

Health Literacy Provider Training and Patient Satisfaction

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Approved May 2017 by the faculty of UMKC in partial fulfillment of the requirements  
for the degree of Doctor of Nursing Practice

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### Abstract

Ninety million Americans lack the health literacy skills required to adequately manage their health while healthcare professionals lack the formal training to appropriately address the needs of low health literate patients. Individuals with limited literacy skills have overall poorer health, more hospitalizations, less use of preventive care services, and decreased knowledge regarding health information. The purpose of this health literacy project was to determine if an evidence based provider health literacy training intervention improved patient satisfaction scores at a rural primary care clinic. This pilot project utilized a quasi-experimental study design comparing the Consumer Assessment of Healthcare Providers and Systems (CAHPS®) survey satisfaction scores of patients regarding provider communication pre and post intervention. The target population was the adult patients of a primary care provider, and formal health literacy training was provided to the healthcare professional to improve competencies regarding the health literacy of patients. The outcome measured was patient satisfaction CAHPS® scores. Results of the project found that participants reported an improvement in their satisfaction with the provider's communication in regards to the use of medical terminology following the health literacy training. When individuals with limited health literacy are properly identified, communication and education can be tailored to their health literacy level to empower adults to adequately manage their own health, decreasing the social burden of misuse of medical resources, improving health outcomes, and ultimately decreasing healthcare costs.

*Keywords:* health literacy, health literacy education, health literacy screening, health literacy assessment, health literacy provider training, patient satisfaction, quality of care, self-efficacy, theory of Self-Efficacy.

### Health Literacy Provider Training and Patient Satisfaction

The National Center for Education Statistics performed the National Assessment of Adult Literacy (NAAL) surveys in 1992 and 2003 (Bass, Wilson, Griffith, & Barnett, 2002; Chew et al., 2008; Schlichting et al., 2007). In 2003, NAAL found that 29% of adults in the United States possessed marginal literacy skills and an additional 14% of American adults had suboptimal literacy skills indicating that poor literacy is a problem for approximately 90 million adults (Kutner, Greenburg, Jin, & Paulsen, 2006). These findings were similar to the results from 1992 and supported that literacy issues are an ongoing problem in the United States (Mihalopoulos, Powers, Lengel, & Mangan, 2013; Schillinger, Bindman, Wang, Stewart, & Piette, 2004).

Health literacy is a person's ability to identify, comprehend, and perform on health related information (Coleman, 2011; Ferguson & Pawlak, 2011). Ferguson and Pawlak (2011) estimated that only 12% of the adult population residing in the United States possess adequate abilities and knowledge to appropriately control their own health. Individuals with literacy skills below the basic level have increased rates of poor or adverse health outcomes, higher incidences of chronic disease, and more hospitalizations (Chew et al., 2008; Coleman, 2011; DeWalt et al., 2011). Many factors influence the adverse health outcomes of individuals with literacy skills below the basic level including delayed diagnosis, poor treatment regimen adherence, and inadequate use of preventative service and follow-up (Ferguson & Pawlak, 2011; Kripalani et al., 2006; Manning & Kripalani, 2007).

Based on the NAAL findings and through deductive reasoning, about half of the adult population will have low literacy skills (Coleman & Fromer, 2015; Kripalani et al., 2006). No structured health literacy screening of patients occurred at the project primary care clinic site, and providers lacked formal health literacy training. The patient population of this clinic is

homogeneous consisting of a majority of Caucasians limiting the cultural diversity of the population.

Research indicates that health literacy status does not correlate to the highest level of education completed, and it was found that most individuals typically possess reading skills two to five grade levels less than the highest grade level they had achieved (Kutner et al., 2006). Low health literacy can be a problem in any setting, and other risk factors for low health literacy are likely to be represented in a given population. Identity, cognitive, behavioral, and affective diversity exist among a population (Gerstandt, 2010). Cognition and health literacy are the foundations of this evidence based practice project, and a wide range of cognitive diversity is anticipated among any patient population.

### **Problem and Purpose**

The awareness, knowledge, and skills to recognize and effectively communicate with and educate patients with low health literacy are often lacking by healthcare providers. The purpose of this health literacy project was to determine if an evidence based health literacy training intervention with a healthcare provider would improve patient satisfaction CAHPS® scores at a primary healthcare clinic. Health literacy has been identified by the Institute of Medicine, Agency for Healthcare Research and Quality, The Joint Commission, and The Centers for Disease Control and Prevention (CDC) as a major issue currently faced by our healthcare system (CDC, 2016; DeWalt et al., 2011; Nielsen-Bohlman, Panzer, & Kindig, 2004; VanGeest, Welch, & Weiner, 2010). One of the objectives by the Department of Health and Human Services' (DHHS) *Healthy People 2020* is to increase the health literacy of the people of the United States (DHHS, 2014).

The probable barriers to successful implementation of this evidence based practice project were anticipated to be access and willingness of the provider to participate in the health literacy training process. The provider may not believe that health literacy is an issue among their patient population, or if it is recognized as a problem, it may be considered of low priority compared to other problems (Barrett, Puryear, & Westpheling, 2008). Additional barriers considered were the willingness of clinic staff to participate in the health literacy screening process. Clinicians may not believe that they will have adequate time to implement a health literacy practice change (Barrett et al., 2008). Clinics commonly have a demanding workload and implementation of one more step in the check-in process for patients may not be well received by clinicians.

For this project, the facilitators considered were providers' enthusiasm for quality improvement and new knowledge regarding their patient management. Awareness of the issues regarding low health literacy, the impact on patients' overall health, and the healthcare costs generated from noncompliance with treatment, lack of preventative care, and improper use of medical resources may also generate support from the organization and clinic administration. As a low cost project, the potential for a positive economic impact would serve as a facilitator for this project.

Sustainability was thought to be related to provider and staff compliance with execution of this evidence based project. If this project was successful and supported by the provider and organization, a quality improvement practice change may occur making health literacy assessment part of the medical history information gathered during check-in. If the health literacy assessment results are integrated into the electronic medical record for documentation and reviewed by the provider, sustainability will be promoted. Factors inhibiting sustainability

might include lack of organizational support for the screening process and no convenient method for documentation. If the project is not successful based on CAHPS® scores or providers do not deem health literacy training or screening helpful in improving patient care, continuation of health literacy screening will likely not occur. The implications for overall improved patient outcomes far outweighs the small monetary investment the organization would make to sustain a health literacy training program for their providers (Barrett et al., 2008).

### **Review of the Evidence**

The clinical inquiry for this project was, in a primary care provider, does providing health literacy training and provider awareness of patients' health literacy level improve patients' satisfaction CAHPS® scores during a three-month period at a primary care clinic? The key databases searched were PubMed, Medline, Ovid, Cumulative Index to Nursing and Allied Health Literature, EBSCOhost, BioMed Central, PsycINFO, Cochrane Database of Systematic Review, and National Guideline Clearinghouse. Keywords included health literacy, health literacy education, health literacy screening, health literacy assessment, health literacy provider training, patient satisfaction, patient-provider communication, and quality of care (see Appendix A for definition of terms).

The search yielded approximately 87 studies which were narrowed to 18 studies based on applicability to this project. The level of evidence based on Melnyk and Fineout-Overholt (2014) include the following: four randomized controlled trials at level II; six controlled trial studies at level III; six non-experimental quantitative at level IV, and one qualitative study and one descriptive study at level VI (see Appendix B for synthesis of evidence table).

### **Provider Perception**

The initial identification of patients with low health literacy can be problematic for healthcare providers. Two studies focused on the perception of the healthcare provider regarding their patients' health literacy status. It was found that providers are typically inaccurate at independently identifying patients with low health literacy (Bass et al., 2002; Chew et al., 2008; Ferguson & Pawlak, 2011; Kelly & Haidet, 2007; VanGeest et al., 2010). Bass et al. (2002) and Kelly and Haidet (2007) studied providers' perception of patients' health literacy skills based on clinical interaction alone compared to patients' health literacy testing scores. Both studies revealed that providers most regularly overestimate their patients' health literacy skills but also underestimate the status of some individuals with adequate health literacy skills.

### **Health Literacy Assessment**

Health literacy level cannot be assessed by appearance or brief conversation and patients are rarely forthcoming with their level of health literacy (Brez & Taylor, 1997; Chew et al., 2008). A potential problem regarding health literacy may be how to best screen patients. Several validated instruments are available to evaluate health literacy, and these tools have been successfully used in research but are not routinely used by a majority of healthcare providers (Bennett, Robbins, Al-Shamali, & Haecker, 2003; Chew et al., 2008; Morris, MacLean, Chew, & Littenberg, 2006; Ryan et al., 2008; Wallace, Rogers, Roskos, Holiday, & Weiss, 2006).

Many healthcare professionals fear that health literacy assessment may offend their patients or lead to embarrassment, shame, distress, or stigmatization (Brez & Taylor, 1997; Ryan et al., 2008; VanGeest et al., 2010; Wallace et al., 2006). Four studies investigated the health literacy assessment process of patients, and conflicting positions were found on patients' perception of the screening process. Wolf et al. (2007) and Brez and Taylor (1997) found a considerable amount of the study participants reported feelings of shame and embarrassment

with health literacy screening. However, VanGeest et al. (2010) found no patients reported feelings of shame. Ryan et al. (2008) did not study patient shame or embarrassment related to health literacy screening specifically but did report high participation rate and satisfaction scores indicating the decreased likelihood that shame and embarrassment were factors in study participation. The studies regarding patients' perception of the health literacy screening process reported that an overwhelming majority of patients approve of health literacy assessment and support provider awareness of their health literacy status regardless of their sense of shame (Brez & Taylor, 1997; Ryan et al., 2008; Seligman et al., 2005; VanGeest et al., 2010; Wolf et al., 2007).

