

IMPLEMENTING THE SUITABILITY ASSESSMENT OF MATERIALS (SAM) TO IMPROVE  
HEALTH LITERACY AT A RURAL COMMUNITY HEALTH CENTER

by

Stephanie Lewis

A Senior Honors Project Presented to the

Honors College

East Carolina University

In Partial Fulfillment of the

Requirements for

Graduation with Honors

by

Stephanie Lewis

Greenville, NC

May 2014

Approved by:

Faculty Mentor (signature required):

A handwritten signature in black ink that reads "Kim Larson". The signature is written in a cursive style with a horizontal line underneath the name.

Kim Larson, RN, PhD

## **Introduction**

Health literacy, as defined by the Institute of Medicine, is “the degree to which individuals have the capacity to obtain, process, and understand basic information and services needed to make appropriate decisions regarding their health,” (Institute of Medicine, 2013, p. 1). The necessity to address low health literacy is becoming an increasingly important issue, and improving health literacy and communication has been identified as a national health priority to improve health outcomes (United States Department of Health and Human Services, 2013). While patients routinely receive brochures and handouts on various health conditions, many of these documents are written at a reading level too high for the patient to comprehend. (Helitzer, Hollis, Cotner, & Oestreicher, 2009). According to the 2003 National Assessment of Adult Literacy (NAAL), 43% of participants were identified as below-basic or basic in health literacy (Kutner, Greenberg, Jin, & Paulsen, 2006). The average reading level of the adult population is at an 8<sup>th</sup> to 9<sup>th</sup> grade level, but nearly one in five adults is at 5<sup>th</sup> grade level or below (Doak, Doak, & Root, 1996). Although, there is no consensus on a specific grade level that all health information documents should conform to, it is important to match the reading grade level to the health literacy skills of the target patient population. If a document is written at a 9<sup>th</sup> grade level or above it is likely too difficult for the majority of the adult population to understand (Doak, Doak, & Root, 1996).

## **Literature Review**

### **Impact of Low Health Literacy**

Low health literacy skills have been shown to increase non-adherence with heart disease treatment regimens, (Taylor-Clarke et al., 2012) and heart disease is the leading cause of death in the United States (Kochanek, Xu, Murphy, & Kung, 2011). Heart disease is also the second

leading cause of death in North Carolina, causing nearly one out of four deaths (North Carolina Center for Health Statistics, 2012). Counties in eastern North Carolina have the highest death and hospitalizations rates from heart disease in the state (Huston, 2010). With increasingly limited resources in health care, allocation of services to where they will have the highest impact is crucial. Nurses are in a unique position to address health literacy in the clinical setting, especially regarding the suitability of patient education materials (Cornett, 2009).

Low health literacy has a significant impact on both the health care system and the individual patient (Oates & Paasche-Orlow, 2009). Patients with inadequate health literacy skills may be unable to comprehend instructions communicated to them by their health care provider or even follow instructions on a medication label (DeMarco & Nystrom, 2010). Low health literacy is also associated with decreased capacity to manage chronic disease (Gazmararian, Williams, Peel, & Baker, 2003) and lower medication compliance rates (Keller, Wright, & Pace, 2008). These are both important skills in the management of heart disease. Patients with lower literacy are more likely to self-report fair or poor health compared to patients with higher literacy (Evangelista et al., 2010). Additionally, they often have higher admission rates and use services that are needed for more critical patients, such as emergency departments. The use of such services leads to inefficient use and higher health care costs (DeMarco & Nystrom, 2010). Difficulty understanding basic health information and navigation health care resources can have severe effects on an individual's physical health.

Millions of Americans live with heart disease, which results in an increasing financial burden on the health care system and society as a whole. In 2010, heart disease costs in the United States were estimated to be \$316.4 billion (Huston, 2010). In turn, improving health literacy could reduce this burden. Health information on heart disease prevention and

management that is available to all individuals, regardless of literacy level, is imperative when approximately 11% of the adult population in the United States has a diagnosis of heart disease (Centers for Disease Control and Prevention, 2012).

### Assessment Tools

Printed patient education materials are a common form of health communication in community-based settings. It is important to have materials that are universally accessible, so that regardless of a person's literacy level they are able to understand the information presented (Institute of Medicine, 2013). Several assessment tools are available to evaluate educational materials. These include the Flesch-Kincaid Grade Level, Fry Readability Graph, Simplified Measure of Gobbledygoo (SMOG), and the Suitability Assessment of Materials (SAM). The Flesch-Kincaid, Fry, and SMOG tools look at the prevalence of polysyllabic words in a particular document. A grade level is then assigned to the brochure based on the formula (Flesch, 1948; Fry, 1977; McLaughlin, 1969; Doak, Doak, & Root, 1996). The main focus of these formulas is readability. While reading level is one aspect of printed materials, there are other areas that influence a patient's ability to understand information.

