

8-2014

# Measuring Health Literacy Among Somali Men Over the Age of 45 - A Pilot Study

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HEALTH LITERACY IN SOMALI MEN

MEASURING HEALTH LITERACY AMONG SOMALI MEN WHO ARE OVER  
THE AGE OF 45 – A PILOT STUDY

A thesis submitted in partial fulfillment of the requirements for  
the degree of Master of Science in Nursing

By

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## HEALTH LITERACY IN SOMALI MEN

Abstract

Somali immigrants to the United States are at a particularly increased risk of lower health literacy due to barriers such as language, lower education levels, culture and decreased access to health care resources. Low health literacy puts individuals and communities at risk for poor health outcomes and health disparities. However, as far as is known, there is limited information addressing the health literacy levels and its effects on Somali men. There are no available studies on the health literacy levels in this population. The purpose of this study is to identify Somali men over the age of 45 and measure their health literacy levels. Obtaining health literacy levels is essential in planning educational interventions tailored purposefully for the population of Somali men over the age of 45 years.

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## Chapter 1

### **Background**

Somali immigrants tend to cluster into central locations to create cohesive communities (Geltman *et al*, 2013). Columbus, Ohio is home to an increasing number of immigrant Somalis. According to the Federal Office of the Refugee Resettlement, the city of Columbus is host to the second-largest Somali community in the US, behind Minneapolis-St Paul. Based on population data from Columbus City Schools (CCS), Small Area Income and Poverty Estimate (SAIPE) and the American Community Survey (ACS), the 2009 report of Community Research Partners (CRP) estimated that between 45,000 and 55,000 Somalis reside in Franklin County (CRP Data Bytes, 2009), which includes Columbus. The American Immigration Council (AIC, 2013) also reported that in 2009, Central Ohio was home to 45,000 Somalis of which 30% are United States citizens. That number is rapidly growing due to newer Somali immigrants. About 35% of the Somali population in Columbus is over the age of 45 years old (CRP, 2009). Out of this large community of immigrants, only 25% speak English well enough to get a job (SCAO, 2009). This relatively low percentage of English speaking people of such a large community has generated growing concerns about their health literacy especially among the older adult population.

Healthcare practice in the Somali culture is based on the belief that angry spirits or the “evil eye” causes illness. Illness is therefore initially referred to the spiritual leader or the medicine man. Extensive herbal medicine is used in the treatment of many illnesses. It is believed that there is a medicine for all illnesses, so most Somalis expect



medication at each visit and for every illness (CDC, 2008). In the Somali culture, the man is the head of the household, if he dies, the eldest male son or an uncle assumes the role of head of household (SCAO, 2009). Being the head of the household, the man is responsible for all major decision making including healthcare decisions. In addition to these practices and beliefs, preventative care is not commonly practiced in this population and may be unfamiliar to most Somalis (CDC, 2008).

According to the Institute of Medicine's 2004 report, *Health Literacy: A Prescription to End Confusion*, 90 million American adults have difficulty understanding, interpreting and acting upon health information. This task may prove to be even more challenging to the older adult Somali who is facing limitations such as language, age, education, cultural and social barriers. Martensson & Hensing (2011) identified specific populations such as the elderly, immigrants, and people with low education, as having lower health literacy compared to other populations. Also, ethnic minorities are particularly at higher risk of being affected by inadequate health literacy and health disparities (Ingram, 2011). Previous researchers also suggest that social structures of some non-English speaking refugees such as the Vietnamese and Haitian increase the likelihood of low health literacy among their members (Geltman *et al*, 2013). Most of the older adult Somali men in Columbus meet these characteristics such as being elderly immigrants with lower educational attainments and thus are likely to have low health literacy.

Geltman, and colleagues (2013) identified in their research that low health literacy in the Somali population of Massachusetts was linked to poor oral hygiene and worsening oral health. The risk of low health literacy in this population portends a

significant public health problem or concern. Low health literacy has great significance for the health of the individual and the community (Martensson & Hensing, 2011). Therefore the assessment of health literacy will guide plans and educational interventions tailored purposefully for this population.

