan population living in southern California?
2. What are the relationships among health literacy, health promotion behaviors, and selected demographic characteristics (age, gender, marital status, educational level, household income, and employment) in a Samoan population in southern California?

Methods

Study Design

A descriptive cross-sectional correlational design was used to examine the relationships among health literacy, health promotion behaviors, and selected patient characteristics in a Samoan population living in southern California. This design was selected due to the lack of current information on either health literacy or its relationship to health promoting behaviors in the target population.

Participants

Prior to this research study, the principal investigator (PI) completed a pilot study to test the methodology and applicability of the tools with a Samoan population. One of the participants suggested that the PI speak with the pastor of a church with a large Samoan population regarding recruitment.

Study approval and access to church members was obtained from the pastor. The PI provided the pastor with a recruitment flyer explaining the study to be disseminated to church members. Interested participants were asked to contact the PI by phone; however, no participants contacted the PI. Instead, the pastor suggested collecting data after church services, and several data collection sessions were scheduled. The PI was also invited to make a presentation to the congregation regarding the study.

Intended participants were female or male Samoans over 18 years of age living in southern California. Participants needed to speak English or comprehend directions from translators. Participants receiving treatment for psychiatric disorders other than mood or anxiety disorders were excluded.

Ethical Considerations

Approval was obtained from the University of San Diego Institutional Review Board prior to data collection. Study participation was voluntary and informed consent was obtained.

The individual demographic questionnaire, the s-TOFHLA, and the HPLP-II were kept together in one packet for each participant. Data were coded with a random number, and no names were used. All questionnaires were kept confidential and were locked in a secure file cabinet in the PI's house. Since this study was non-experimental, there were no anticipated risks to participants. Participants were offered the phone number of a local mental health hotline if they experienced distress. Feelings of shame related to low literacy levels were also a possibility. However, none of the participants expressed distress or feelings of shame regarding the questionnaires. Only one participant stated that he thought he could not complete the questionnaires but then finished and answered all the questions. He did not give a clear reason why he thought he could not complete the questionnaires.

Data Collection

The pastor introduced the PI and asked her to talk with the congregation about her research study. The response of the congregation was positive, and the PI started data collection after the services that day. After giving informed written consent, the participants completed a demographic questionnaire, the Health Promoting Lifestyle Profile II (HPLP-II), and the short form of the Test of Functional Health Literacy in Adults (s-TOFHLA). The demographic questionnaire was adapted from U.S. Census Bureau forms (2010) and elicited participant characteristics including age, gender, marital

status, educational level, household income, and employment status.

Participants then completed the HPLP-II. The PI provided instructions on how to complete the instruments. The s-TOFHLA was administered last because it was a timed test. The demographic questionnaire took 5 to 10 minutes to complete; the revised HPLP-II took up to 30 minutes; and 7 minutes were allowed to complete the s-TOFHLA. After participants completed all the measures, everything was collected, sealed in an envelope, and put in a locked cabinet in the PI's house. Participants received a \$15 gift card for a local store, even if they did not complete the entire session.

Measuring health literacy. The short Test of Functional Health Literacy in Adults (s-TOFHLA) was used to measure health literacy. The s-TOFHLA is an abbreviated form of the Test of Functional Health Literacy (TOFHLA), developed by Parker and colleagues (Parker et al., 1995). The s-TOFHLA consists of two reading passages, reduced from 17 multiple-choice numeracy items and three reading passages in the original TOFHLA. The administration time for the s-TOFHLA was also reduced from 22 minutes to 7 minutes (Baker et al., 1999). Participants were not informed that this was a timed test; when 7 minutes elapsed, they were told to stop taking the test (Nurss et al., 2001). The s-TOFHLA was administered using the large print version, in 14 point font to accommodate potential reduced visual acuity.

Participants read two written passages, the first addressing instructions for preparing for an x-ray and the second dealing with Medicaid rights and responsibilities. The timed reading comprehension tests used the modified Cloze procedure, a test used to measure understanding of the material. Participants read sentences that had missing words and chose which of four words provided would best fit the sentence. They circled

the letter (a, b, c, or d) in front of the word they felt would fit best.