The Suitability Assessment of Materials (SAM) incorporates other variables into its assessment. The SAM tool looks at various areas: content, literacy demand, graphics, layout and typography, learning stimulation and motivation, and cultural appropriateness (Doak, Doak, & Root, 1996). It is important to note that graphics can increase the effectiveness of printed materials and have been shown to increase patient recall, comprehension, and adherence (Brotherstone, Miles, Robb, Atkin, & Wardle, 2006; Katz, Kripalani, & Weiss, 2006). After the document is scored based on all of the outlined criteria, a rating of superior, adequate, or not suitable is assigned (Doak, Doak, & Root, 1996).

Health literacy is a complex and multidimensional concept, and it encompasses more than reading ability (Smith, Nutbeam, & McCaffery, 2013). This SAM tool is a more inclusive measure of the variables that affect a person's ability to understand a document, compared to tools that only look at readability. When using the SAM tool, if a document is not suitable, areas that need improvement can be identified. This feature is valuable to nurses, who can either find more suitable material to give to patients or update the current document with necessary revisions.

#### Nursing Interventions: Screening for Health Literacy

Nurses play a crucial role in teaching patients about health promotion and disease management, and can make a difference in addressing health literacy in the health care setting. One-third of health care professionals are unaware of the issues surrounding health literacy or do not understand how health literacy affects patient care (Shieh & Hosei, 2008).

In order to facilitate an environment that is conducive to patient learning, nurses and other health care providers need to screen patients for low health literacy, document learning preferences in patient records, and use health communication and teaching techniques that are appropriate for the patients literacy level (Evangelista et al., 2010). Several studies recommend that appropriate education materials are needed in order to create an environment that is accessible to all patients, regardless of their literacy level (Taylor-Clarke et al., 2012; DeMarco & Nystrom, 2010; Evangelista et al., 2010). Nurses routinely distribute patient educational materials and it is important that these materials are appropriate for the population they are serving (Kamimura, Christensen, Tabler, Ashby, & Olsen, 2013). Nurses are in a unique position to address the issue of health literacy, especially assessing the readability of written health information materials.

In order to address the problem of health literacy, this senior honors project was conducted in partnership with a community health nurse located a rural community health center in eastern North Carolina. This community health center is one of 20 centers in a rural health center network. The purpose of this project was specifically to assess the suitability of heart disease health information disseminated at this center, using the SAM tool, and examine the role of the community health nurse in the dissemination of these materials.

### **Methodology**

This project took place during a 7-week community health clinical rotation. First an environmental assessment of a segment of the target county was conducted. This occurred through direct observation and gathering of secondary information. The main categories of this survey included: community vitality, indicators of social and economic conditions, health resources, environmental conditions related to health, and social functioning. Second, an assessment of available health literature was conducted, specific to heart disease. Third, observations were conducted regarding how health education materials were disseminated at this health center. Finally, interview questions were developed and key informants were identified. The interview questions were: 1) What do you feel your role is in distributing health information materials at this health center? 2) How do you educate patients using health information? 3) How do you assess patients' understanding of the material? 4) Where do you obtain the materials you distribute to patients? 5) Do you face any barriers in obtaining health information materials? If so, what are these barriers? 6) Do you face any barriers in distributing or reviewing materials with patients? If so, what are these barriers?

A total of three community health nurses were interviewed as key informants about their role in the dissemination of health information materials. Finally, key health education materials

were collected and evaluated using the SAM tool. A total of eight health education brochures were evaluated, three brochures about heart disease prevention and maintenance were collected at this rural community health center. Five brochures were obtained from the main center, due to the limited availability of materials at the rural health center. The SAM tool was used to evaluate these eight brochures. Each brochure took an average of 20-30 minutes to evaluate. For the literacy demand sub-section of the SAM tool, the grade level of each brochure has to be calculated. To determine the reading grade level for each brochure SMOG tool was used. Finally, using the SAM tool, the suitability score of each health education document (superior, adequate, or not suitable) was determined.

### **Findings**

The main findings for this project were: using the SAM tool to score the brochures, 100% received a score of adequate and 75% received a score of superior. Even though all of the documents were found to be adequate, the majority of the brochures were still written at too high of a reading level. Using the SMOG tool, five out of the eight brochures (62.5%) were above an 8<sup>th</sup> grade reading level and only three out of the eight brochures (37.5%) were at or below an 8<sup>th</sup> grade reading level.