### **Health literacy**

The Institute of Medicine's 2004 report, *Health Literacy: A Prescription to End Confusion* defines 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 health decisions" (2004). The World Health Organization WHO (2013) defines 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." According to the WHO, a person with adequate health literacy possesses the cognitive and social skills to access, understand and utilize health information for health promotion and prevention. Similarly, the National Assessment of Adult Literacy (NAAL) defines health literacy as the ability to use health-related written information to "function in society, to achieve one's goals, and to develop one's knowledge and potential." If high health literacy permits individuals to make appropriate health decisions, then it is a form of empowerment. This is because health literacy enables an individual to acknowledge the health related information, understand the importance of prevention and screening and be familiar with basic day to day services available in managing chronic diseases and promoting healthy lifestyles (Cimasi, Sharamitaro & Seiler, 2013). However, health literacy itself is not sufficient. Functional health literacy is a person's ability to read and comply with prescriptions,

appointments, management of acute and chronic illness and other information needed to manoeuvre through the healthcare system (Ingram, 2011). Therefore, low health literacy puts individuals and communities at risk for poor health and inappropriate healthcare decisions.

In order for one to be health literate, one has to possess certain skills termed “health literacy skills.” These health literacy skills are needed for verbal communication, reading and understanding personal and family health information, making decisions about participating in research, accurately using medical tools and supplies, calculating medication dosage and time and voting on healthcare related issues (Nielson-Bohlman, Panzer, Hamlin & Kindig, 2004). Health literacy skills include reading, basic calculations, and the ability to recognize common medications and over-the-counter (OTC) medications and their uses.

### **Significance**

A significant number of American adults are considered to have low health literacy. Prevalence of limited health literacy is about 47% or 90 million American adults (Nielson-Bohlman, *et al*, 2004). According to Weiss (2007), about 89 million American adults lack sufficient health literacy to perform common preventative care measures and needed medical treatments. The economic cost of this low health literacy in this population is approximately \$50 to \$73 billion annually (Weiss, 2007). For example, Medicaid patients in Arizona with reading levels below the 3<sup>rd</sup> grade had annual charges of \$7500 higher than those who read above the 3<sup>rd</sup> grade level (Nielson-Bohlman *et al*, 2004).

## Consequences

The consequences of low health literacy cannot be fully enumerated. However, Martensson & Hensing (2011) identified that low health literacy is associated with incorrect use of medications and assistive aides, lack of knowledge in making medical decisions, difficulty in interpreting signs and symptoms, difficulty completing healthcare and insurance forms, misunderstanding of medical or nursing instructions, inability to keep appointments to care visits, unnecessary examinations or surgery, increased need of hospitalization, and security risks (Martensson & Hensing, 2011). Low or inadequate health literacy has been associated with limited access and use of healthcare, poor clinical outcomes, frequent hospitalization, mortality and poor health outcomes (Geltman, *et al*, 2013). Low health literacy also impacts an individual's ability to search for and utilize health information, adopt healthy behaviors and implement public health alerts (health.gov, n.d). Individuals with low health literacy skills use more health services, use more expensive health services and have greater risks for hospitalization (Mancuso, 2009; Nielsen-Bohlman *et al*, 2004). Furthermore, they report difficulty understanding OTC medication labels and nutrition labels. In summary, inadequate health literacy causes self-care deficits, higher morbidity of chronic disease, and low physiologic and psychological health status (Chen, Hsu, Tung, & Pan, 2013).

In a study conducted by Macabasco-O'Connell, and colleagues (2011), they found that low health literacy was associated with worse heart failure-related quality of life among patients with heart failure. These researchers also associated low health literacy with lower heart failure knowledge, lower performance of self-care behaviors, lower self-efficacy and lower heart failure quality of life (Mabasco-O'Connell *et al*, 2011).

**Gap**

Based on the evidence that supports the fact that health care literacy impacts health outcomes, it is important to evaluate health literacy in Somali men over the age of 45 years. There is little information that addresses the health literacy levels and health effects on Somali men (Geltman *et al*, 2013) over the age of 45. As far as is known, health literacy levels in this exact population have not been studied. It is important to evaluate and gain insights into the health literacy levels of this population because assessing health literacy levels in this specific population will guide nursing and medical interventions that will address their specific needs in providing effective health promotion education and assist in the quest to eliminating health disparities. Therefore, the purpose of this study is to measure health literacy of Somali men over the age of 45 in order to inform future educational nursing interventions and to guide advanced practice nurses efforts to address the potential health literacy levels of this population.