Scoring for the s-TOFHLA was derived from a previous study with the TOFHLA (Williams et al., 1995). The developers decided on cutoffs for the s-TOFHLA that closely matched the proportions of inadequate and marginal health literacy from the previous TOFHLA study (Parker et al., 1995). The s-TOFHLA was scored on a scale of 0 to 36, with s-TOFHLA scores of 23 to 36 indicating adequate health literacy, 17 to 22 indicating marginal health literacy, and 0 to 16 indicating inadequate health literacy (Morris et al., 2006).

Baker et al. (1999) noted that the reliability and validity of the s-TOFHLA is similar to the TOFHLA, but it takes less time to administer. Numerous studies have demonstrated that the s-TOFHLA is a reliable and valid instrument (Morris et al., 2006). This instrument has a Cronbach's alpha of 0.98, demonstrating high internal consistency.

Measuring health promotion behaviors. The Health Promotion Lifestyle Profile II (HPLP-II), based upon the Pender and colleagues' Health Promotion Model (revised) (2006), was used to measure health promotion behaviors. Developed by Pender in 1987 as the Health Promoting Lifestyle Profile (HPLP), the instrument included seven subscales that predicted health-promoting behaviors (Walker et al., 1987).

In 1996, the HPLP was revised to six subscales and became the HPLP-II. The six subscales included physical activity, spiritual growth, health responsibility, interpersonal relations, nutrition, and stress management (Walker & Hill-Polrecky, 1996). The HPLP-II is a self-administered questionnaire including 52 items on an ordinal scale. A Likert-type scale, scored from 1 to 4 (never = 1, sometimes = 2, often = 3 and routinely = 4), measures overall health-promoting lifestyle. The six subscale scores are the means of

responses to the subscale items, which are then summed for the overall score (Walker et al., 1987).

Higher scores indicated more health-promoting behaviors. The HPLP II was used because it has a higher Cronbach's alpha coefficient than the previous HPLP. Cronbach's alpha coefficient for internal consistency was 0.94 for the overall score and ranged from 0.80 to 0.87 for the subscales (Carlson, 2000; Frank-Stromberg & Olsen, 2004).

Data Analysis

Data analysis included descriptive and inferential statistics. The software package *Statistical Package for Social Sciences (SPSS)*, version 20 was used to analyze the data. The statistical tests for each research question are described below.

Question 1. What is the level of health literacy in a Samoan population living in southern California? Health literacy is the independent variable and participants were assigned to one of the three categories, inadequate (0-16), marginal (17-22), or adequate (23-36) health literacy, based on scores on the s-TOFHLA. Descriptive statistics examined the frequency distributions, percentages, means, and standard deviations.

Question 2. What are the relationships among health literacy, health promotion behaviors, and selected demographic characteristics (age, gender, marital status, educational level, household income, and employment) in a Samoan population in southern California? Descriptive statistics determined the frequency distributions, percentages, mean, and standard deviations for participant characteristics of (a) gender, (b), age, (c) marital status, (d) educational level, (e) household income, and (f) employment. Descriptive statistics summarized demographic variables and the overall health promoting lifestyle results. Demographic differences between the three health

literacy groups were examined using Fisher's Exact Test instead of chi-square due to the small sample size and because some cell counts were less than five (Fields, 2009).

Fisher's Exact Test was also used to assess differences in respondents' health literacy levels by demographic characteristics. The independent t-test and one-way ANOVA were used to compare the effect of demographic variables on health promotion. Chi-square and one-way ANOVA were used to examine associations among health literacy and health promotion behaviors. The level of significance was set at 0.05. Due to the small sample size, regression analyses could not be completed.

Results

Study results are presented in terms of sample characteristics and overall measures of health literacy and health promoting behavior. Results of bivariate analyses are then addressed.

Sample Characteristics

Data were collected from 87 adult Samoan participants between March 25, 2012 and May 6, 2012. As indicated in Table 1, the majority of participants (63%) were female. All of the participants were under 65 years of age. Nearly half (47%) of the participants were single, and 39% reported that they were unemployed. Participants had relatively high education levels, with nearly 60% reporting some college education. Despite their education, however, 47% reported annual household incomes less than \$10,000.