### **Provider Training**

The health literacy training of various healthcare professionals was the focus of 12 studies. Research has shown that healthcare providers commonly use medical jargon when communicating with patients and fail to provide adequate explanation of the terminology used during the encounter (Castro, Wilson, Wang, & Schillinger, 2007; Deuster, Christopher, Donovan, & Farrell, 2008). The use of jargon and lack of explanation may leave patients with low health literacy confused about their plan of care (Deuster et al., 2008). This is a contributing factor to the adverse health outcomes of individuals with low health literacy (Ferguson & Pawlak, 2011; Kripalani et al., 2006; Manning & Kripalani, 2007).

Institutions in the United States responsible for the education of future healthcare professionals are not routinely addressing the concept of health literacy in the curriculum (Brown et al., 2004; Coleman, 2011; Cormier & Kotrlik, 2009; Kripalani et al., 2006). Students and novice professionals enter the healthcare system unprepared to adequately provide care for patients with impaired health literacy and unaware of the impact on patients' health outcomes.



Several studies focused on health literacy education at the student level and the integration of material into the classroom or clinical rotation curriculum. The studies were conducted at medical schools or residency programs. Hess and Whelan (2009) found that students reported an improvement in their perceived communication skills with patients after the training intervention. Evaluation in the healthcare setting was conducted by Rosenthal, Werner, and Dubin (2004) and Hazzard et al. (2000) and found that residents reported increased knowledge, improved comfort, and increased frequency in addressing health literacy with patients after a health literacy training intervention.

The effects of health literacy training of healthcare professionals was the focus of multiple studies. Some studies focused on the education of specific disciplines while others encompassed all professionals involved in patient care. Schlichting et al. (2007) conducted a large multi-state survey and found that healthcare providers trained in health literacy reported higher rates for using the teach-back method and health education material appropriate for limited literacy patients. Goto, Lai, and Rudd (2015) studied the health literacy training of public health nurses and found almost half reported utilizing the new skills in their patient care. Pharmacists were evaluated by Mihalopoulos et al. (2013) and were found to have an increase in their self-reported comfort level in assisting patients with impaired health literacy skills as well as an increase in their overall health literacy knowledge after a health literacy training course. Over 90% of the healthcare professionals attending an intensive weeklong health literacy educational program studied by Evans et al. (2014) reported implementing health literacy education projects within their local communities.

Two randomized controlled trials were conducted on the topic of health literacy training of providers. Ferreira et al. (2005) and Clark et al. (1998) compared the effect of a health literacy

training workshop on patient care versus no training. Ferreira et al. (2005) explored colorectal cancer screening rates of patients after providers attended workshops to advance communication skills with low health literate patients. Screening rates were significantly higher ( $p = < 0.01$ ) among low health literate patients receiving care from providers that had attended the workshop (Ferreira et al., 2005). Clark et al. (1998) assessed the care pediatric asthma patients received from their pediatricians after an interactive seminar. Parents of the asthma patients in the intervention group reported higher rates of instruction clarification and reassurance from the provider, increased teach-back method for inhaler use, and fewer follow-up visits for poor asthma control (Clark et al., 1998).

A randomized controlled trial by Seligman et al. (2005) looked at provider awareness of diabetic patients' low health literacy status. The providers had no formal health literacy training but received communication-enhancing management strategies education. It was found that providers in the intervention group who were aware of patients' low health literacy level had increased rates of the recommended communication practices for diabetic patients. Patients of the providers in the intervention group also had an overall decrease in their glycosylated hemoglobin at a three month follow-up compared to patients of the provider control group. Despite the advantages of providers' knowledge of patients' health literacy status, the intervention group providers in this study reported lower self-efficacy scores regarding the care they provided to their patients (Seligman et al., 2005). The findings indicates that provider awareness of patients' health literacy improves communication and patient outcomes and formal health literacy training might be useful to increase providers' self-efficacy.

### **Theory**

Self-efficacy is one's confidence in their own capability to perform certain activities and this confidence will influence which activities they undertake (Bandura, Adams, & Beyer, 1977). Albert Bandura's Theory of Self-Efficacy integrates the components of individuals' own confidence, or self-efficacy, and their desire and capabilities to begin a new behavior or change their behavior to a more desired one (Bandura et al., 1977). Four major concepts are included in the Theory of Self-Efficacy: human agency, self-efficacy expectations, outcome expectations, and self-efficacy information sources (Bandura et al., 1977). Self-efficacy information is further divided into four sources that an individual bases their own self-efficacy. These sources include established prior experiences, observed or vicarious experiences, verbal persuasion or reinforcement from others, and physiological and emotional state (Bandura et al., 1977; Gist & Mitchell, 1992).

The Theory of Self-Efficacy can be applied to this health literacy training project because a practice modification of the providers is desired and their confidence in their abilities to implement the behavior change will be an underlying component success. Once the provider gains new knowledge from the health literacy training, an increase in confidence will lead to initiation and continued utilization of the new knowledge gained. As the initial focus of this project, the provider's self-efficacy regarding communication and educational techniques for patients with low health literacy will help determine the success and sustainability of the project (see Appendix C for the Theory of Self-Efficacy). No studies were found which applied the Theory of Self-Efficacy to the education of providers related to health literacy screening of patients. Some research articles utilized the Social Cognitive Theory, the parent theory of the Theory of Self-Efficacy, to describe provider behavior related to screening practices and counseling efforts of patients (Lowenstein et al., 2013; Ozer et al., 2004). Ozer et al. (2004)

explained that providers' self-efficacy was directly correlated with mastery experiences and increased rates of screening. Lowenstein et al. (2013) found that providers of obese patients reported an increase in their patient counseling and higher self-efficacy scores when the practice setting provided appropriate educational resources for healthy diet and exercise.

### **Methods**

University of Missouri- Kansas City Institutional Review Board (IRB) reviewed as expedited research (see Appendix D for IRB approval letter). Health literacy training occurred with a primary care provider with patient satisfaction CAHPS® scores pre and post intervention as the measured outcome. Verification of inclusion criteria for project participants occurred in conjunction with the clinic staff and through conversation with the participants by the student investigator. The risk to patients related to this project was minimal.

Informed consent was required for this project because patients' satisfaction surveys regarding care and health literacy screening were gathered. The surveys and screening were components of this project, and the patients' autonomy and right to decline participation in the project was an ethical consideration. Data collection involved completion of pre and post satisfaction surveys and verification that health literacy assessment occurred among patients. Patient privacy and confidentiality were maintained as related to study involvement, surveys, and health literacy screening. Aggregate satisfaction survey results will be shared with the provider. No student investigator research conflicts were identified.

The cost of this health literacy evidence based practice project was minimal. Health literacy training materials are available from the Centers for Disease Control and Prevention (CDC) and the American Medical Association (AMA) free of charge. Expenses accrued were for the printing of the material. The educational session was completed by the provider at her

convenience. A small incentive in the form of a five-dollar gift card was included for patient participation. Dissemination of this project was anticipated so estimated costs for travel, lodging, and conference expenses were also considered. A small grant to cover the minor expenses of this project was granted from UMKC Women's Council Graduate Assistance Fund (see Appendix E for estimated project costs).

### **Setting & Participants**

The setting for this project was a primary care clinic in a rural Midwest city. Inclusion criteria for project participants was English speaking adult patients at least age of 18 years, previous appointment within the last six months with the provider participating in the health literacy training, and current clinic visit with the same provider the day of study recruitment. Exclusion criteria included patients who had already participated in the project returning to the clinic for any subsequent visits within the project period and patients with lack of cognitive ability to understand study procedures as determined by the student investigator during recruitment or consent process. Patient sampling consisted of consecutive sampling on days of the student investigator presence at the clinic. As a pilot project, the expected number of participants was 30 patients. The continuous availability of patients for the survey and health literacy screening supported this method of sampling and expected quantity of participants. Patients may not have met the inclusion criteria or may have declined participation.

### **Evidence Based Practice Intervention**

A minority of healthcare providers receive formal health literacy education as part of their professional curricula or as continuing education while in practice (U.S. Department of Health and Human Services, 2010). Even fewer healthcare professionals assess or even take into consideration their patients' health literacy status (Barrett, Puryear, & Westpheling, 2008;

Kripalani et al., 2006). Several approaches for educating healthcare providers on the topic of health literacy have been developed including didactic, experiential, workshops, videos, simulated encounters, direct observation, and service learning (Coleman, 2011; DeWalt et al., 2011; Kripalani et al., 2006). Due to a lack of comparative studies evaluating the various methods and techniques for training, the literature does not support the use of one technique over the other; however, the use of multiple modalities is recommended (Coleman, 2011). This evidence based practice project consisted of a web-based training session in conjunction with print material and video review utilizing existing material from the CDC and the AMA. This material focuses on the influence of health literacy on patient care, communication, compliance, and outcomes. Print material available from the AMA was distributed to the provider and clinic staff to reference after the training and during the project implementation. Formal health literacy training can give providers the knowledge and tools to initiate formal health literacy assessment of patients, improve provider-patient communication, and ultimately improve quality of care.

