Heart Health Literacy Tables:
Exploring Cardiology and Medical Terminology with the Community

Honors Project

In fulfillment of the Requirements for

The Esther G. Maynor Honors College

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By

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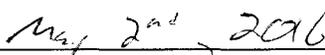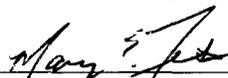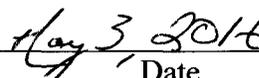
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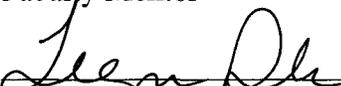
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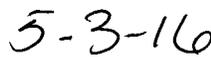
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HEART HEALTH LITERACY TABLES:

EXPLORING CARDIOLOGY AND MEDICAL TERMINOLOGY WITH THE

COMMUNITY:

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Abstract

This paper measures the degree of medical literacy in Robeson County and to better improve the understanding of various cardiovascular ailments. This will be done through numerous Heart Health Literacy Tables held at a local venue, Golden Corral (Lumberton, NC). Blood pressures will be administered on-site for willing participants, American Heart Association literature will be provided and explained, and comparisons will be drawn between the data collected and national values. Trends were seen, such as a greater participation of women, a higher incidence of hypertension in African Americans than other ethnicities (in contrast to their population sizes), and an upward trend in participation with respect to age. Overall, results corresponded nicely with national averages, with the exception that we had a larger percentage of Native American volunteers. This can be attributed to the proximity of the literacy table venue to the Lumbee Tribe population (Pembroke, NC). Strategies for improved methodology in communicating with patients, bridging the literacy gap, and blood pressure measurements are given as well.

Introduction

      We live in one of the most pivotal moments in healthcare reform in our nation's history. Since the enactment of the Affordable Care Act (ACA) in 2010, there has been a tremendous impact on the field of medicine and the availability of medical aid. Since its implementation, there has been a 60% increase in the number of patients, either in an in- or out-patient setting (Thompson). With the massive influx of sick persons commonly associated with the ACA, physicians and other medical professionals are faced with the growing task of providing proper care to a wider berth of patients.

      Coordinating efforts between staff, analyzing the data and symptoms present, delving into medical histories, interacting with patients and families, suggesting valid procedures and prescribing appropriate medications are just a few aspects of medicinal care (Safeer). But even with these comprising the mere tip of the iceberg we call "healthcare", one crucial skill is the tether that holds this system in place, being ancient as civilization itself: communication. Communication between not only healthcare professionals, but between staff, patient and families, can be extraordinarily efficacious. With this in mind, there is one caveat. It requires a complimentary relationship between the health literacy of the medical professional and the patient. That is what this paper will attempt to analyze and present, along with results of the Heart Health Literacy Tables and strategies on how to address any shortcomings in literacy.

Literacy: Definitions and Identification

      The American Medical Association (AMA) defines 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." (Schulte). It is the individual's capacity to obtain, process and understand basic services necessary to make critical decisions regarding his or her health.

Despite the fact that most adults have the ability to read at an eighth-grade level, twenty percent of the population reads at or below a fifth-grade level (Safeer). With most health care literature are written at the tenth-grade level, any pre-existing literacy disparity between physician and patient is then greatly compounded. The gap can be drawn even wider when older patients, with impaired vision and hearing status, and those whose primary language is not English are taken into account.

Patients with inadequate medical literacy may face many obstacles when accessing and utilizing the health care system. These could include missing appointments due to the inability to register for insurance or follow directions to the clinic, being unable to complete forms proficiently, signing a document that they don't understand, or leaving with unanswered questions due to being ashamed. The majority of patients with literacy problems are unable to follow prescription directions (Safeer). If a patient does not understand his or her doctor's or pharmacist's instructions, or those on the prescription label, and takes medication incorrectly, the condition can easily deteriorate. This results in more invasive treatment, higher costs, and a less desirable patient outcome (Schulte). One common example of this occurs predominately among Hispanics whose first language is not English. When given a medication that states "take once daily", someone with a flexible understanding of English would know to take a single pill per day, but for a Hispanic American the meaning might not be as clear. With the Spanish word "once" meaning eleven, they may construe the label to be telling them to take eleven pills a day, resulting in having to spend more money on both refills and doctor visits, and a severe increase in the possibility of a toxic overdose.