Health Literacy and Health Promotion Measures

The s-TOFHLA and the HPLP-II were tested for reliability (internal consistency) using the Cronbach's alpha, and acceptable levels were found for both instruments as

indicated in Table 2. The Cronbach's alpha for the s-TOFHLA was 0.95. The Health Promotion Lifestyle Profile II (HPLP-II) questionnaire had an overall Cronbach's alpha coefficient of 0.97 with subscale alpha coefficients ranging from 0.80 to 0.88. Reliability coefficients as well as descriptive statistics for the s-TOFHLA and HPLP-II are presented in Table 2.

As indicated in the table, s-TOFHLA scores ranged from 1 to 36, with a mean score of 31.33. Nearly 91% of the participants scored in the adequate literacy range, while 2% and 7% had scores indicating marginal and inadequate literacy levels, respectively. Overall HPLP scores ranged from 52 to 205. The subscale of the HPLP-II related to spiritual growth had the highest mean (25.80), while the stress management subscale had the lowest mean (19.93).

Bivariate Analyses

Table 3 presents the results of bivariate analysis of associations between health literacy levels and demographic characteristics. Statistically significant relationships were found between health literacy levels and marital status ($\chi^2=19.1$; $p=0.035$) and employment status ($\chi^2=21.2$; $p=0.011$). The bivariate associations between health literacy and other demographic characteristics were not statistically significant.

As indicated in Table 4, independent t-tests found no statistically significant relationship between gender and overall health promotion scores or subscale scores. Tables 5 through 7 present significant results of one-way ANOVAs performed to examine health promotion scores by demographic characteristics. The Levene's tests were not significant indicating variances were equal and no assumptions were violated. As indicated in the table, educational status was significantly related to overall HPLP-II

scores as well as to subscale scores for nutrition, spiritual growth, and interpersonal relations. Not surprisingly, Tukey post hoc comparisons indicated that persons with some college education or higher were significantly more likely than those with high school education or less or no education to have higher HPLP-II scores. Similarly, higher education level was linked to better scores on the nutrition, spiritual growth, and interpersonal relations subscales.

The only other significant relationships were noted for marital status with subscale scores for physical activity and age with spiritual growth subscale scores. Tukey post hoc comparisons indicated that divorced individuals engaged in less physical activity than either married or single participants. No differences were noted between divorced and separated individuals. With respect to age, participants aged 22 to 44 years had significantly higher spiritual growth scores than those 45 to 64 years of age, but did not differ significantly from those 18 to 21 years of age.

Table 8 presents relationships of health literacy to overall health promotion scores and subscale scores. No significant relationship was found between health literacy levels and overall HPLP-II scores. There was a statistically significant relationship, however, between health literacy level and health promotion subscale scores for physical activity ($\chi^2=72.0$; $p=0.009$). Similarly, there was a significant relationship between health literacy level and interpersonal relations subscale scores ($\chi^2=108.0$; $p=0.004$). Health literacy level was not statistically significantly associated with the health promotion subscales for health responsibility, nutrition, spiritual growth, and stress management.

Descriptive results for physical activity and interpersonal relations subscale scores by health literacy levels are presented in Table 9. One-way ANOVAs were performed to

determine the significance of differences in these subscale scores based on levels of inadequate, marginal, and adequate literacy. No statistically significant differences were found for either physical activity or interpersonal relations among the three levels of health literacy (See Table 10). Even though persons with inadequate health literacy levels had lower scores for physical activity and interpersonal relations, this was not statistically different from the mean scores of those who reported marginal or adequate health literacy levels.