During August 2016, the provider and clinic support staff at the clinic site were contacted, and health literacy training and the process for CAHPS® survey and health literacy screening was addressed. The training occurred in October 2016 after IRB approval. The training consisted of a web-based training session utilizing the CDC *Health Literacy for Public Health Professionals* course and the AMA video *Health literacy and patient safety: Help patients understand* (see Appendix F for intervention material). The clinic was provided *Health Literacy and Patient Safety: Help Patients Understand - Manual for Clinicians, 2nd Edition* to use as a reference throughout the project period. During October after provider training and IRB approval through early November 2016, the student investigator recruited participants after check in (see Appendix G for sample recruitment script), obtained consent, and distributed the

CAHPS® survey and health literacy screening in the exam room prior to the visit with the provider. After the patient appointment with the provider, the student investigator again provided the CAHPS® survey which was completed in the exam room. After completion, the student investigator provided a \$5 gift card to the participant and collected the surveys. The receptionist and support staff at the clinic were also educated on collecting surveys and providing the gift cards if the student investigator was with another participant (see Appendices H, I, and J for timeline, intervention steps, and Logic Model).

### **Models**

The change model utilized for this project was the Change Curve Model. This model provided a guide for the implementation of evidence based practice projects at an organizational level (Duck, 2001). This project was implemented at a primary care clinic focusing on a provider and clinical staff involved in the stages outlined by the Change Curve Model.

The Stetler Model of Evidence-Based Practice was the foundational framework for this health literacy evidence based practice project. As outlined by Stetler (2001), this model is most appropriate for this project due to the practitioner-oriented approach focusing on the individual provider and critical thinking skills, problem solving abilities, and evidence based knowledge utilization. This model takes into consideration two different types of evidence (Stetler, 2001): external evidence gained from research, expert opinion, and experience reported in the literature; and internal evidence gained from other credible sources of information such as affirmed first-hand observations and experiences locally obtained (Melnik & Fineout-Overholt, 2014; Stetler, 2001). These sources of evidence were important project components as this project integrated evidence based literature as well as the expert opinion and personal knowledge of the provider regarding the particular patient population.

Once the change in behavior has occurred as outlined by the change model, sustainability will be related to provider and staff compliance with execution of this project. The information from the health literacy training intervention was initially part of the external evidence supporting the evidence based practice change. Utilization of the knowledge gained from the training and implementation of the information during the project period became part of the internal evidence of the provider to help sustainability of the practice change.

### **Design, Validity**

This project utilized a quasi-experimental study design. This project compared patients' satisfaction with their communication with their healthcare provider before and after the provider training intervention.

**Internal validity.** The impact of the intervention of health literacy training was used to generate the pre and post CAHPS® survey results. The immediate pre and post visit survey timing decreased the chance factors or historical events which may threaten the internal validity of the project. Potential historical events impacting the outcomes of this project could have been media coverage drawing attention, positive or negative, to health literacy. It was anticipated that the intervention of health literary training would result in an improvement in the dependent variable of CAHPS® survey scores among patients. The health literacy training by the provider was at the providers' convenience but verification of completion of the intervention occurred prior to project implementation.

Attrition, refusal of participation, lack of completion of the surveys, repeat testing within a close time frame, and the Hawthorne effect were potential concerns with the participants and integrity of the data, and literature has indicated that a significant amount of patients participating in studies regarding health literacy screening reported feelings of shame and



embarrassment with the health literacy screening process (Brez & Taylor, 1997; Wolf et al., 2007). To support the participant involvement in the study, a \$5 gift card incentive for survey completion was offered. During the project, health literacy screening and survey administration was limited to once per patient decreasing the threat to internal validity from repetitive measure of the same assessment from the same participant (Brez & Taylor, 1997; Wolf et al., 2007).

**External validity.** The patient population for this project was adult and culturally homogeneous; however, identity, cognitive, behavioral, and affective diversity exist among any given population of individuals (Gerstandt, 2010) indicating that the health literacy level of the population was likely heterogeneous. For the purpose of this project, external validity is limited to patient populations of primary care providers similar to the participants of this project.

### **Outcomes, Measurement Instruments**

The outcomes measured were the pre and post intervention patients' CAHPS® satisfaction survey scores. The CAHPS® is a series of surveys created by The United States Agency of Healthcare Research and Quality (AHRQ) to ask patients to evaluate various encounters with healthcare (AHRQ, 2008). This tool was developed to be modified to meet the needs of the research conducted. This project used the established questions focused on provider communication and health literacy. Dyer, Sorra, Smith, Cleary, and Hays (2012) investigated the validity of the CAHPS® Clinician and Group Adult Visit Survey version 2.0 and found reliability ranging from 0.77 to 0.89 concluding that the survey yields reliable information by measuring the concepts intended to be measured. The survey used for this project consisted of 24 total questions. The initial two questions verified if the healthcare provider is the patients' primary provider. The next section is a nine question pre-survey the patients completed prior to their scheduled appointment on the day of recruitment. The third section is another nine

questions asking the same content as the pre-survey but in regards to the appointment that day and were completed after the appointment. The final four questions gathered demographic data regarding age, gender, race, and highest grade level completed. The CAHPS® surveys are in the public domain and intended for use to improve quality of healthcare so permission for use is not required (AHRQ, 2008; see Appendix K for the CAPHS® survey).

### **Quality of Data**

No published studies or benchmarks studies were identified which exactly aligned with this project in regards to health literacy training of providers. A study by Roter et al. (1998) did investigate the intervention of an interpersonal communication training program for doctors and patients' satisfaction scores. This study was used as benchmark data for comparison to the project results because the patient-provider communication skills outlined in the Roter et al. study are also a major component to the health literacy training utilized for this project. Roter et al. found that doctors who had received the communication training had higher satisfaction scores than the doctors who had not received training. The trained doctors asked more open-ended questions, used more facilitation incorporating verified patient understanding and paraphrased content, and were perceived as friendlier and more interested than the control doctors.

### **Analysis Plan**

Data collected for this project was numeric. As a pilot project, the maximum sample size was 30 patients. The statistical method used for analysis of the comparison of the baseline pre-test satisfaction data and the post-test data was the Wilcoxon signed-rank test due to related samples and violation of parametric assumptions (see Appendices K and L for data collection and statistical analysis table templates).

## Results

### Setting & Participants

The time frame for implementation of this project was approximately three weeks from completion of the health literacy training intervention by the provider to collection of 30 surveys by patients participating in the project. The setting for this project was a primary care clinic in a rural Midwest city. Participants were English speaking patients at least 18 years of age who had a previous appointment with the participating provider within the last six months and presented for a clinic visit with the same provider the day of study recruitment. Demographic data gathered were analyzed. The demographic data survey was not completed by three of the study participants. Of the participants who completed the demographics questionnaire, ages ranged from 26 to over 90, the mean age was 54.9, twenty-two were female, five were male, and all were of white race. The educational levels were as follows: one participant was 8th grade or less, three had some high school but did not graduate, 11 were high school graduates or had their GED, 10 had some college or two-year degree, one was a four-year college graduate, and four participants did not answer. Health literacy assessment of participants found that four participants were of low health literacy, nine had marginal health literacy, and 17 were of adequate health literacy.

### Actual Intervention Course

The intervention was completed by the provider and consisted of the web-based training session of the CDC's *Health Literacy for Public Health Professionals* course and the AMA's video *Health literacy and patient safety: Help patients understand* (see Appendix F for intervention material). The continuing education certificate awarded after completion of the CDC course was verified by the student investigator before project implementation. The intervention

was completed by the provider the night before patient recruitment began to enhance the inclusion criteria to all patients seen by the provider within six months prior to the intervention. Participants were recruited for project participation over the course of four clinical days.

### **Outcome Data**

A Wilcoxon signed-rank test was conducted to compare patients' satisfaction CAHPS® scores before the health literacy training of a healthcare provider and after the health literacy training (see Appendix M for statistical analysis results table). The CAHPS® survey used for this project measured outcomes on eight main topics including provider explanation of information, easy to understand information, use of medical words, use of supplemental material (pictures, drawings, videos, etc.), provider answering questions to patients' satisfaction, adequate information provided, patient encouragement to discuss concerns, and provider evaluation of patients' ability to manage health concerns. Statistical analysis found that there was no significant difference in the scores for provider explanation of information ( $Z = .000, p = 1.000$ ), easy to understand information ( $Z = -1.414, p = .157$ ), use of supplemental material ( $Z = -.447, p = 1.000$ ), provider answering questions to patients' satisfaction ( $Z = .000, p = 1.000$ ), adequate information provided ( $Z = .000, p = 1.000$ ), patient encouragement to discuss concerns ( $Z = -.905, p = .366$ ), and provider evaluation of patients' ability to manage health concerns ( $Z = -.362, p = .717$ ). Analysis did find a statistically significant difference in patients' satisfaction scores regarding the healthcare provider's use of medical words during communication with the patient ( $Z = -2.333, p = .020$ ). This result suggests that the use of medical terminology by the provider that patients do not understand decreases after completion of health literacy training.

One participant failed to complete the question regarding easy to understand information from the provider on the post survey. All other surveys questions were adequately completed.

The post survey has a second page gathering demographic data that was not completed by three participants.

## **Discussion**

### **Successes**

The outcome of this study revealed an improvement in patients' opinion of the provider's communication regarding the use of medication terminology during their visit. This may indicate that health literacy training increases provider awareness of the use of inappropriate medical terminology so communication improved following training to a more suitable vocabulary that patients could understand better. All the patients recruited were receptive to the project and generally expressed support of the concept of health literacy training of health care providers.

### **Strengths**

The setting of this project was in a rural Midwestern town with limited healthcare resources outside the clinical setting. The staff included the provider, nurses working with the provider, and ancillary staff. The organizational culture promoted highest quality patient care and teamwork among all staff members. The health literacy intervention and survey distribution by the student investigator was supported by the organization and assistance was provided by the office manager and clinic staff for setup during project initiation.