## Chapter 2

### **Theoretical Model**

This study is a descriptive study designed to measure the health literacy levels in Somali men in Columbus over the age of 45. The theory to guide this research is Dorothea Orem's theory of Self-Care Deficit. The purpose of this study is to help illuminate the self-efficacy needs of this population which also happens to be the purpose of Orem's theory. Orem's theory of self-care subsumes three separate theories: theory of self-care, theory of self-care deficit and theory of nursing systems (Orem, 1991). These three theories are interconnected and presume that self-care is ultimately linked to an individual's health, development and well-being. This is because people maintain their life, health and well-being by caring for themselves (Meleis, 2012 pg 208). Chiang and colleagues (2013) suggest a relationship between low health literacy and self-care deficit or poor self-efficacy. Even though Orem's theories do not explicitly reference health literacy as a requirement for self-care, this assertion is implied in the health-deviation self-care requisites. The health-deviation self-care requisites of Orem's theory includes an individual's ability to seek and secure medical assistance, be aware of and attend to effects and results of pathologic conditions and states, carry out prescribed medical and nursing measures effectively, and learn to live with effects of pathologic conditions in a lifestyle that promotes continued personal development (Orem, 1991; Meleis, 2012 pg 210). One of the major assumptions of Orem's theory also highlights the point that a "person's knowledge of potential health problems is necessary for promoting self-care behaviors" (Orem, 1991). With the purpose of promoting adequate self-care, these theories comprehensively emphasize the need for individuals to be health literate.

Adequate self-care requires a knowledge base of critical skills and competencies of accessing, understanding, appraising and applying information from all domains of healthcare, disease prevention and health promotion (Heide, Rademakers, Schipper, Droomers, Sorensen, & Uiters, 2013).

## **Variables**

### **Health literacy**

Adequate health literacy is the ability to read, understand and interpret daily health related information and the possession of knowledge about disease processes and self-management skills (Heide *et al* 2013). Also, adequate health literacy enables an individual to seek, access, and obtain health information, understand instructions on prescription bottles, education brochures and health care providers directions (Chiang *et al*, 2013).

### **Low health literacy**

Low health literacy is conceptually defined in the following statements: poorer knowledge about disease processes and self-management skills among people with chronic conditions such as diabetes, heart disease and arthritis (Osborne, Batterham, Elsworth, Hawkins, & Buchbinder, 2013; Chiang *et al*, 2013); the inability to access, seek and obtain health information; the inability to understand or comprehend health information; inability to interpret and judge health information; inability to apply health information (Heide *et al* 2013); and inability to understand instructions on prescription bottles, education brochures and providers directions (Chiang *et al*, 2013). Health literacy is influenced by an individual's age, culture, ethnicity, race, income, occupation and

education. For the purposes of this study, low health literacy is conceptually defined as getting a score of 0-1 on the Newest Vital Sign score sheet.