Discussion

As noted earlier, there is a paucity of studies linking health literacy and health promotion among Samoans. In prior studies, Asian Americans, Native Hawaiians, and Pacific Islander (AANHPI) populations were often aggregated, and, thus, these studies do not present an accurate picture of the multitude of ethnic groups within the AANHPI population (Ponce et al., 2009). Therefore, a strength of this study was in disaggregating the Samoan population from other Asian groups. This study also provided an enhanced understanding of some of the difficulties encountered in studying this population in a church setting. After attending the church service, some people declined to participate in the study because they just wanted to eat, socialize, and then go home. Also, some people thought they would receive a gift card without answering the survey questions. Based on observations during the study, factors other than health literacy appeared to influence health promotion, including a dangerous community environment, lack of finances, and cultural beliefs and traditions. These factors may help to explain the relatively high literacy levels, but low scores on the overall HPLP-II and several of the subscales.

Previous research has examined the relationship of health literacy to health

promotion but in different populations. In a cross-sectional survey, Chang (2011) explored the relationship of health literacy, self-reported health status, and health promoting behaviors among Taiwanese high school students and found students with low health literacy had lower scores on health-promoting behaviors in areas of nutrition and interpersonal relations, but not in other areas of the HPLP. The study also showed that students whose parents had a college education had higher health literacy levels. The current study had similar findings regarding the relationship of education to the interpersonal relations subscale, but found no relationship between health literacy and nutrition. A significant relationship was found for physical activity, which differs from Chang's (2011) findings.

Coffman et al. (2012), studying Latino adults with diabetes, found that almost half of the participants had low health literacy and those who had adequate health literacy had better control of their blood sugars, and utilized health care services more. Interestingly, these researchers also concluded that the years of education, not health literacy, were associated with diabetes knowledge (Coffman et al., 2012). The authors also noted that some participants did not utilize health care services because of lack of health care insurance and lower household income. The low literacy levels in Coffman et al.'s study are in contrast to the relatively high levels of literacy found in the current study. The lack of variability in health literacy levels in the present study may explain the lack of significant relationships with overall HPLP-II scores and with several of the subscale scores.

The small sample size, the use of only one data collection site, and the lack of anyone over age 65 limit generalizability of the current findings. The pastor reported that

younger people attend the church service and older people stay home. Previous studies have noted that those over age 65 tend to have lower levels of health literacy (Cutulli & Bennett, 2009; Egbert & Nanna, 2009) suggesting a need for further studies with older Samoans. Furthermore, even though participants were given specific directions on how to answer the questionnaires, some participants did not follow the directions and some participants did not provide complete data. For example, some participants left the employment or household income items blank. However, all analyses were based on valid data.

The majority of the participants surveyed had adequate health literacy levels. Observations in the setting indicated, however, that members of the population may not follow health promotion behaviors even with adequate health literacy levels. For example, data were collected after church services when members of the congregation held luncheons where they played card games and/or socialized. Poor dietary habits were observed during these events. For example, food included heavy sauces and starchy foods, (e.g., taro) with an absence of salads or green leafy vegetables. These observed dietary practices are consistent with prior research and may contribute to health-related problems.

There are other reasons why population members may not engage in health promotion behaviors including the danger of their community environment, a lack of finances, and cultural beliefs and traditions. For example, on the last day of data collection, an altercation occurred among attendees at the service. Afterwards, the pastor indicated "We are good people but we don't know how to handle stress." Poor stress management was also noted in respondent's stress management scores on the HPLP-II.

Conversely, the mean for spiritual growth on the HPLP-II was high, which may be the result of recruiting participants among active church members.

Violence appeared to be prevalent at the church and in the surrounding community. Ten bullet holes lining the church walls were noted by the investigator. Exercise in this population is limited by the danger inherent in the living environment and by finances. A few participants mentioned that they do not have the money to pay for a gym membership. The Samoan people also know they should exercise and follow a healthy diet but some do not (Bell et al., 2001). Due to the surrounding dangers, subjects in this study choose not to jog around the block even though this would be an inexpensive activity. This may result in fewer health promotion behaviors and not necessarily be related to health literacy issues. Further research is indicated to see why the Samoan population does not employ health promotion behaviors and to develop ways to utilize cultural beliefs and their church structure to promote health.