The provider that participated in this project and served as the student investigator's facilitator is a doctor of nursing practice prepared nurse practitioner. The health literacy training intervention chosen for this project could be completed at the provider's convenience. The student investigator worked closely with the receptionists to determine patients that met the inclusion criteria. Patient recruitment took a total of four clinical days, and the initial 30 participants approached for the project participated.

### **Results Compared to the Literature**

The results of this project are compared to the benchmark study from Roter et al. (1998). Roter et al. (1998) investigated the intervention of an interpersonal communication training program for internal medicine and family practice physicians and patients' satisfaction scores. The study used a pre-test and post-test quasi-experimental design with 15 voluntarily participating physicians. The pre-test data collected were audiotape recordings of all participating physicians during routine patient visits and patient questionnaires. The study group consisted of nine physicians that received an eight-hour communication training session and six physicians in the control group that received no training intervention.

The results of the health literacy project found that the patients reported the provider decreased use of medical terminology that they did not understand after the provider completed the health literacy training. Roter et al. (1998) found that the physicians who had received the communication training had higher satisfaction scores than the physicians who had not received training. The trained physicians asked more open-ended questions, used more facilitation incorporating verified patient understanding and paraphrased content, and were perceived as friendlier and more interested than the control physicians.

### **Limitations**

#### **Internal Validity Effects**

Possible sources affecting the internal validity of this project may include the unintended biases of the participants to report high satisfaction scores for the provider initially with the pre-survey. The participants' inability to adequately recall their last appointment with the provider to provide accurate information regarding their satisfaction with communication could also have influenced the project outcomes. This project utilized a web-based training session in

conjunction with print material and video based on convenience for the provider. Various methods for health literacy education of providers have been developed including didactic, experiential, workshops, videos, simulated encounters, direct observation, and service learning, but the literature does not support the use of one technique over the other (Coleman, 2011). The use of a less rigorous training intervention could have also affected internal validity and project findings.

The completion of the CDC's *Health Literacy for Public Health Professionals* course was the only part of the intervention that could be verified by the student investigator because a continuing education certificate was generated from the CDC after training completion. The provider expressed verbally that viewing of the video was completed so formal verification by the student investigator could not occur. Project outcomes could have been affected if actual completion of all components of the intervention did not occur.

### **External Validity Effects**

The participants who completed the demographic survey ( $n = 27$ ) for this project 100 percent Caucasian and 81.4% ( $n = 22$ ) were female. The project site was in a rural Midwestern town. The health literacy level of the project population was found to be 13.3% ( $n = 4$ ) of participants having low health literacy, 30% ( $n = 9$ ) with marginal health literacy, and 56.7% ( $n = 17$ ) having adequate health literacy. These findings are similar to the NAAL findings that about half of the adult population will have suboptimal literacy skills (Coleman & Fromer, 2015; Kripalani et al., 2006). The participant demographics and project setting are all factors that will limit the generalizability of these project findings to a patient population of a similar composition in a similar setting.

### **Sustainability and Maintenance of Effects**

Health literacy assessment of the patients occurred in written form during the project period. Continuation of this practice may reduce over time if all patients are not provided this document to complete upon check-in or if new staff members are not properly trained on scoring the assessment. Incorporating health literacy assessment as part of the medical history information gathered when vital signs are taken and integrating the documentation into the electronic medical record for review by the provider will promote sustainability. Provider retention of the health literacy training knowledge could decrease over time so requirement of health literacy training as continuing education on an annual or biennial basis at the organization level could ensure effects are maintained.

### **Study Limitations Minimization**

Efforts to minimize the impact of the limitations on application of results included partial verification of completion of the health literacy training by the provider prior to project implementation assuring that any effect on patient's satisfaction scores could be attributed to the intervention. Project findings revealed that the participant population possessed similar health literacy skills as the general population of the United States (Coleman & Fromer, 2015; Kripalani et al., 2006), but due to the setting and homogeneity of the participants, the effects of the limitations on the project results include the generalizability of findings only to a patient population of a similar composition in a similar setting as the projects.

### **Interpretation**

#### **Expected and Actual Outcomes**

The anticipated results of this project were to find improvement in patients' satisfaction with provider communication in eight different areas after health literacy training by the provider. Of the eight main topics assessed with the CAHPS® surveys, participants only reported



significant improvement ( $Z = -2.333, p = .020$ ) in the provider's use of medical terminology following the health literacy training. Based on comments from multiple participants during recruitment and obtaining consent by the student investigator, the provider received high satisfaction scores on the pre-survey and likely possessed adequate professional health literacy skills despite the lack of formal health literacy training prior to this project. It was also found that over half of the project participants possessed adequate health literacy skills based on the health literacy screening results. This finding may also contribute to the high pre-survey satisfaction scores because the patients with adequate health literacy may have a better understanding of their health and the information discussed with the provider.

### **Intervention Effectiveness**

The simplicity of the health literacy training intervention chosen for this project and ability for the provider to complete at her convenience aided in the provider's willingness to participate in the project and complete the training required. In the small, rural clinic, staff were receptive of the project goals and assisted the student investigator during the entire project implementation phase. This fostered attainment of the full 30 patients desired for this project. As a doctorally prepared nurse practitioner, the participating provider's experience with project implementation may have also helped with the effectiveness of the intervention and implementation of the project. The settings which the intervention of health literacy training of healthcare providers is most likely to be effective are rural settings, lower socioeconomic status areas, and a setting with high rates of individuals with low health literacy.

### **Intervention Revision**

Modification to the intervention to improve project outcomes may include the use of a more rigorous training course by the healthcare provider. This training could incorporate a

combination of the multiple methods for health literacy education developed including didactic, experiential, workshops, videos, simulated encounters, direct observation, and service learning (Coleman, 2011). Inclusion criteria for the participants may be limited to those with a health literacy level below the basic level where the intervention may have the most impact.

### **Impact to Health System, Costs, & Policy**

The expected impact of this health literacy training intervention of a healthcare provider is a decrease in healthcare costs accrued by patients with low health literacy over the patients' lifetime. Research has shown that patients with decreased literacy skills have increased rates of poor or adverse health outcomes, higher incidences of chronic disease, and more hospitalizations (Chew et al., 2008; Coleman, 2011; DeWalt et al., 2011). The actual impact of this intervention is limited to the project findings. Participants reported improvement in the provider's use of medical terminology that they did not understand. Health literacy has been identified by multiple agencies as a major issue currently faced by our healthcare system so a change in the healthcare system and policy is anticipated (CDC, 2016; DeWalt et al., 2011; Nielsen-Bohlman, Panzer, & Kindig, 2004; VanGeest, Welch, & Weiner, 2010).

This health literacy evidence based practice project was a relatively low budget project (see Appendix E for initial estimated costs). The health literacy training materials chosen are available from the CDC and AMA free of charge. Actual expenses accrued for the printing of the material were the same as the projected costs. The 30 five-dollar gift cards purchased were distributed to all 30 project participants. Dissemination costs for travel, lodging, and conference expenses were initially estimated based on independent attendance of a regional conference (\$600.00) but actual expenses for the Advanced Practice Nurses of the Ozarks (APNO) conference were half of the estimated amount. This intervention is economically sustainable

because the health literacy training used for this project is available free of charge. The health literacy screening questionnaire is also available free of charge further supporting sustainability. The funding source for this project was a grant in the sum of \$494.00 awarded from the UMKC Women's Council Graduate Assistance Fund to the student investigator to cover the expenses of this project and dissemination.

### **Conclusion**

Health literacy should be formally assessed by providers to foster accurate knowledge of their patients' health literacy level. Implementation of a formal health literacy training program for providers is simple and realistic. Health literacy assessment training is designed to educate healthcare professional on the impact of low health literacy in our society and provide the proper knowledge and skills for appropriate communication and education with low health literate patients.

Additional research is needed to investigate various outcomes related to health literacy training of primary care providers. A potential area of interest related to health literacy is the measurement of specific patient outcomes after formal health literacy training of providers. No studies found investigated these topics specifically, but it is an area identified for further research because positive patient outcomes and improved health are the ultimate goal for the U.S. healthcare system.

Dissemination of this evidence based practice project included a poster presentation that occurred at the Advanced Practice Nurses of the Ozarks (APNO) annual conference in November 2016. Plans for future dissemination include returning to the 2017 APNO conference to present project results. The American Nurses Association's *Online Journal for Issues in Nursing*, *Journal of Health Communication*, and *Patient Education and Counseling* are journals

considered for publication of this project due to their strong support of health literacy awareness and impact on quality of care.

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## Appendix A

## Definition of Terms

**Health Literacy-** an individual's ability to identify, comprehend, and perform on health related information (Coleman, 2011; Ferguson & Pawlak, 2011).

**Health Literacy Training-** formal education of healthcare professionals to improve their competencies regarding knowledge, skills, and attitudes related to health literacy (Coleman, 2011; Ferguson & Pawlak, 2011).