In order to be able to avoid these consequences of illiteracy, residents and physicians will have to first be able to identify those who are lacking. "When asked to identify which of their patients had deficiency in health literacy, residents identified 10 percent, but the actual figure

was more than a third" (Safeer). What is attributed to this discrepancy is that most physicians gauge their patient's literacy levels by asking for their highest level of education. In actuality, it has been shown that the final grade completed by the individual is often higher than their level of literacy due to declining cognitive function and increased time since formal education as age increases. Thus, asking a patient for their highest academic grade of completion in order to asses literacy skills can lead to a positive error on the awareness of the physician.

Patients that have limited health literacy may often feel a sense of shame, decreased self-worth and a perpetual fear of public embarrassment. As such, physicians and medical staff must rely not on just verbal cues, but on also behavioral cues as well in order to ascertain the literacy abilities of their patients. These can include: asking staff for help, inability to keep appointments, noncompliance with medication, making excuses ("I forgot my glasses") and postponing decision making ("May I take the instructions home" or "I'll read through this when I get home") (Almander-Douglas). There are also many assessment tools available that may aid in measuring health literacy. The quickest of these is the Rapid Estimate of Adult Literacy in Medicine, taking only two to three minutes to administer (see fig. 1). It tests the patient's recognition of various health care terms and converts the results into a numerical score that can better assist a physician's understanding of the literacy capabilities of their patients.

Patient name _____ Date of birth _____ Reading level _____

Date _____ Clinic _____ Examiner _____ Grade completed _____

List 1		List 2		List 3	
Fat	❏	Fatigue	❏	Allergic	❏
Flu	❏	Pelvic	❏	Menstrual	❏
Pill	❏	Jaundice	❏	Testicle	❏
Dose	❏	Infection	❏	Colitis	❏
Eye	❏	Exercise	❏	Emergency	❏
Stress	❏	Behavior	❏	Medication	❏
Smear	❏	Prescription	❏	Occupation	❏
Nerves	❏	Notify	❏	Sexuality	❏
Germs	❏	Gallbladder	❏	Alcoholism	❏
Meals	❏	Calories	❏	Irritation	❏
Disease	❏	Depression	❏	Constipation	❏
Cancer	❏	Miscarriage	❏	Gonorrhea	❏
Caffeine	❏	Pregnancy	❏	Inflammatory	❏
Attack	❏	Arthritis	❏	Diabetes	❏
Kidney	❏	Nutrition	❏	Hepatitis	❏
Hormones	❏	Menopause	❏	Antibiotics	❏
Herpes	❏	Appendix	❏	Diagnosis	❏
Seizure	❏	Abnormal	❏	Potassium	❏
Bowel	❏	Syphilis	❏	Anemia	❏
Asthma	❏	Hemorrhoids	❏	Obesity	❏
Rectal	❏	Nausea	❏	Osteoporosis	❏
Incest	❏	Directed	❏	Impetigo	❏

List 1 score _____ List 2 score _____ List 3 score _____

Raw score _____

Directions:

1. Give the patient a laminated copy of the REALM form and score answers on an unlaminated copy that is attached to a clipboard. Hold the clipboard at an angle so that the patient is not distracted by your scoring. Say: "I want to hear you read as many words as you can from this list. Begin with the first word in List 1 and read aloud. When you come to a word you cannot read, do the best you can or say, 'blank' and go onto the next word."
2. If the patient takes more than five seconds on a word, say "blank" and point to the next word, if necessary, to move the patient along. If the patient begins to miss every word, have him or her pronounce only known words.
3. Count as an error any word not attempted or mispronounced. Score by marking a plus (+) after each correct word, a check (✔) after each mispronounced word, and a minus (–) after words not attempted. Count as correct any self-corrected words.
4. Count the number of correct words for each list, and record the numbers on the "Score" line. Total the numbers, and match the score with its grade equivalent in the table below.