Conclusion

Based on the review of the literature, there are studies about health literacy and health promotion behaviors in Caucasians, African Americans, and Hispanics. However, as noted earlier, there is a paucity of studies on health literacy and health promotion behaviors in Samoans. Although this study provided insights into health promoting behaviors in the Samoan population, there is insufficient information to guide practical interventions. Further research is needed to determine health literacy levels in the Samoan population, particularly among the elderly, and to determine how health literacy is related to health promotion. If limited health literacy is related to poor health promotion in the older Samoan population, we need to know how we can improve health

literacy skills in order to increase health promotion behaviors. Further research is also needed to identify other factors affecting health promotion and to design interventions to foster health promotion behaviors in this population.

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CONTRIBUTIONS

Study Design: KT, MJC

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Manuscript Development: KT, MJC

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Table 1: Sample Characteristics (N = 87)

	No. (%)
Gender	
Male	30 (34.5)
Female	55 (63.2)
Unspecified	2 (2.3)
Age	
18 – 21 years	15 (17.2)
22 – 44 years	37 (42.5)
45 – 64 years	35 (40.2)
65 years and older	0 (0.0)
Unspecified	0 (0.0)
Marital status	
Married	40 (40.0)
Single	41 (47.1)
Divorced	3 (3.4)
Separated	2 (2.3)
Unspecified	1 (1.1)
Employment status	
Full time	18 (20.7)
Part time	28 (32.2)
Unemployed	34 (39.1)
Retired	3 (3.4)
Unspecified	4 (4.6)
Education status	
No schooling	3 (3.4)
High school or less	32 (36.8)
Some college or more	52 (59.8)
Unspecified	0 (0.0)
Household income	
Less than \$10,000	41 (47.1)
\$10,000 to \$69,999	39 (44.8)
\$70,000 or more	3 (3.4)
Unspecified	4 (4.6)

Note: Percentages may not sum to 100% due to rounding.

Table 2. Means, Ranges, and Reliability Coefficients for s-TOFHLA Score, Overall HPLP-II Score, and Subscale Scores.

	<i>Mean (SD)^b</i>	Range	Cronbach's α
s-TOFHLA score	31.13 (6.95)	1-36	0.95
Overall HPLP-II score (n=62) ^a	133.77(28.74)	52-205	0.97
<i>Subscales</i>			
Health responsibility (n=82) ^a	21.54 (5.67)	9-36	0.86
Physical activity (n=81) ^a	22.56 (6.44)	9-36	0.88
Nutrition (n= 77) ^a	22.12 (5.19)	9-36	0.84
Spiritual growth (n=79) ^a	25.80 (5.80)	9-36	0.88
Interpersonal relations (n= 75) ^a	24.83 (5.58)	9-36	0.85
Stress management (n= 82) ^a	19.93 (4.65)	8-32	0.80

Table 3: Fisher's Exact Test Results, Differences in Health Literacy Levels by Demographic Characteristics

	Inadequate No. (%)	Marginal No. (%)	Adequate No. (%)	χ^2	<i>df</i>	<i>p</i> - value ^a
Gender (n=83)						
Male	3 (10.3)	1 (3.4)	25 (86.2)	1.7	2	0.418
Female	2 (3.7)	1 (1.9)	51 (94.4)			
Age						
18 – 21 years	1 (6.7)	0 (0.0)	14 (93.3)	2.8	4	0.603
22 – 44 years	1 (2.7)	1 (2.7)	35 (94.6)			
45 – 64 years	4 (12.1)	1 (3.0)	28 (84.8)			
65 years and older	0 (0.0)	0 (0.0)	0 (0.0)			
Marital status						
Married	2 (5.3)	2 (5.3)	34 (89.5)	19.1	6	0.035*
Single	2 (4.9)	0 (0.0)	39 (95.1)			
Divorced	2 (66.7)	0 (0.0)	1 (33.3)			
Separated	0 (0.0)	0 (0.0)	2 (100)			
Employment status						
Full time	4 (22.2)	0 (0.0)	14 (77.8)	21.2	6	0.011*
Part time	0 (0.0)	1 (3.7)	26 (96.3)			
Unemployed	2 (6.1)	0 (0.0)	31 (93.9)			
Retired	0 (0.0)	1 (33.3)	2 (66.7)			
Education status						
No schooling	0 (0.0)	0 (0.0)	3 (100)	7.6	4	0.090
High school or less	5 (16.7)	0 (0.0)	25 (83.3)			
Some college or more	1 (1.9)	2 (3.8)	49 (94.2)			
Household income						
Less than \$10,000	3 (7.3)	0 (0.0)	38 (92.7)	2.7	4	0.642
\$10,000 to \$69,999	3 (8.1)	2 (5.4)	32 (86.5)			
\$70,000 or more	0 (0.0)	0 (0.0)	3 (100)			