**Self-efficacy-** an individual's confidence in his or her abilities to execute particular activities. (Bandura et al., 1977)

## Appendix B

## Synthesis of Evidence Table

<b>1<sup>st</sup> author, Year</b>	<b>Title, Journal</b>	<b>Purpose</b>	<b>Research Design, Evidence Level</b>	<b>Sample, Setting</b>	<b>Intervention, Measures</b>	<b>Results</b>
<b>Provider Training</b>						
Goto 2015	<i>Health Literacy Training for Public Health Nurses in Fukushima: A Multi-site Program Evaluation.</i> Japan Medical Association journal	Assess the outcome of a HL educational program for public health nurses	Experimental, quantitative & qualitative  Level 3	N= 64 public health nurses Health Literacy Training Workshop	Two 2-hr session workshops on health literacy and assessment tools. Quantitative and qualitative data surveys (post-training & one-month)	45% reported gaining confidence in assessing and revising written materials, 47% reported applying the skills learned in workshops during the f/u period.
Coleman 2015	<i>A health literacy training intervention for physicians and other health professionals.</i> Family Medicine	Examine HL training on physicians and nonphysicians.	Experimental, quantitative  Level 3	N= 45 single family medicine clinic of a residency program	3 ½ hour HL training with pre-/post- self-reported assessment	48% overestimated pre-training comprehension of HL issues
Evans 2014	<i>The impact of a faculty development program in health literacy and ethnogeriatrics.</i> Academic Medicine. Journal of the Association of American Medical Colleges	Enrich healthcare faculty and professionals' awareness, abilities, and approaches on health literacy	Experimental, quantitative  Level 3	N= 34 healthcare professionals Stanford Geriatric Education Center Program participants	Health Literacy/ Ethnogeriatrics (HLE) curriculum (8 modules) Participants' Self-Reported Impact of the Program pre and post-tests (Likert scale)	Curriculum improved participants' awareness, abilities, and approaches related to HL. Participants highly rated the curriculum's usefulness

Mihalopoulos 2013	<i>Impact of a Health Literacy Training Course on Community Pharmacists' Health Literacy Knowledge and Attitudes</i> The Journal of Pharmacy Technology	Assess the influence of HL training on pharmacists' HL knowledge & attitudes	Experimental, quantitative  Level 3	N= 44 supermarket community pharmacists  Required business meeting	2-hr health literacy training course pre- and post-survey	Increase in knowledge-based test scores, confidence and ease providing care for low HL pts. 95% of participants felt training provided resources & communication methods useful to their practice setting
Deuster 2008	<i>A Method to Quantify Residents' Jargon Use During Counseling of Standardized Patients About Cancer Screening.</i> Journal of General Internal Medicine	Assess residents use of jargon and explanation during cancer screening discussions	Non-experimental, Quantitative  Level 4	N= 43 residents Primary Care Internal Medicine program at Yale & Medical College of Wisconsin	standardized patient encounters; explicit-criteria procedure to abstract transcripts	19.6 unique jargon words were used per encounter & approximately 4.5 jargon clarifications were explained per encounter
Castro 2007	<i>Babel babble: physicians' use of unclarified medical jargon with patients.</i> American Journal of Health Behavior	Describe doctors' jargon use with limited health literacy diabetic patients.	Non-experimental, Quantitative  Level 4	N= 74 patient encounters primary care clinics at an urban public hospital in San Francisco	sTOFHLA; Audiotaped outpatient encounters and coded unclarified jargon; telephone pt. questionnaire	81% of encounters contained $\geq 1$ unclarified jargon term; patient comprehension rates were generally low
Schlichting 2007	<i>Provider perceptions of limited health literacy in community health centers</i> Patient Education and Counseling	Investigate techniques used by community providers to care for limited health literacy patients	Descriptive study  Level 6	N= 333 physicians, mid-level healthcare providers, dentists, dental hygienists,	provider survey regarding health literacy (Likert-type scale, yes/no, & comments)	Providers estimate high prevalence of low health literacy patients in their clinics and report utilizing various techniques to assist low health literate patients.

				registered nurses from 10 Midwest states		
Ferreira 2005	<i>Healthcare provider-directed intervention to increase colorectal cancer screening among veterans: results of a randomized controlled trial.</i> Journal of Clinical Oncology	Assess if provider-guided intervention improved screening rates for colorectal cancer	Quantitative, randomized, controlled trial  Level 2	185 patients (control) 197 patients (intervention) 2 outpatient clinic at VA Medical Center in Chicago, Illinois	2-hour workshop on colorectal cancer screening and communication improvement skills with low HL patients	Patients with low HL, screening completed by 55.7% in intervention group vs 30% in control. Screening was achieved by 41.3% intervention patients vs 32.4% of controls.
Seligman 2005	<i>Physician notification of their diabetes patients' limited health literacy. A randomized, controlled trial.</i> Journal of General Internal Medicine	Determine if notifying providers of patients' low HL status changes performance, satisfaction, or self-efficacy.	Quantitative, randomized, controlled trial  Level 2	N= 63 physicians, 182 diabetic patients with suboptimal HL  Urban, academic, public hospital	sTOFHLA; Satisfaction & effectiveness questionnaire. Patients' self-efficacy using Patient-Enablement Instrument, HbA1c pre and 2-9 months after study enrollment	Intervention doctors had higher use of recommended management strategies. Intervention doctors had decreased satisfaction with visits. Intervention & control post-visit self-efficacy results were similar. 64% of intervention doctors and 96% of patients felt assessing HL was beneficial.
Rosenthal 2004	<i>The effect of a literacy training program on family medicine residents</i> Family Medicine	Examined if Reach Out & Read (ROR) and adult literacy intervention increases residents' skills,	Experimental, quantitative  Level 3	N= 24 residents at Franklin Square Family Health Center (primary care	Educational conferences, precepting, and ROR single group pretest/posttest	Literacy knowledge scores increased. After the intervention: increased comfort in counseling about childhood and adult literacy, Increased

		approaches, and behavior regarding literacy.		health center in Baltimore)		number of residents reported inquiring about literacy.
Hazzard 2000	<i>Training residents in pediatric literacy: impact on knowledge, attitudes and practice</i> Ambulatory Child Health	Establish if literacy-building training improves literacy knowledge, opinions, and approaches	Quasi-experimental  Level 3	N= 66 residents  3 outpatient clinics in Southeast United States	30 min training session The Knowledge About Literacy Development and Attitudes Regarding Early Childhood Literacy Scales administered before and 6 months after training.	Intervention group had more literacy milestones assessment increased anticipatory guidance related to literacy.
Clark 1998	<i>Impact of Education for Physicians on Patient Outcomes.</i> Pediatrics	Assess impact interactive seminar on 1) plans of care, communications and educational behavior, 2) health condition of patients with asthma, 3) satisfaction with care of parents	Randomized, controlled trial  Level 2	N= 74 general practice pediatricians from Ann Arbor, MI, and New York, NY	interactive continuing education training seminar	Intervention physicians had increased rates of going over instructions for new meds, & giving written information. Parents rated intervention providers higher on being reassuring, providing encouragement, and being informative.
<b>Health Literacy Assessment</b>						
VanGeest 2010	<i>Patients' perceptions of screening for health literacy: reactions to the newest vital sign</i> Journal of Health Communication	Examine patients' response to the health literacy screening (Newest Vital Sign).	Non-experimental, Quantitative  Level 4	N= 179 Morehouse School of Medicine, Department of Family Medicine	NVS & reaction survey	> 99% patients felt screening did not lead to shame. 97% support HL assessment.