Scores and Grade Equivalents for the REALM Questionnaire

Grade equivalent

Raw score	Grade range
0 to 18	Third grade and below; will not be able to read most low-literacy materials; will need repeated oral instructions, materials composed primarily of illustrations, or audio or video tapes
19 to 44	Fourth to sixth grade; will need low-literacy materials, may not be able to read prescription labels
45 to 60	Seventh to eighth grade; will struggle with most patient education materials; will not be offended by low-literacy materials
61 to 66	High school; will be able to read most patient education materials

Fig. 1. Rapid Estimate of Adult Medicine in Literacy Form.

<u>Service Project Details, Procedure and Analysis</u>

The purpose of my service project, Heart Health Literacy Tables, was to analyze and address the growing disparity between health professionals (specifically their jargon) and the everyday person . Approximately "half of the adults in the United States do not understand what doctors, pharmacists, health care organizations and other health care professionals tell them about their medical care and treatment options" (Shulte). To improve the medical literacy of the local area, explanations of medical/diagnostic terminology, what their blood pressure values could indicate, and advice on what nutritional/physical paths they could take to improve their health were given. Eight heart health literacy tables were held within a four month period (January to April) at Golden Corral in Lumberton, NC. Individuals passing by the table were asked if they were willing to participate in our questionnaire in exchange for a free blood pressure check, given by myself and monitored by my assistant and mother, a nurse practitioner. If consenting, they were asked by myself for their gender, age, identifying ethnicity, and what cardiovascular ailments they and/or their family suffer from. Blood pressure results were given to them and recorded, but no names/audio/video were recorded. Below is the format of the data collection tool used to record volunteer data (see table 1).

Table 1

Table Data Collection Spreadsheet

Subject #	Age	Gender	Ethnicity	Blood Pressure (sys/dia)	Personal Ailments	Family Ailments
1						
2						
3						
4						
5						

Volunteers were then provided American Heart Association pins and pamphlets, the latter giving descriptions of relevant cardiovascular ailments and nutritional advice. Any serious conditions, and there were a few, were referred to the closest and most appropriate medical facility. The determination of the degree of "seriousness" was left to my assistant, Janice Butler Ryckeley.

Over the last four months, my project has had 286 individuals volunteer to assist, allowing me to measure their blood pressure and provide them with American Heart Association literature. Comparisons between what data is gleaned from the table and national averages (specifically cardiovascular ailments in certain age, gender, and ethnicity groups) will provide society an insight on which vascular symptoms and diseases need the most attention in the local area. Before we delve into the trends seen between groups and illness, let us first look at the raw data by the recorded demographics: gender, ethnicity and age.

Table 2

Gender Variance in Terms of Participation, Blood Pressure, Agreement, and Diabetes

Volunteers: Gender		
	Male	**Female**
Number of Volunteers	98	188
Stated HBP	35.8%	64.2%
HBP at time	36.4%	63.6%
Agreement between Statement and Measurement	46.2%	53.8%
Stated Diabetes	29.6%	70.4%

In respect to gender, we observe a significant difference between the number of male and female volunteers (see table 2). There were nearly twice as many female volunteers than males, and that can potentially be explained by behavioral reasons. Statistically men are more likely to

die from heart disease, diabetes, suicide, homicide and accidents than females. In spite of this, males are also far less likely to seek medical attention, may be partially due to how they were raised, emphasizing hypermasculine behavior and "toughing it out" (Almander-Douglas). When men do seek professional medical assistance, they are less likely to comply with instructions and advice. Women on the other hand have much better outcomes in the realm of mortality, but this is not the case in terms of morbidity, especially for certain acute and chronic diseases. In comparison, more women than men suffer from hypertension, diabetes and respiratory conditions, but while they may suffer more from illnesses, their conditions are less often life-threatening.