^a *p*-values are based on all cases with valid data.**p*<0.05.

Table 4. Independent Samples T-Test of HPLP-II Scores, Subscale Scores and Gender

	sex	N	Mean	Std.		<i>p</i> -value
				Deviation		
Overall HPLP-II	Male	24	134.04	27.358		0.860
score	Female	36	135.33	28.125		
Health	Male	29	21.86	6.334		0.821
Responsibility	Female	51	21.55	5.124		
Physical Activity	Male	28	23.61	6.602		0.378
	Female	51	22.25	6.206		
Nutrition	Male	29	21.93	4.773		0.687
	Female	46	22.41	5.377		
Spiritual Growth	Male	29	26.79	6.026		0.340
	Female	48	25.48	5.419		
Interpersonal	Male	27	24.33	5.738		0.441
Relations	Female	46	25.37	5.070		
Stress Management	Male	30	20.57	5.569		0.458
	Female	50	19.70	3.924		

Table 5. One-Way ANOVA of the Effect of Age on Health Promotion

		Sum of Squares	df	Mean Square	F	Sig.
Overall HPLP-II score	Between Groups	1326.326	2	663.163	.797	.455
	Within Groups	49064.513	59	831.602		
	Total	50390.839	61			
Health Responsibility	Between Groups	30.321	2	15.160	.466	.629
	Within Groups	2572.070	79	32.558		
	Total	2602.390	81			
Physical Activity	Between Groups	80.532	2	40.266	.969	.384
	Within Groups	3241.468	78	41.557		
	Total	3322.000	80			
Nutrition	Between Groups	23.792	2	11.896	.434	.649
	Within Groups	2026.156	74	27.380		
	Total	2049.948	76			
Spiritual Growth	Between Groups	311.165	2	155.583	5.120	.008
	Within Groups	2309.594	76	30.389		
	Total	2620.759	78			
Interpersonal Relations	Between Groups	115.264	2	57.632	1.899	.157
	Within Groups	2185.482	72	30.354		
	Total	2300.747	74			
Stress Management	Between Groups	8.586	2	4.293	.195	.823
	Within Groups	1740.975	79	22.038		
	Total	1749.561	81			

* $p < 0.05$.

Table 6. One-Way ANOVA of the Effect of Marital Status on Health Promotion

		Sum of Squares	df	Mean Square	F	Sig.
Overall HPLP-II score	Between Groups	13203.317	3	4401.106	6.864	0.000*
	Within Groups	37187.522	58	641.164		
	Total	50390.839	61			
Health Responsibility	Between Groups	175.797	3	58.599	1.864	0.143
	Within Groups	2420.450	77	31.434		
	Total	2596.247	80			
Physical Activity	Between Groups	457.411	3	152.470	4.063	0.010*
	Within Groups	2851.789	76	37.524		
	Total	3309.200	79			
Nutrition	Between Groups	186.345	3	62.115	2.433	0.072
	Within Groups	1863.603	73	25.529		
	Total	2049.948	76			
Spiritual Growth	Between Groups	294.110	3	98.037	3.118	0.031*
	Within Groups	2326.608	74	31.441		
	Total	2620.718	77			
Interpersonal Relations	Between Groups	327.699	3	109.233	3.882	0.013*
	Within Groups	1969.666	70	28.138		
	Total	2297.365	73			
Stress Management	Between Groups	139.365	3	46.455	2.223	0.092
	Within Groups	1609.031	77	20.897		
	Total	1748.395	80			

* $p < 0.05$.