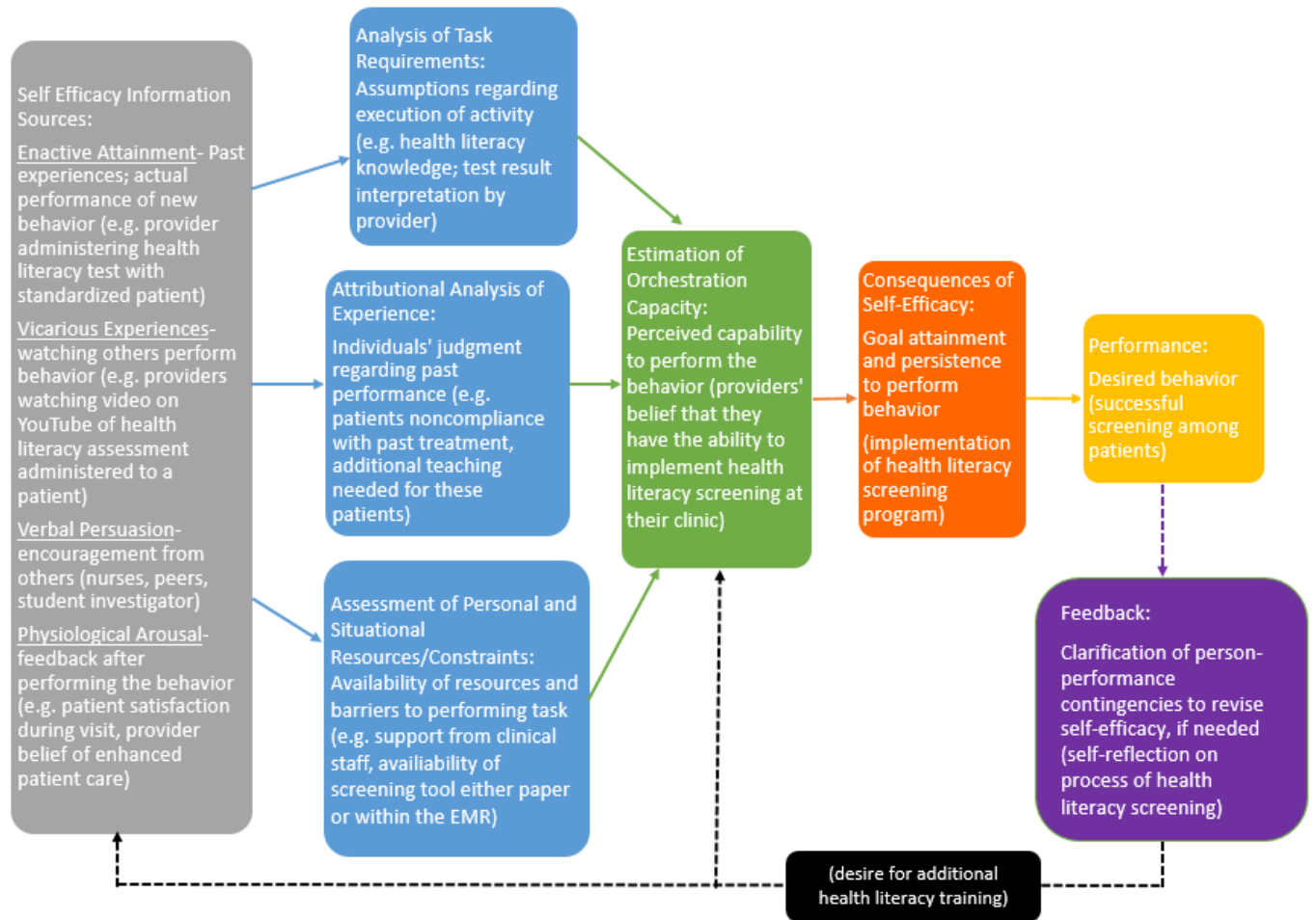


				Primary Care Clinics		
Ryan 2008	<i>Will patients agree to have their literacy skills assessed in clinical practice?</i> Health Education Research	Determine patients that would be willing to submit a literacy screening and difference in patient satisfaction in clinics that assess literacy vs clinics that don't.	Randomized, controlled trial  Level 2	N= 284 University of Miami's South Florida Primary Care Practice-Based Research Network & Miami-Dade County Health Department	NVS & Art of Medicine Survey questionnaire (AMSQ)	No satisfaction differences between groups.
Wolf 2007	<i>Patients' shame and attitudes toward discussing the results of literacy screening.</i> Journal of Health Communication	Examined patients cooperation with having literacy charted in medical records.	Non-experimental, Quantitative  Level 4	N= 283 General Medical Clinic at Grady Memorial Hospital in Atlanta, Georgia	REALM & ashamed/embarrassment questionnaire	Increased shame reported by low HL patients. 90% of low HL patients support provider awareness of health literacy level.
Brez 1997	<i>Assessing literacy for patient teaching: perspectives of adults with low literacy skills.</i> Journal of Advanced Nursing	Understand response of adults with low literacy skills to screening of literacy	Qualitative study  Level 6	N= not given adults in Eastern Ontario community college literacy program	semi-structured interviews and observation of simulated patient encounter	All patients: support provider awareness of reading abilities and belief info should be used improve patient-provider communication.
<b>Provider Perception</b>						
Kelly 2006	<i>Physician overestimation of patient literacy: a</i>	Assess provider estimation of	Non-experimental, Quantitative	N= 12 primary care	REALM & physicians rating of	Providers overestimated the HL level for African Americans 54% of the

	<i>potential source of healthcare disparities.</i> Patient Education and Counseling	patients' literacy status	Level 4	physicians (100 patients) Michael E. DeBakey Veterans Affairs Hospital Houston, Texas	patients' literacy status	time, white non-Hispanics 11%, and other race/ethnicity patients 36% of the time compared to REALM results.
Bass 2002	<i>Residents' ability to identify patients with poor literacy skills</i> Academic Medicine: Journal of the Association of American Medical Colleges	Examine if residents could identify low literacy patients based on clinical interactions	Non-experimental, Quantitative  Level 4	N= 182 General Internal Medicine Clinic at the University of Kentucky College of Medicine	Scores from REALM-R questionnaires and evaluation of literacy from residents	Residents suspected 90% of patients to have no literacy issues, yet 36% had low literacy. Residents suspected only 10% of patients had low HL based on interactions.

Appendix C

Theory to Application Diagram



*Note.* Health literacy educational training for primary care providers evidence based practice project applied to the Theory of Self-Efficacy model. Adapted from M.E. Gist and T.R. Mitchell, 1992. Self-Efficacy: A Theoretical Analysis of Its Determinants and Malleability, p.189.

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## Appendix D

## IRB Approval Letter



UMKC  
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**NOTICE OF NEW APPROVAL**

Principal Investigator: Lyla Lindholm  
UMKC Health Sciences Building  
Kansas City, MO 64108

Protocol Number: 16-306  
Protocol Title: Health Literacy Provider Training and Patient Satisfaction  
Type of Review: Designated Review

**Date of Approval: 10/12/2016**  
**Date of Expiration: 10/11/2017**

Dear Dr. Lindholm,

The above referenced study, and your participation as a principal investigator, was reviewed and approved by the UMKC IRB. You are granted permission to conduct your study as described in your application.

Your protocol was approved under Expedited Review Regulatory Criteria at 45 CFR 46.110 or 21 CFT 56.110 under Category #7 as follows:

7. Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Your protocol was approved for a waiver of documentation of consent under regulatory criteria at 45 CFR 46.117(c) having met either of the following criteria:

1. That the only record linking the subject and the research would be the consent document and the principal risk would be potential harm resulting from a breach of confidentiality. Each subject will be asked whether the subject wants documentation linking the subject with the research, and the subject's wishes will govern; or
2. That the research presents no more than minimal risk of harm to subjects and involves no procedures for which written consent is normally required outside of the research context.

In cases in which the documentation requirement is waived, you may be required to provide subjects with a written statement regarding the research.

The IRB reviewed and approved the alteration or waiver of authorization under "Type of Review" as identified above and has determined the alteration or waiver, in whole or in part, of authorization satisfies the criteria under 45 CFR 164.512(i)(2)(ii).

This approval includes the following documents:

**Attachments**

Roediger, UMKC Project Approval Letter 07 28 2016  
IRB Site Letter\_08-01-1026  
Methodology Section\_Version 2.0\_08-12-2016  
Health Literacy Screening Tool\_Version 1.0\_06-20-2016  
Screening for Recruitment, medical record, version 01, 08-20-2016  
Data Collection Template\_Version 1.0\_08-29-2016  
Code sheet 08 29 2016.docx  
CAHPS Pre-Survey\_Version 2\_08-29-2016-3



UMKC  
5319 Rockhill Road  
Kansas City Missouri  
TEL: 816 235-5927  
FAX: 816 235-5602

CAHPS Post-Survey\_Version 2.0\_08-29-2016-1  
Partial Waiver of Authorization\_Version 2.0\_09-03-2016  
Inclusion, exclusion criteria 09-23-16  
Consent Form, Patient Participant, version 2, 09 16 2016 - Stamped 10.12.2016  
Consent Form, Provider, Version 1.0, 09-14-2016 - Stamped 10.12.2016  
Recruitment Script\_Version 2.0\_08-12-2016 08/12/2016

This approval includes the following documents:

**Attachments**

The ability to conduct this study will expire on or before 10/11/2017 unless a request for continuing review is received and approved. If you intend to continue conduct of this study, it is your responsibility to provide a Continuing Review form prior to the expiration of approval.

This approval is issued under the University of Missouri - Kansas City's Federal Wide Assurance FWA00005427 with the Office for Human Research Protections (OHRP). If you have any questions regarding your obligations under the Board's Assurance, please do not hesitate to contact us.

There are 5 stipulations of approval:

- 1) No subjects may be involved in any study procedure prior to the IRB approval date or after the expiration date. (PIs and sponsors are responsible for initiating Continuing Review proceedings).
- 2) All unanticipated or serious adverse events must be reported to the IRB.
- 3) All protocol modifications must be IRB approved prior to implementation unless they are intended to reduce risk. This includes any change of investigator.
- 4) All protocol deviations must be reported to the IRB.
- 5) All recruitment materials and methods must be approved by the IRB prior to being used.

Please contact the Research Compliance Office (email: [umkcirb@umkc.edu](mailto:umkcirb@umkc.edu); phone: (816)235-5927) if you have questions or require further information.

Thank you,

Cynthia Thompson  
UMKC IRB

## Appendix E

## Cost Table for Health Literacy Training Project

Itemized Need	Maximum Anticipated Cost
Health Literacy Training Packet 3 @ \$3.10 each	\$9.30
Health Literacy Questionnaires 30 @ \$0.05 each	\$1.50
CAHPS® Survey 30 @ \$0.30	\$9.00
Manilla Envelopes 30 @ \$0.36	\$10.80
Participant Gift Cards 30 @ \$5.00	\$150.00
Project Dissemination	\$600.00
Total Cost	\$780.60

## Appendix F

## Intervention Material

Centers for Disease Control and Prevention

## Health Literacy for Public Health Professionals



## Program Description

The purpose of this web-based training program is to educate health professionals about public health literacy and their role in providing health information and services and promoting public health literacy. The course uses a 508-compliant template, knowledge checks, scenario-based interactions, video clips, and a post-test to engage learners. The course includes an evaluation, glossary, and resource list.

[START ONLINE TRAINING >](#)

## Objectives

At the conclusion of the session, the participant will be able to:

1. Define and describe public health literacy.
2. List factors that influence public health literacy.
3. Identify who is affected by public health literacy.
4. Recognize the consequences of limited public health literacy.
5. Determine who are the stakeholders in public health literacy.
6. Recognize the role of public health literacy in meeting core public health services.
7. Apply lessons learned to improve public health literacy.