### Theoretical framework

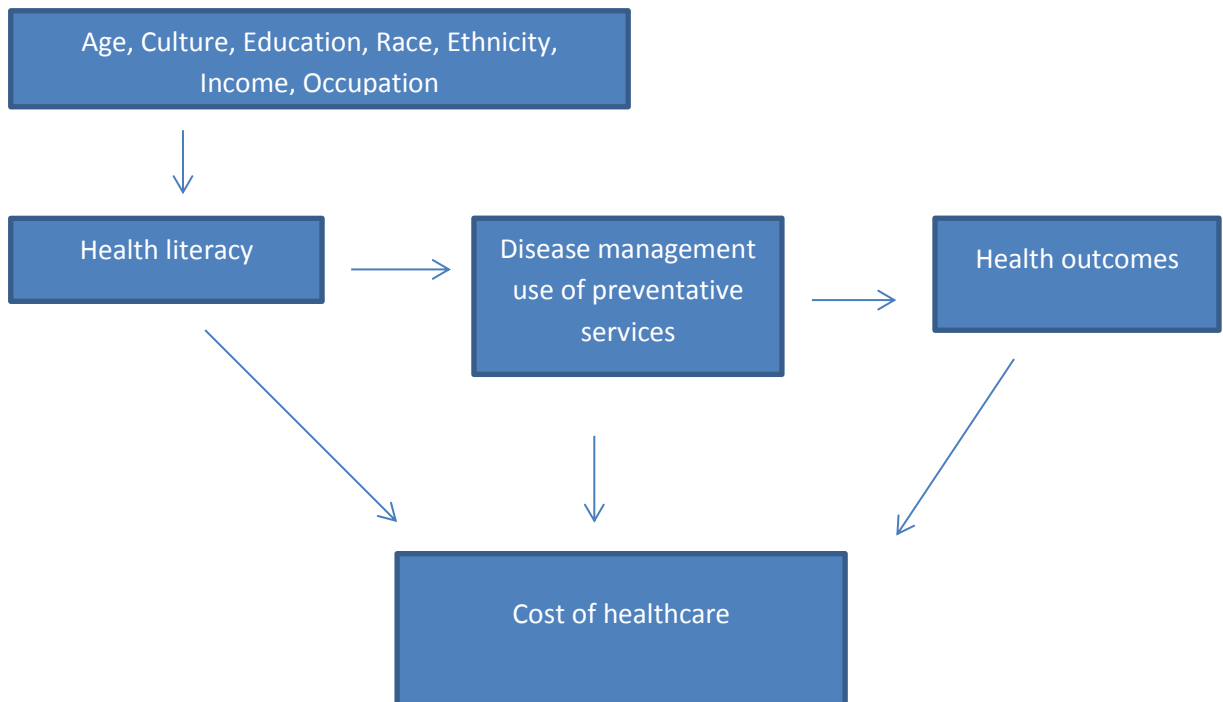


Figure 1. Theoretical Model

This theoretical framework shows the association of demographics such as age, culture, race, education, and income with health literacy, disease management, health outcomes, and the overall cost of healthcare in the United States (Heide *et al*, 2013, & Osborne *et al*, 2013). Individuals with low health literacy skills are at higher risk of poorer health (Rowlands, Khazaezadeh, Oteng-Ntim, Seed, Barr & Weiss, 2013). Adequate health literacy increases self-efficacy, and use of preventative care to promote personal health and chronic disease management (Chen *et al*, 2013).



## Chapter 3

### **Methods**

#### **Subjects**

The participants were a convenience sample of nineteen Somali men over the age of 45 living in Columbus, OH and recruited from one home health agency. Eligible participants were invited into the study via telephone conversation. A verbal consent for intent to participate was received via the telephone conversation, and a date was set for the researcher to meet the prospective participants in their home for written consent and data collection. Inclusion criteria were Somali men age 45 years and up, who speak and read English. Exclusion criteria were the inability to speak and understand English, known cognitive impairment, and if the person was a healthcare professional.

#### **Design**

This was a descriptive, pilot study to depict the health literacy levels for Somali men in Columbus. This study did not provide any treatment or intervention for the nineteen participants. Data were collected at a single meeting with each participant in their home.

#### **Measurement tools**

Socio-demographic characteristics including age, marital status, education level, occupation, income, and chronic illnesses were collected with a questionnaire (see appendix A). Even though numerous tools such as The Rapid Estimate of Adult Literacy in Medicine (REALM), The Test of Functional Health Literacy in Adults (TOFHLA) and

the Medical Term Recognition Test (METER) are available to measure health literacy, this study utilized the Newest Vital Sign (NVS) to measure health literacy in the chosen population. The NVS has a high sensitivity and correctly identifies practically most patients with low health literacy (Osborn, Weiss, Davis, Skripkauskas, Rodrigue Bass & Wolf, 2007). The Newest Vital Sign was used due to its assessment of functional health literacy and the minimum time it takes to administer.

The Newest Vital Sign (NVS) (see appendix B and C) was developed by Pfizer (Hubbard, 2011). The Newest Vital Sign (NVS) is a simple and fast assessment of health literacy. It can be administered in 3 minutes, is available in both English and Spanish, and was designed for use in outpatient providers' offices (Hubbard, 2011). It measures both literacy and numeracy skills and validated to be a predictor of health literacy levels (Rowlands *et al*, 2013). In a study comparing the performance of the NVS with existing tools, the NVS was found to be reliable, with good internal consistency, high sensitivity for detecting inadequate health literacy, and moderate specificity (Osborn, Weiss, Davis, Skripkauskas, Rodrigue Bass & Wolf, 2007).

Participants were handed an ice cream label and given a few minutes to review. Then, a series of questions were asked regarding the nutritional value of the ice cream and if it is appropriate for the participant to eat the ice cream based on hypothetical health reasons. The participants' answers were scored based on the number of correct answers.

Operationally, low health literacy is defined as a score of 0-1; a score of 2-3 indicates the possibility of limited literacy and a score of 4-6 indicates adequate literacy. The highest possible score is 6 (Hubbard, 2011).