Table 7. One-Way ANOVA of the Effect of Education Status on Health Promotion

		Sum of Squares	df	Mean Square	F	Sig.
Overall HPLP-II score	Between Groups	5413.092	2	2706.546	3.550	0.035
	Within Groups	44977.746	59	762.335		
	Total	50390.839	61			
Health Responsibility	Between Groups	224.609	2	112.304	3.731	0.028*
	Within Groups	2377.782	79	30.099		
	Total	2602.390	81			
Physical Activity	Between Groups	187.768	2	93.884	2.336	0.103
	Within Groups	3134.232	78	40.182		
	Total	3322.000	80			
Nutrition	Between Groups	179.439	2	89.719	3.549	0.034*
	Within Groups	1870.509	74	25.277		
	Total	2049.948	76			
Spiritual Growth	Between Groups	427.548	2	213.774	7.408	0.001*
	Within Groups	2193.211	76	28.858		
	Total	2620.759	78			
Interpersonal Relations	Between Groups	202.139	2	101.070	3.468	0.036*
	Within Groups	2098.607	72	29.147		
	Total	2300.747	74			
Stress Management	Between Groups	84.641	2	42.320	2.008	0.141
	Within Groups	1664.920	79	21.075		
	Total	1749.561	81			

* $p < 0.05$.

Table 8: Chi-square Test Results, Health Promotion Scores by Health Literacy Levels

	χ^2	<i>df</i>	<i>p-value</i> ^a
Overall HPLP-II score (n=61) ^a	113.0	88	0.119
Subscales			
Health Responsibility (n=80) ^a	48.0	38	0.105
Physical Activity (n=79) ^a	72.0	48	0.009*
Nutrition (n= 76) ^a	57.0	42	0.149
Spiritual Growth (n= 77) ^a	46.0	40	0.250
Interpersonal Relations (n= 73) ^a	108.0	36	0.004*
Stress Management (n= 80) ^a	40.0	40	0.477

* $p < 0.05$

^a p -values are based on all cases with valid data.

Table 9. Descriptive Summary of Physical Activity and Interpersonal Relations Scores by Health Literacy Level

		95% Confidence									
		Interval for Mean									
		n	Mean	SD	Error	Std.		Lower Bound	Upper Bound	Minimum	Maximum
Physical Activity	Inadequate Health Literacy (0-16)	5	18.00	9.327	4.171	6.42	29.58	9	29		
	Marginal Health Literacy (17-22)	2	25.50	0.707	0.500	19.15	31.85	25	26		
	Adequate Health Literacy (23-36)	72	22.89	6.301	0.743	21.41	24.37	13	36		
	Total	79	22.65	6.501	0.731	21.19	24.10	9	36		
Interpersonal Relations	Inadequate Health Literacy (0-16)	6	20.50	9.182	3.748	10.86	30.14	9	30		
	Marginal Health Literacy (17-22)	1	31.00	.	.	.	.	31	31		
	Adequate Health Literacy (23-36)	66	25.27	5.067	0.624	24.03	26.52	16	36		
	Total	73	24.96	5.594	0.655	23.65	26.26	9	36		

Table 10. ANOVA Results, Differences in Physical Activity and Interpersonal Relations Scores by Health Literacy Level

				Mean		
		Sum of Squares	df	Square	F	Sig.
Physical Activity	Between	128.465	2	64.232	1.541	0.221
	Groups					
	Within	3167.611	76	41.679		
	Groups					
	Total	3296.076	78			
Interpersonal Relations	Between	162.286	2	81.143	2.717	0.073
	Groups					
	Within	2090.591	70	29.866		
	Groups					
	Total	2252.877	72			

Plan for a Continued Program of Research

Health literacy is an ongoing problem and people need to be able to understand health-related information. They will be unable to engage in health promotion behaviors if they do not understand. Further research is needed to see if older Samoans have problems with health literacy and whether or not they follow health promotion behaviors. In the future, I would like to do a qualitative research study and ask why the Samoan population does not engage in health promotion behaviors.