## Faculty/Credentials

Cynthia Baur, Ph.D. Senior Advisor, Health Literacy, Centers for Disease Control and Prevention; Julie Gazmararian, PhD, MPH, Associate Professor, Rollins School of Public Health, Emory University

## Target Audience

Physicians, Registered Nurses, Nurse Practitioners, Dentists, Pharmacists, Health Educators, Health Communicators, Public Affairs Specialists, Health Care Administrators, Epidemiologists, Public Health Program Managers, Community Health Workers, and Health Department Staff

## Contact Information

Cynthia Baur, Ph.D., Office of the Associate Director for Communication (404) 498-6411.

## Course Information

**Activity Number:** WB2364

**Activity Title/Topic:** Health Literacy for Public Health Professionals

**Origination:** February 10, 2014

**Expiration:** February 10, 2018

**Renewal dates:** February 10, 2016

**Prerequisites:** None

**Format:** Web-based program

**Hardware/Software:** Computer-Internet

**Materials:** None

**Fees:** No fees are charged for CDC's CE activities.

*Note.* From “Health Literacy for Public Health Professionals,” by C. Baur and J. Gazmararian, 2014. Copyright 2016 by Centers for Disease Control and Prevention.

## Appendix G

## Recruitment Script

**1. Introduction of Student Investigator**

Excuse me, sir/ madam or excuse me, Mrs. Smith? (confirm that you have the correct person if you are contacting a specific patient or potential subject)

Do you have a minute? My name is Sara Roediger. I am a nurse practitioner student at University of Missouri- Kansas City and I am working on a research study.

**2. Immediate opportunity to opt-out**

I'm here to ask patients about their satisfaction with communication of their visits with their provider and to see if you are interested in hearing more about my study. Is it OK for me to continue?

If individual says "no, not interested" = stop, say thank you but do not continue.

If he/she says yes, then continue or make plans to revisit at a more convenient time.

**3. Make a BRIEF statement about why he/she was selected. Make sure the individual understands that this research is separate from his/her clinical care.**

I would like to see if you'd be interested in completing a survey regarding your satisfaction with your care at your last visit and your visit today. This survey is not part of your care or treatment here at Northwest Health Services. I am approaching every patient at the clinic today who has seen this same provider at least once in the last six months. This research is separate from the care you are receiving here at Northwest Health Services and whether or not you decide to hear more about the research won't affect your care.

**4. Ask if he/she is interested in hearing more details.**

So, are you interested in hearing some details about the research study?

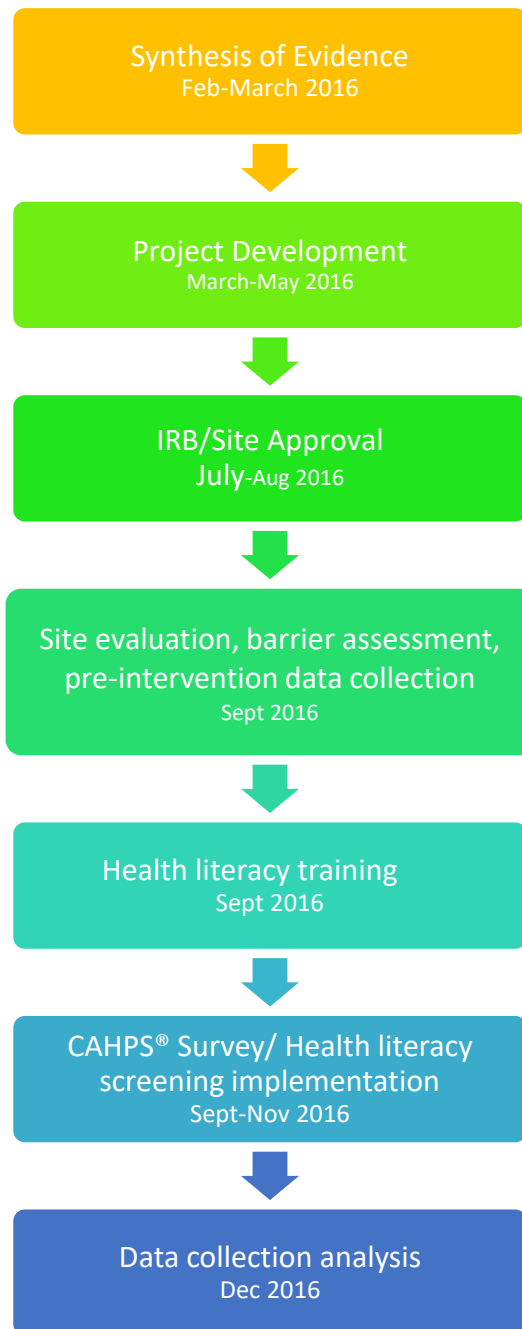
If not interested, thank the individual for his/her time.

If interested, then move to the consent form.



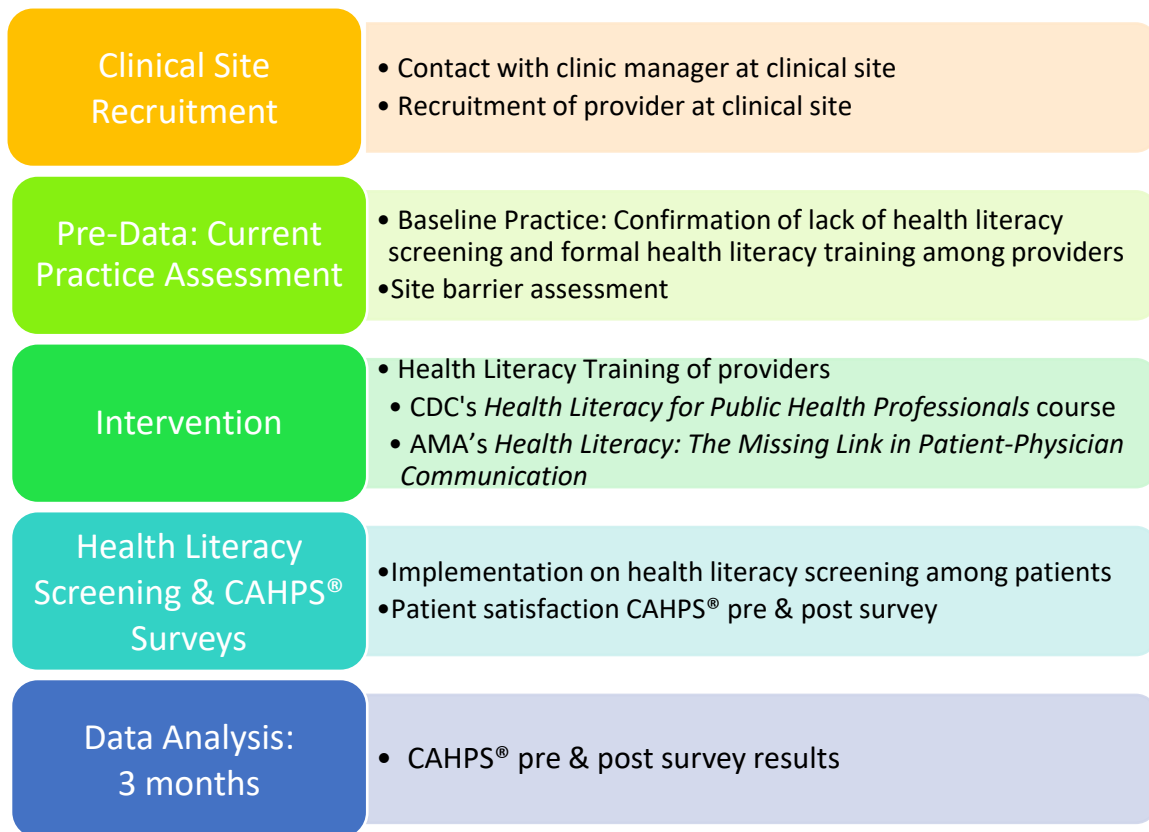
Appendix H

Project Timeline Flow Graphic



## Appendix I

## Intervention Diagram



Appendix J

Logic Model

Inputs	Intervention(s)		Outcomes -- Impact		
	Activities	Outputs Participation	Short	Medium	Long
<p><b>Evidence, sub-topics</b></p> <ul style="list-style-type: none"> <li>• Low literacy skills correlate with poorer health outcomes</li> <li>• Healthcare providers are inadequately trained to communicate with low health literate patients</li> <li>• Health literacy training positively impacts providers' awareness, knowledge, and skills regarding health literacy</li> <li>• Patients are supportive of provider's knowledge of their health literacy status</li> </ul> <ul style="list-style-type: none"> <li>• Health Literacy Assessment</li> <li>• Provider Perception</li> <li>• Provider Training</li> </ul> <p><b>Major Facilitators or Contributors</b></p> <ul style="list-style-type: none"> <li>• Providers' enthusiasm</li> <li>• Quality Improvement</li> </ul>	<p><b>EBP intervention which is supported by the evidence in the Input column</b></p> <ul style="list-style-type: none"> <li>• Health literacy training for primary care providers (CDC's Health Literacy for Public Health Professionals course)</li> </ul> <p><b>Major steps of the intervention</b></p> <p>I: Stagnation                      II: Preparation                      III: Implementation                      IV: Determination                      V: Fruition</p>	<p><b>The participants (subjects)</b></p> <ul style="list-style-type: none"> <li>• Primary care provider</li> <li>• Patients of primary care provider</li> </ul> <p><b>Site</b>                      Northwest Health Services</p> <p><b>Time Frame</b>                      September 2016 to November 2016 (~3 months)</p> <p><b>Consent Needed or other</b></p> <ul style="list-style-type: none"> <li>• Provider consent</li> <li>• Site approval</li> <li>• UMKC IRB Approval</li> </ul> <p><b>Person(s) collecting data</b>                      Student investigator</p> <p><b>Others directly involved</b></p> <ul style="list-style-type: none"> <li>• Dr. Lyla Lindholm, DNP- Academic Adviser</li> </ul>	<p><b>(Completed as student)</b></p> <p><b>Outcome(s) to be measured with valid &amp; reliable tool(s)</b></p> <p>CAHPS® Survey                      Pre-test and post-test results</p> <p><b>Statistical analysis to be used</b></p> <p>Wilcoxon test (<math>n = 30</math>)</p>	<p><b>(after student DNP)</b></p> <p><b>Outcomes to be measured</b></p> <p>Improved health outcomes of the patients</p>	<p><b>(after student DNP)</b></p> <p><b>Outcomes that are potentials</b></p> <p>Decrease in healthcare costs</p>

<b>Major Barriers or Challenges</b> <ul style="list-style-type: none"><li>• Willingness of clinical staff</li><li>• Coordination &amp; implementation of training session</li></ul>					
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## Appendix K

## Measurement Tool

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## CAHPS<sup>®</sup> Clinician & Group Surveys

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**Your Privacy is Protected.** All information that would let someone identify you will be kept private. Your responses to this survey are also completely **confidential**.