## **Procedure**

Qualified participants were first contacted and recruited through a telephone conversation. Once they agreed to participate in the study, the researcher scheduled a day and time to meet in the participant's home. The participant then signed a written consent and completed the demographic questions verbally. After these initial questions were asked and answered, the NVS test was conducted, and the researcher scored the answers based on the instructions of the test.

One researcher administered the questionnaire and collected data to ensure uniformity and standardization. Data were collected through a structured interview using the questionnaire and the NVS tool. The total time spent with each participant during data collection was approximately 30minutes.

## **Data Analysis.**

All demographic information and data collected for this study were handled by only the researcher. The participants were only identified by their initials and year of birth. For instance, if Matt Smith was born in 1920, his identifying information is MS1920. This identifying information is only available to the researcher to ensure privacy and confidentiality. The participants were given both a written and verbal statement ensuring them of confidentiality of all personal and identifying information provided. Their identity will also remain anonymous during presentations, reports, and publications of any kind (Burns *et al*, 2009, pg. 202).

PSPP was used for statistical data analysis. Nominal data such as demographic information were analyzed using mode and percentages to describe the demographic

variables. Interval ratio level of data was analyzed with means, standard deviations and Pearson's Correlation Coefficient (Burns *et al*, 2009).

### **Strengths**

One of the strengths of this study is the minimal financial costs. The cost of conducting this study is low. All resources needed for the study were provided by the researcher. Also, there was an easy access to the intended population. This pilot study only used nineteen participants who were recruited from one home health agency in Columbus, OH.

### **Weaknesses**

The weaknesses of the study design include small sample size, and using a convenience group. These factors limit the generalizability of this study and may not provide an accurate representation of this population.

## Chapter 4

**Results**

Total number of participants (N) = 19

	<b>Number (n)</b>	<b>Percentage (%)</b>
<b>Age</b>		
45 -54yrs	4	21.05%
55-64yrs	9	47.37%
65-74yrs	5	26.32%
75 and above	1	5.26%
<b>Marital Status</b>		
Married	9	47.37%
Single	2	10.53%
Divorced	4	21.05%
Widowed	4	21.05%
<b>Educational attainment</b>		
No education	2	10.53%
Elementary school	7	36.84%
High school equivalent	5	26.32%
Associates level	3	15.79%
Bachelor's level	2	10.53%
<b>Annual income</b>		
\$11,000 - \$25,000	6	31.58%

\$26,000-\$50,000	12	63.16%
\$51,000-\$100,000	1	5.26%
<b>Length of stay in the US</b>		
6-10yrs	4	21.05%
11-20yrs	11	57.89%
Over 20yrs	4	21.05%
<b>Diagnoses</b>		
Hypertension	11	58%
COPD	3	15.79%

Table 1. Demographic distribution

The total number of participants is nineteen (N=19) of which 47% were between the ages of 55 and 64, and 78% were over 54years old. While 63% had an annual income between \$26,000 and \$50,000, 31% had an annual income under \$25,000. Educational attainment of participants varied with 36.8% of the participants having elementary school as their highest level of education and only 26% having a high school equivalent education. Over half of participants (N=11, 58%) had a diagnosis of hypertension. Other chronic diseases identified were diabetes, chronic obstructive pulmonary disease (COPD), arthritis, generalized pain, hyperlipidemia, asthma, and stroke. Nearly two-thirds of the participants (N=12, 63%) lived with their wives and children. Only 6 participants lived alone and one lived in an assisted living facility.