The findings from the environmental assessment provided an overview of the target county. The rural community health center primarily serves a low income and uninsured population in a rural community. The health center provides a wide range of services across the lifespan including primary and preventive care. As of 2012, the estimated population of the target county was 124,246, with three predominant ethnic/racial groups: White (55%), African American (32%), and Hispanic (10%). Almost 22% of the population is below the poverty level and the median household income is \$41,233. Only 81% of the population has a high school

diploma or higher, and only 15% have a Bachelor's degree or higher (U.S. Census Bureau, 2014). The target county encompasses urban, suburban, and rural areas with a wide range of housing options including: single-family homes, apartments, and Section 13 housing. The community has numerous health services including a community hospital, local health department, community health centers, dozens of pharmacies and private physician offices.

Key informants reported that health teaching is an important role for the community health nurse. Methods used to educate clients were verbal discussion and the use of printed materials. Asking questions and clarifying were identified as the most common ways of assessing a patient's understanding of the material. Most of the health information materials the nurses used were materials that the health center received at no cost. Lack of funding, lack of materials at no cost, and lack of Spanish-language materials were barriers identified to obtaining appropriate health information. Having too little time with patients, resulting from a high-volume of patients in one day, was identified as a major barrier to patient education. Lastly, all key informants agreed that health literacy is a significant barrier to positive health outcomes for the population this center serves.

### **Discussion**

With approximately 20% of the population living below the poverty level and not having at least a high school diploma, health literacy is a subject that needs to be addressed in this community. Community health nurses, especially those at the rural community health center, are in a unique position because of their direct daily one-on-one interaction with this vulnerable population. The SAM tool is useful in identifying materials that are not appropriate for distributing to clients. Even though the SAM tool considers many factors involved in the composition of a health information document, reading level is a concern for many documents,



even those that received an adequate rating. In addition to the SAM tool, nurses must use their judgment for whether or not a specific health information material will enhance a client's understanding of the topic. Providing educational materials that are at the 8<sup>th</sup> grade level or lower is imperative in addressing health literacy, so that clients are able to comprehend the information and use that knowledge to manage their condition or improve their health.

The SAM tool and its use in evaluating materials were presented to the community health nurses. The implementation of this tool will help nurses identify materials that are not suitable to distribute to clients. The heart disease materials obtained from the community health center were from various health organizations and pharmaceutical companies. These materials were received at no cost to the health center, but were limited in quantity. This created a need for additional materials that could be re-printed at a low cost. Additional heart disease health information materials from the American Heart Association were identified, due to the limited availability of health information materials at the center. A system for incorporating these low literacy materials was developed for use by the community health nurse at this rural community health center. In collaboration with the community health nurse, the materials were printed and organized along with the other suitable materials already at the center. This system was located in the nurse's desk, ready for access and distribution to clients.

Patient education materials are only one component to improving health literacy and teaching clients. Ultimately, the nurse must use their judgment in educating the patient on necessary health information. In addition to having appropriate materials available, continuing education on the topic of health literacy and patient education should be provided to nurses, in both acute care and community-based settings. Increasing awareness among nurses about teaching techniques would also be beneficial in improving health literacy. Incorporating health

literacy concepts into nursing curricula will be vital to increasing the nursing profession's leadership role in addressing and improving health literacy (Cornett, 2009). In order for nurses to implement these interventions, nurses need to be informed and educated in this area (Wood, Kettinger, & Lessick, 2007; Evangelista et al., 2010).

## References

- Brotherstone, M., Miles, A., Robb, K. A., Atkin, W., & Wardle, J. (2006). The impact of illustrations on public understanding of the aim of cancer screening. *Patient Education and Counseling*, 63(3), 328-335. doi.org/10.1016/j.pec.2006.03.016
- Centers for Disease Control and Prevention. (2012). *Summary Health Statistics for U.S. Adults: National Health Interview Survey, 2011*. Retrieved from [http://www.cdc.gov/nchs/data/series/sr\\_10/sr10\\_256.pdf](http://www.cdc.gov/nchs/data/series/sr_10/sr10_256.pdf)
- Cornett, S. (2009). Assessing and addressing health literacy. *Online Journal of Issues in Nursing*, 14(3), 1-16. Retrieved from <http://search.proquest.com.jproxy.lib.ecu.edu/docview/501869610/fulltextPDF?accountid=10639>
- DeMarco, J. & Nystrom, M. (2010). The importance of health literacy in patient education. *Journal of Consumer Health on the Internet*, 14(3), 294-301. doi:10.1080/15398285.2010.502021
- Doak, C. C., Doak, L. G., & Root, J. H. (1996). *Teaching patients with low literacy skills*. Retrieved from <http://www.hsph.harvard.edu/healthliteracy/files/2012/09/doakchap1-4.pdf>
- Evangelista, L. S., Rasmusson, K.D., Laramée, A. S., Barr, J., Ammon, S. E., Dunbar, S.,...Yancy, C. W. (2010). Health literacy and the patient with heart failure-implications for patient care and research: A consensus statement of the Heart Failure Society of America. *Journal of Cardiac Failure*, 16(1), 9-16. doi:10.1016/j.cardfail.2009.10.026
- Flesch, R. (1948). A new readability yardstick. *Journal of Applied Psychology*, 32(3), 221-233. doi:10.1037/h0057532

Fry, E. (1977). Fry's readability graph: Clarifications, validity, and extension to Level 17.