**Your Participation is Voluntary.** You may choose to answer this survey or not. If you choose not to, this will not affect the healthcare you get.

**What To Do When You're Done.** Once you complete the survey, place it in the envelope provided, seal the envelope, and return the envelope to the front desk.

### Survey Instructions

Answer each question by marking the box to the left of your answer.

You are sometimes told to skip over some questions in this survey. When this happens you will see an arrow with a note that tells you what question to answer next, like this:

Yes → **If Yes, go to #1 on page 1**

No

---

**Your Provider**

---

1. Our records show that you receive care from the provider named below.

\_\_\_\_\_, APRN

Is that right?

- <sup>1</sup>  Yes  
<sup>2</sup>  No → **If No, please return survey to front desk**

The questions in this survey will refer to the provider named in Question 1 as “this provider.” Please think of that person as you answer the survey.

2. Is this the provider you usually see if you need a check-up, want advice about a health problem, or get sick or hurt?

- <sup>1</sup>  Yes  
<sup>2</sup>  No

---

**Your Care From This Provider at Your Most Recent Visit**

---

These questions ask about **your own** health care at your last appointment with this provider.

3. During your most recent visit, did this provider explain things in a way that was easy to understand?

- <sup>1</sup>  Yes, definitely  
<sup>2</sup>  Yes, somewhat  
<sup>3</sup>  No

4. During your most recent visit, did you talk with this provider about any health questions or concerns?

- <sup>1</sup>  Yes  
<sup>2</sup>  No → **If No, go to #6**

5. During your most recent visit, did this provider give you easy to understand information about these health questions or concerns?

- <sup>1</sup>  Yes, definitely  
<sup>2</sup>  Yes, somewhat

<sup>3</sup>  No

6. During your most recent visit, how often did this provider use medical words you did not understand?

<sup>1</sup>  Never  
<sup>2</sup>  Sometimes  
<sup>3</sup>  Usually  
<sup>4</sup>  Always

7. During your most recent visit, how often did this provider use pictures, drawings, models, or videos to explain things to you?

<sup>1</sup>  Never  
<sup>2</sup>  Sometimes  
<sup>3</sup>  Usually  
<sup>4</sup>  Always

8. During your most recent visit, how often did this provider answer all your questions to your satisfaction?

<sup>1</sup>  Never  
<sup>2</sup>  Sometimes  
<sup>3</sup>  Usually  
<sup>4</sup>  Always

9. During your most recent visit, how often did this provider give you all the information you wanted about your health?

<sup>1</sup>  Never  
<sup>2</sup>  Sometimes  
<sup>3</sup>  Usually  
<sup>4</sup>  Always

10. During your most recent visit, how often did this provider encourage you to talk about all your health questions or concerns?

<sup>1</sup>  Never  
<sup>2</sup>  Sometimes  
<sup>3</sup>  Usually  
<sup>4</sup>  Always

**11.** Sometimes providers give instructions that are hard to follow. During your most recent visit, how often did this provider ask you whether you would have any problems doing what you need to do to take care of this illness or health condition?

- <sup>1</sup>  Never
- <sup>2</sup>  Sometimes
- <sup>3</sup>  Usually
- <sup>4</sup>  Always

---

**STOP**

**Please Complete Second Part After Your Visit Today**

---



---

## Your Care From This Provider at Your Visit Today

---

These questions ask about your visit with this provider today. Please answer only for your own healthcare.

**12.** During your visit today, did this provider explain things in a way that was easy to understand?

- <sup>1</sup>  Yes, definitely  
<sup>2</sup>  Yes, somewhat  
<sup>3</sup>  No

**13.** During your visit today, did you talk with this provider about any health questions or concerns?

- <sup>1</sup>  Yes  
<sup>2</sup>  No → **If No, go to #15**

**14.** During your visit today, did this provider give you easy to understand information about these health questions or concerns?

- <sup>1</sup>  Yes, definitely  
<sup>2</sup>  Yes, somewhat  
<sup>3</sup>  No

**15.** During your visit today, how often did this provider use medical words you did not understand?

- <sup>1</sup>  Never  
<sup>2</sup>  Sometimes  
<sup>3</sup>  Usually  
<sup>4</sup>  Always

**16.** During your visit today, how often did this provider use pictures, drawings, models, or videos to explain things to you?

- <sup>1</sup>  Never  
<sup>2</sup>  Sometimes  
<sup>3</sup>  Usually  
<sup>4</sup>  Always

**17.** During your visit today, how often did this provider answer all your questions to your satisfaction?

- <sup>1</sup> Never
- <sup>2</sup> Sometimes
- <sup>3</sup> Usually
- <sup>4</sup> Always

**18.** During your visit today, how often did this provider give you all the information you wanted about your health?

- <sup>1</sup> Never
- <sup>2</sup> Sometimes
- <sup>3</sup> Usually
- <sup>4</sup> Always

**19.** During your visit today, how often did this provider encourage you to talk about all your health questions or concerns?

- <sup>1</sup> Never
- <sup>2</sup> Sometimes
- <sup>3</sup> Usually
- <sup>4</sup> Always

**20.** Sometimes providers give instructions that are hard to follow. During your visit today, how often did this provider ask you whether you would have any problems doing what you need to do to take care of this illness or health condition?

- <sup>1</sup> Never
- <sup>2</sup> Sometimes
- <sup>3</sup> Usually
- <sup>4</sup> Always

---

**About You**

---

21. What is your age? \_\_\_\_\_

22. Are you male or female?

<sup>1</sup>  Male

<sup>2</sup>  Female

23. What is your race? Mark one or more.

<sup>1</sup>  White

<sup>2</sup>  Black or African American

<sup>3</sup>  Asian

<sup>4</sup>  Native Hawaiian or Other Pacific Islander

<sup>5</sup>  American Indian or Alaska Native

<sup>6</sup>  Hispanic or Latino

<sup>7</sup>  Other

24. What is the highest grade or level of school that you have completed?

<sup>1</sup>  8th grade or less

<sup>2</sup>  Some high school, but did not graduate

<sup>3</sup>  High school graduate or GED

<sup>4</sup>  Some college or 2-year degree

<sup>5</sup>  4-year college graduate

<sup>6</sup>  More than 4-year college degree

**Thank you.**

**Please return the completed survey to the front desk in the envelope provided.**



## Appendix M

## Statistical Analysis Results Table

## Test Statistics

	Explain Post - Explain Pre	Concerns Post - Concerns Pre	Concerns Info Post - Concerns Info Pre	Med Terms Post - Med Terms Pre	Pictures Post - Pictures Pre
Z	.000 <sup>b</sup>	-1.414 <sup>c</sup>	-1.414 <sup>c</sup>	-2.333 <sup>c</sup>	-.447 <sup>c</sup>
Asymp. Sig. (2-tailed)	1.000	.157	.157	.020	.655

	Answer Questions Post - Answer Questions Pre	Information Post - Information Pre	Talk Post - Talk Pre	Follow Instructions Post - Follow Instructions Pre
Z	.000 <sup>b</sup>	.000 <sup>b</sup>	-.905 <sup>d</sup>	-.362 <sup>c</sup>
Asymp. Sig. (2-tailed)	1.000	1.000	.366	.717

## BRIEF Questionnaire Score

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Low Health Literacy	4	13.3	13.3	13.3
Marginal Health Literacy	9	30.0	30.0	43.3
Adequate Health Literacy	17	56.7	56.7	100.0
Total	30	100.0	100.0	

## Appendix N

## UMKC SoNHS Proposal Approval Letter



July 28, 2016

Members of UMKC Institutional Review Board  
University of Missouri-Kansas City  
Kansas City, MO 64108

UMKC IRB,

This letter serves to provide documentation regarding Sara Roediger's Doctor of Nursing Practice (DNP) Project proposal. Ms. Roediger obtained approval for her project proposal, Health Literacy Provider Training and Patient Satisfaction, from the School of Nursing DNP faculty committee on July 28, 2016.

If I can provide any further information, please feel free to contact me.

Sincerely,

A handwritten signature in cursive script that reads "Susan J. Kimble".

Susan J. Kimble, DNP, RN, ANP-BC, FAANP  
Clinical Associate Professor  
DNP Programs Director  
UMKC School of Nursing and Health Studies  
816-235-5962  
[kimbles@umkc.edu](mailto:kimbles@umkc.edu)