Table 3

Ethnicity Variance in Terms of Participation, Blood Pressure, Agreement, and Diabetes

Volunteers: Ethnicity					
	Caucasian	African Am	Native Am	Hispanic	Other
Number of Volunteers	136	104	30	12	4
Stated HBP	50.90%	35.80%	13.30%	0%	0%
HBP at time	47.70%	29.50%	15.90%	4.60%	2.30%
Agreement between statement and measurement	61.50%	30.80%	7.70%	0%	0%
Stated Diabetes	51.90%	29.60%	7.40%	11.10%	0%

U.S. Population by race/ethnicity (2012)

- White, 63%
- Hispanic or Latino*, 16.9%
- Black or African American, 13.1%
- Asian, 5.1%
- American Indian/Alaskan Native, 1.2%
- Native Hawaiian or Other Pacific Islander, .20%
- Two or more races, 2.4%
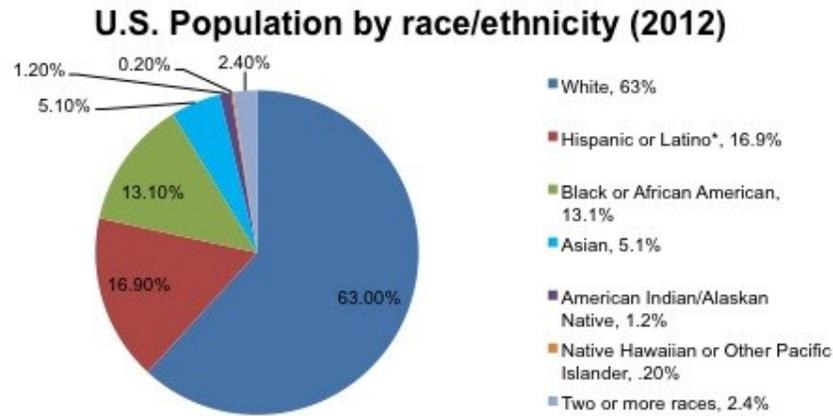
Fig. 2. Census Data of Racial Diversity of the United States (2012).

With ethnicity, we view Caucasians and African Americans with the highest participation at the literacy table and Native Americans, Hispanics and other having the least (see table 3). According to national census reports, there are more Hispanic/Latino people than African Americans and Native Americans (see fig. 2). From this, we see that even though African Americans and Native Americans consist of smaller portions of the national population than Hispanic Americans, they were more likely to participate in the Heart Health Literacy table. This can either be attributed to a difference in the local demographics with respect to race and/or the awareness of risk factors within particular races (Wilkins). According to the American Heart Association (AHA), in comparison to Caucasians, African Americans have the worst health profile with higher rates of death due to cancer, heart disease and diabetes. Specifically, African American males have the absolute lowest life expectancy of any racial or gender category (Wilkins). In respect to the service tables, we see Caucasians with the highest values across the board, with African Americans following, and then a dramatic drop-off with the other ethnicities. Historically, Hispanic and Native Americans have mixed statistics in comparison to Caucasians, having lower mortality rates attributed to heart disease, but higher mortality rates attributed to

diabetes (Minino). Native Americans especially have some of the highest mortality rates linked to diabetes and suicide.