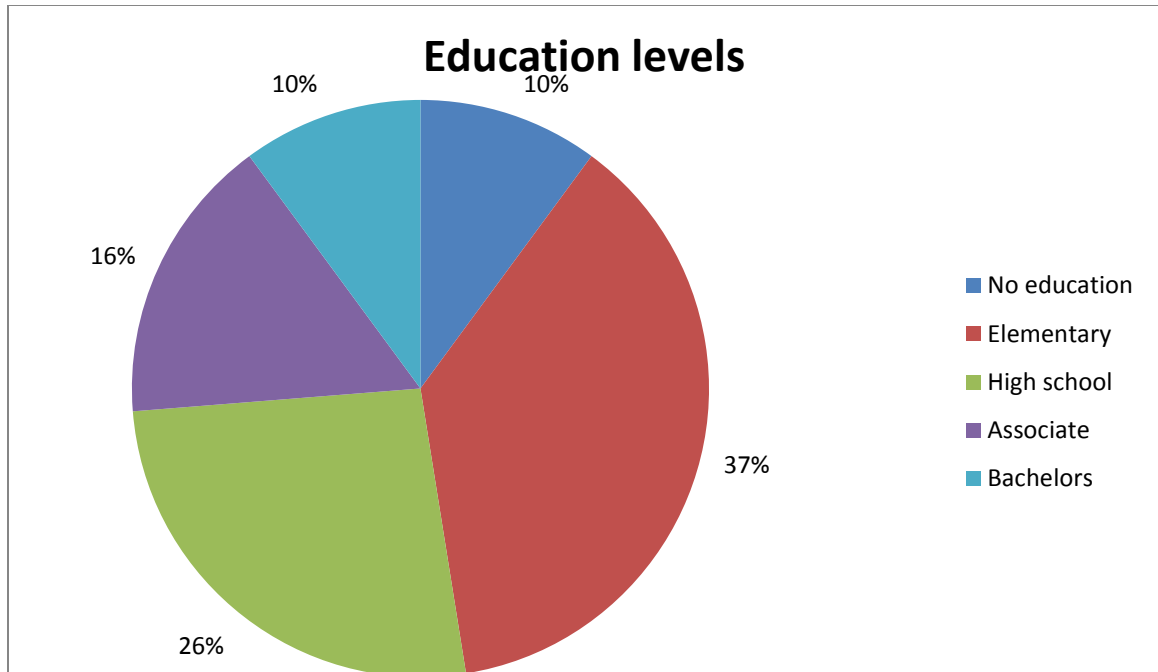


Figure 2. Participants' educational levels

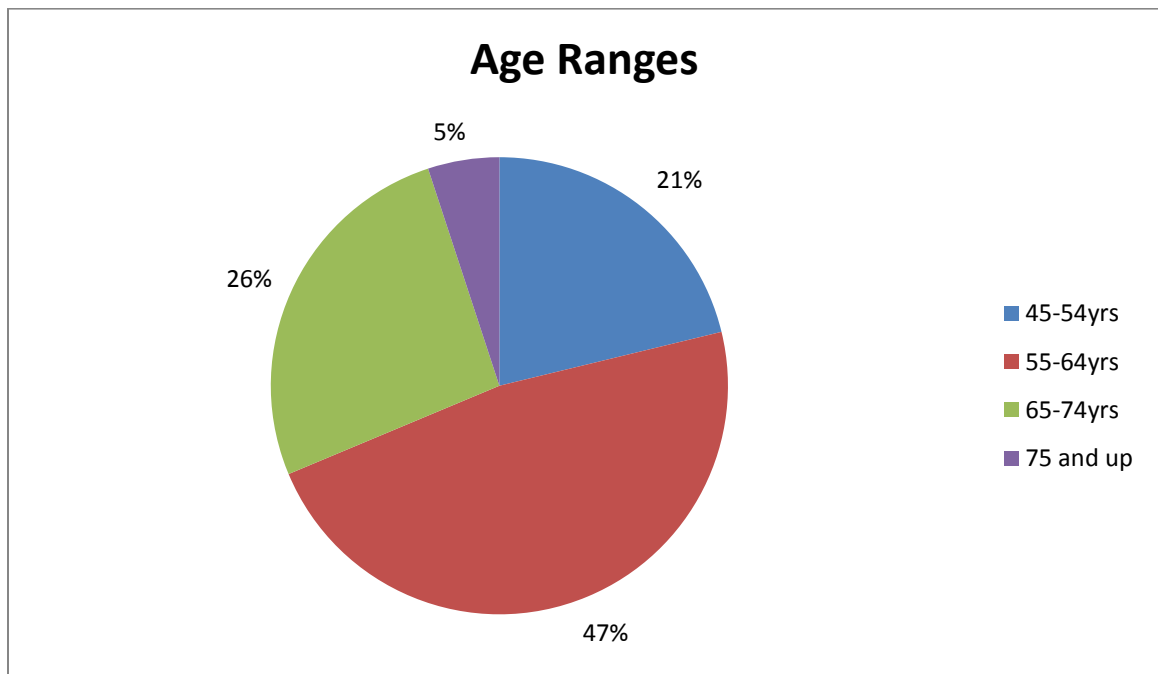


Figure 3. Age ranges

The average NVS score was 1.74 with a standard deviation of 1.97. Most participants had low or potentially limited literacy, with 58% of the subjects having low