*Journal of Reading*, 21(3), 242-252. Retrieved from

<http://www.jstor.org/stable/40018802>

Gazmararian, J. A., Williams, M. V., Peel, J., & Baker, D. W. (2003). Health literacy and knowledge of chronic disease. *Patient Education and Counseling*, 51(3), 267–75

Helitzer, D., Hollis, C., Cotner, J., & Oestreicher, N. (2009). Health literacy demands of written health information materials: An assessment of cervical cancer prevention materials.

*Cancer Control: Journal of the Moffitt Cancer Center*, 16(1), 70. Retrieved from

<http://familycancergeneticsnetwork.org/CCJRoot/v16n1/pdf/70.pdf>

Huston, S. L. (2010). *The burden of cardiovascular disease in North Carolina*. Retrieved from

[http://www.startwithyourheart.com/resources/508SWYH\\_BurdenofCVDinNCJuly2010.pdf](http://www.startwithyourheart.com/resources/508SWYH_BurdenofCVDinNCJuly2010.pdf)

Institute of Medicine (2013). Health literacy: Improving health, health systems, and health policy around the world. Washington, D. C.: The National Academies Press.

Kamimura, A., Christensen, N., Tabler, J., Ashby, J., & Olsen, L. M. (2013). Patients utilizing a free clinic: Physical and mental health, health literacy, and social support. *Journal of Community Health*, 38(4), 716-723. doi: 10.1007/s10900-013-9669-x

Katz, M. G., Kripalani, S, & Weiss, B. D. (2006). Use of pictorial aids in medication

instructions: a review of the literature. *American Journal of Health-System Pharmacy*, 63(23), 2391-2397.

Keller, D. L., Wright, J., & Pace, H. A. (2008). Impact of health literacy on health outcomes in ambulatory care patients: a systematic review. *The Annals of Pharmacotherapy*, 42(9), 1272–81

- Kochanek, K. D., Xu, J., Murphy, S. L., Minino, A. M., & Kung, H. (2011). Deaths: Final data for 2009. *National Vital Statistics Reports*, 60(3). Retrieved from [http://www.cdc.gov/nchs/data/nvsr/nvsr60/nvsr60\\_03.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr60/nvsr60_03.pdf)
- Kutner, M., Greenberg, E., Jin, Y., & Paulsen, C. (2006). *The health literacy of America's adults: results from the 2003 national assessment of adult literacy*. Retrieved from <http://nces.ed.gov/pubs2006/2006483.pdf>
- McLaughlin, G. H. (1969). SMOG grading-a new readability formula. *Journal of Reading*, 12(8), 639-646. Retrieved from <http://www.jstor.org/stable/40011226>
- North Carolina Center for Health Statistics. (2012). *Leading causes of death in North Carolina 2012*. Retrieved from <http://www.schs.state.nc.us/schs/data/lcd/getleadcauses.cfm>
- Oates, D. J. & Paasche-Orlow, M. K. (2009). Health Literacy: Communication strategies to improve patient comprehension of cardiovascular health. *Circulation*, 119(7), 1049-1051. doi:10.1161/CIRCULATIONAHA.108.818468
- Shieh, C., & Hosei, B. (2008). Printed health information materials: Evaluation of readability and suitability. *Journal of Community Health Nursing*, 25(2), 73-90. doi:10.1080/07370010802017083
- Smith, S. K., Nutbeam, D., & McCaffery, K. J. (2013). Insight into the concept and measurement of health literacy from a study of shared decision-making in a low literacy population. *Journal of Health Psychology*, 18(8), 1011-1022. doi: 10.1177/1359105312468192
- Taylor-Clarke, K., Henry-Okafor, Q., Murphy, C., Keyes, M., Rothman, R., Churchwell, A., . . . Sampson, U. K. A. (2012). Assessment of commonly available education materials in heart failure clinics. *The Journal of Cardiovascular Nursing*, 27(6), 485-494. doi:10.1097/JCN.0b013e318220720c

United States Department of Health and Human Services. (2013). *Health Communication and Health Information Technology*. Retrieved from <http://healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicId=18>