Table 4

Age Variance in Terms of Participation, Blood Pressure, Agreement, and Diabetes

Age			
15-30	30-50	50-70	70+
40	76	138	32

Chronic diseases disproportionately affect older adults and are typically associated with disability, diminished quality of life, and increased financial cost for long-term care. Today, about 80% of older adults have at least one chronic condition, and 50% have at least two (Clinical Practice Guidelines). As such, elderly individuals have an increased incentive to become more educated and aware of their health and risk factors. This can be seen in Table 4 as we have an abrupt spike in volunteers whose age ranged from 50 to 70 years old. This trend can also be attributed to the fact that the one of the largest causes of mortality in aged individuals (45 and older) is heart disease (see fig. 3).
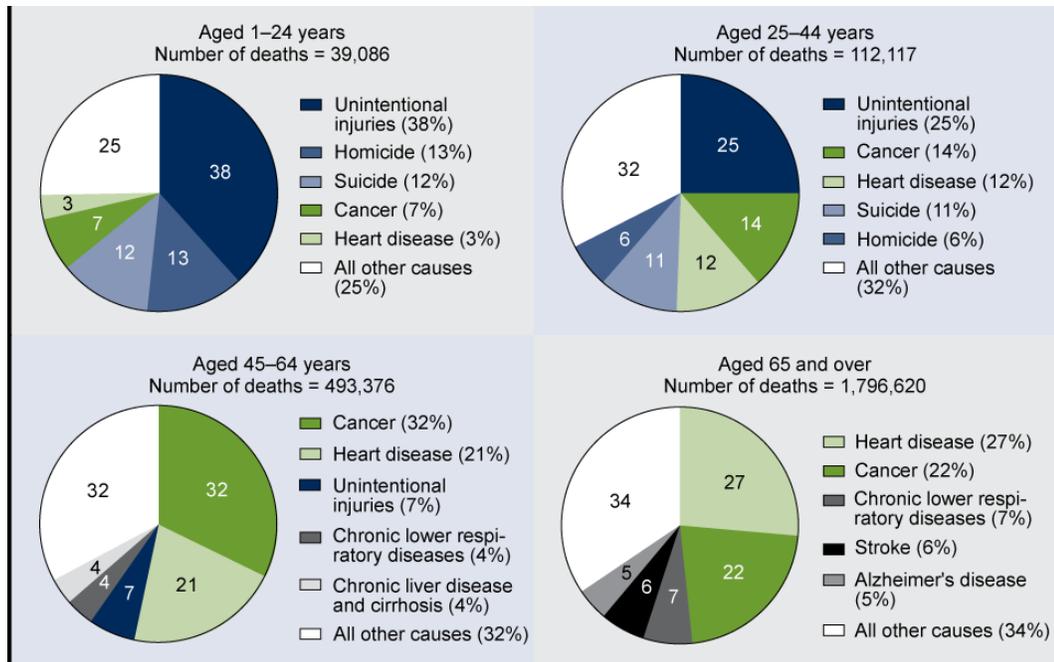
Fig. 3. Percent Distribution of Five Leading Causes of Death, by Age Group.

Younger individuals (<44 years old) are more prone to die due to non-natural circumstances, leading causes being homicide, suicide, and unintentional injuries (Minino). This can contribute to a decreased incentive for health-related awareness, with a mindset that ailments such as cancer, heart disease and stroke are restricted to "old-people." This can explain why the participation of individuals in the younger age brackets, 15-40 years old, was the smallest. Another trend that needs explanation is even with the apparent increase of incentive in elderly individuals to improve health awareness (50-70 years old), why is there such a drop-off in the 70+ bracket? The reason could be that even though increased age begets a need for health literacy, there is a drastic decrease in the population of individuals age seventy and older in the U.S. (see fig. 4) (West). So even though there is the desire to learn about one's health, thus leading to participation at the literacy table, there is a much smaller pool of individuals to draw from in this age bracket.
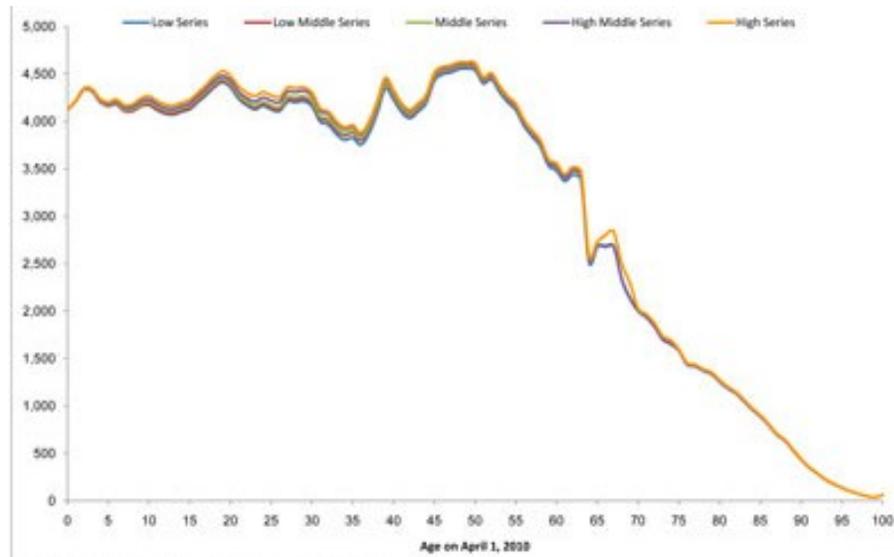
Fig. 4. Total U.S. Population by Age: April 1, 2010. West, Mary J.