health literacy (score of 0-1), and 26% having scores of 2-3 (indicating the possibility of limited literacy). Only 16% had adequate literacy (score of 4-6). There was a significant strong positive correlation between education and NVS score ( $r=0.67$ ,  $p=0.002$ ), and a significant positive correlation between income and NVS score ( $r=0.49$ ,  $p=0.035$ ). The NVS tool was found to have good internal consistency in this population (Cronbach's alpha 0.74). No significant correlations were found between the NVS score and marital status, length of stay in the United States and participant age.

<b>Demographic Item</b>	<b>r</b>	<b>p-value</b>
Education	0.67	0.002
Income	0.49	0.035
Age	-0.38	0.109
Length of stay in the US	-0.04	0.863

Table 2. Correlation between NVS and demographic items



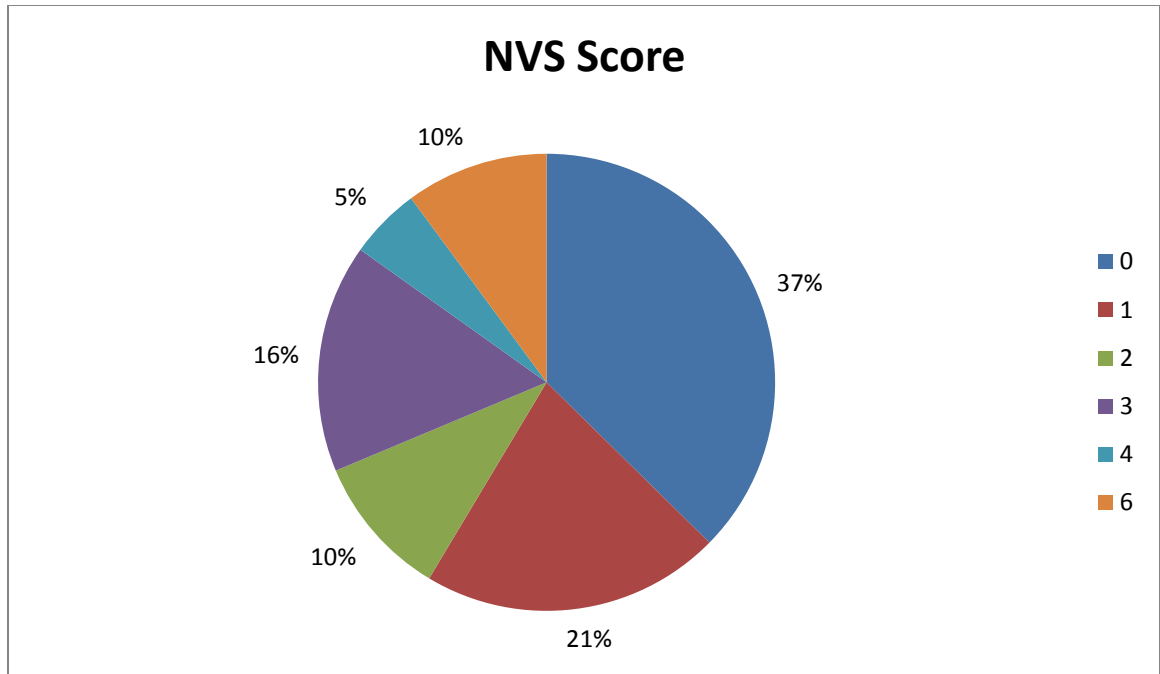


Figure 4. Percentages of NVS Score

## Chapter 5

### Discussion

The purpose of this study was to provide an initial insight into the health literacy levels of the immigrant Somali population and its associations with demographic and socioeconomic variables such as age, income, length of stay in the United States and education. For this purpose, health literacy was measured with the NVS tool and correlated with demographic characteristics that were collected as part of the study. Low health literacy was found in 58% of the population with an additional 26% having the possibility of limited health literacy. This finding is higher than the 47% prevalence of limited health literacy in the general American adult population (Nielson-Bohlman, *et al*, 2004). However, these findings are consistent with health literacy rates in ethnic minorities, the elderly, individuals with lower education levels, and individuals with social barriers such as language and culture (Martensson & Hensing, 2011; Ingram, 2011; Geltman, *et al*, 2013). The findings of this study suggest that the Somali men who are over the age of 45 are at an increased risk of difficulty in obtaining, processing and understanding basic health information.