What Was Learned

According to the American Heart Association (AHA), one of the most common cardiovascular ailments seen in Americans is hypertension. Commonly referred to as "high blood pressure", hypertension is a condition when the driving force for the movement of blood is greater than normal. As the name would imply (hyper- meaning more, -tension referring to pressure), hypertension is abnormally high pressure being produced by the heart exerted against blood vessels, causing an increased likelihood of damage. Classification for the quality of blood pressure is provided in Fig. 5.

Blood Pressure Classification in Adults (JNC 7)

BP Classification	SBP (mm Hg)	DBP (mm Hg)
Normal	< 120	and < 80
Prehypertension	120 – 139	or 80 – 89
Stage 1 Hypertension	140 – 159	or 90 – 99
Stage 2 Hypertension	≥ 160	or ≥ 100

Fig. 5. Clinical Practice Guidelines on Hypertension and Antihypertensive Agents in Chronic Kidney Disease

Approximately 70 million American adults have high blood pressure, roughly equating to one in three adults in the U.S.. Prevalence of hypertension is high in men until age 45, similar for both sexes from 45-64, and with women being most prone after 64 year of age (Clinical Practice Guidelines). With respect to race, African American adults are among the highest prevalence in the world (45%).

When in the clinical setting, some blood pressure values could be artificially inflated due to improper measuring procedure on the part of the medical professional. Examples include incorrect cuff size, taking the pressure immediately when the patient enters, crossed legs and even talking during the measurement. Having a cuff too large for the patient could result in a falsely low blood pressure, while one too small will do the inverse. Administering a blood pressure measurement shortly after the patient's entry into the room will result in an artificially elevated pressure due to having just walked. It is suggested to have the patient sit at rest, back supported and with arm at heart level for at least five minutes before conducting a measurement (Clinical Practice Guidelines). Even details such as having the patient's legs crossed or conversing can artificially raise their blood pressure, although by a smaller margin (1-4 mmHg

systolic). An example of a positive error in measurement readings that is not directly the result of staff procedure is White Coat Hypertension. This is an increased blood pressure due to not the method of measurement, but just location and being in the presence of medical staff. To ascertain whether an abnormally high blood pressure is genuine or a result of White Coat Hypertension, Home BP Measurement (HBPM) can be conducted by the patient or homecare professional with instructions, and twelve consecutive readings over a week's period will be used to make a decision.

Conclusion

The American Medical Association (AMA) defines 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" (Schulte). Data collected from the Heart Health Literacy tables agreed with national averages and trends, except that our Native American participation was inflated due to the proximity to the Lumbee Tribe. From improvements to methods in blood pressure monitoring to improving communication skills with patients, physicians (current and future) have many avenues towards improved patient literacy. Just as science is a constantly evolving field, so is language and communication. As such, flexibility and continual self-improvement should be emphasized, as it is a requirement for effective communication between physician and patient.

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