Furthermore, as expected, this study also found a strong correlation between education and health literacy in this population (Nielson-Bohlman, *et al*, 2004; & Heinrich, 2012). Chen *et al* (2014) also reported the significant correlation between health literacy and knowledge. This study found that nearly half (47%) of this population had only elementary education as their highest educational attainment. Participants with lower education levels scored lowest on the NVS score. Only one participant had a

bachelor's degree and had the highest maximum score of 6. The level of education is therefore a contributing factor in the health literacy levels of this population.

Also, older participants had lower health literacy scores than younger participants but these differences were not statistically significant. This finding is consistent with the study results of Heinrich (2012) that found no significant correlation between age and health literacy. However, a significant correlation was found between income and health literacy in this population which is supported by the findings of Heide and colleagues (2013). The study found that the higher income earners had higher literacy levels. However, this finding is inconclusive due to the inability to verify it based on individual income.

### **Implications for practice**

A significant number of the older Somali men in this study were found to have low or limited health literacy. Therefore, older Somali males with low education are at higher risk for low health literacy and require interventions to increase literacy or to improve communication in health care settings. Acculturation should not be assumed based on the length of stay in the US. According to Geltman and colleagues (2013), acculturation is a measure of factors such as with whom people spend time, types of media they are exposed to and the language with which they communicate comfortably. Furthermore, acculturation in a culture is not determined by length of stay in that culture or by a measure of the individual's health literacy (Ingram, 2011). Healthcare providers should therefore assess health literacy for all patients (Heinrich, 2010) if possible. Also, healthcare providers should base their communication on the literacy levels of each

patient. However, given the low health literacy of this patient population, it is important that healthcare providers use clear communication and effective teaching strategies for all patients (Ingram, 2011). Printed educational materials should be assessed for reading levels, clarity of materials, use of pictures and use of medical terminology to ensure clarity of communication (Heinrich, 2010). Verbal and demonstrative instructions should also be provided in addition to written materials.

Furthermore, based on the beliefs of the “angry spirits” and “evil eye”, and the expectation of medication at all sick visits, there is the need for additional education within this population regarding their health care. This education should be clearly communicated especially due to potentially low health literacy.

### **Recommendations for future studies**

A larger sample size should be used for future studies to improve generalizability. Also, measurement of health literacy in the non-English speaking Somalis and Somali women will help to illuminate the health literacy needs of the general Somali population. Also, other studies could focus on the impact of health literacy on the health outcomes of the Somali population. Interventions are also needed to combat low health literacy in this population.

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**APPENDIX A**

Subject ID:

Date:

**Demographic Questionnaire**

Age

 45 – 54     55 – 64     65 -74     75 and above

Marital Status

 Married     Single     Divorced     Widowed

Highest level of education

 No education     Elementary School     High School     Associate Degree  
 Bachelor's Degree     Master's Degree     Doctoral Degree

Annual income in \$

 Under 10,000     11,000 – 25,000     26,000 – 50,000     51,000 – 100,000  
 above 100,000

Who do you live with?

 Alone     With spouse     With spouse and children     with extended family  
 Congregate housing

Length of stay in the United States?

 1 – 5yrs     6 – 10yrs     11 – 20yrs     over 20yrs

What diseases have you been diagnosed with?

 Heart disease     Cancer     High blood pressure     Diabetes     COPD      
 Hyperlipidemia     Arthritis     Obesity     Stroke     Other (list below)

## APPENDIX B

NVS Ice cream label

<b>Nutrition Facts</b>			
Serving Size		½ cup	
Servings per container		4	
Amount per serving			
Calories	250	Fat Cal	120
			%DV
<b>Total Fat</b>	13g		20%
Sat Fat	9g		40%
<b>Cholesterol</b>	28mg		12%
<b>Sodium</b>	55mg		2%
<b>Total Carbohydrate</b>	30g		12%
Dietary Fiber	2g		
Sugars	23g		
<b>Protein</b>	4g		8%

\*Percentage Daily Values (DV) are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

**Ingredients:** Cream, Skim Milk, Liquid Sugar, Water, Egg Yolks, Brown Sugar, Milkfat, Peanut Oil, Sugar, Butter, Salt, Carrageenan, Vanilla Extract.



