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HEALTH LITERACY ASSESSMENTS AND CHRONIC DISEASE: AN
INTEGRATIVE REVIEW

A Scholarly Project

Presented to the

Faculty of Liberty University

In partial Fulfillment of the requirements for the Degree of

Doctor of Nursing Practice

By

Dana Kaye Smith Woody

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ABSTRACT

Health literacy is a matter of grave concern in health care today. Defined as more than the ability to read and write, it involves obtaining, processing, and understanding health information. Yet it is a concept often misunderstood and overlooked in the environment of professional care. Specifically, low health literacy in the setting of chronic disease has proven to be a challenging and costly phenomena. Given the high prevalence of chronic disease, there is a pressing need for health care providers to acknowledge this subject matter in care delivery. This integrative review provides a synthesis of published evidence identifying and clarifying the need for health care providers to address and support low health literacy in the setting of chronic disease via use of health literacy assessments. Recommendations for improved awareness among health care providers were devised as a result of this review. Analysis of the literature further supports the need to create a practice standard for the care continuum. The review lays the foundation to create change in chronic care delivery. Building upon nursing science, informing research, and facilitating policy initiatives, this review will serve as a call to action for health care providers.

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PROPOSED PROCESSES UNDERTAKEN

Introduction

Defined by the Institute of Medicine (IOM, 2004) as the “capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions,” health literacy (HL) is a matter of grave concern in health care today. Health literacy is also referred to as skills needed to interpret documents, read and write prose (print literacy), use quantitative information (numeracy), and speak and listen effectively (oral literacy) (Berkman et al., 2011). More than the ability to read and write, HL is misunderstood and often overlooked in the environment of care. Further defined as a social determinant of health, limited HL is responsible for health inequities—unfair and avoidable disparities in health status (World Health Organization [WHO], 2015).

“Health literacy is vital information and plays a major role in enhancing quality of life and promoting better health outcomes and may be a key factor in eliminating health disparities across the globe” (Heinrich, 2010, p. 222). Recognized as a standard of care by the Joint Commission (2007), HL demands the attention of health care providers. Yet, despite its importance, awareness of HL is low among health care providers (Coleman, 2011). Specifically, low HL in the setting of chronic disease has proven to be a challenging and costly phenomenon.

Nearly half of all adults in the United States have a chronic disease. Affecting over 117 million adults, chronic diseases are costly and preventable according to the Centers for Disease Control and Prevention (CDC, 2015). Chronic diseases accounted for 86% of all health care spending in 2010 in the United States (Centers for Disease

Control and Prevention [CDC], 2015). Also, related to this, low HL accounts for \$106 billion to \$238 billion in spending annually (Almader-Douglas, 2013).

Patients with chronic disease need support and information in order to be effective managers of their health. This includes basic information about their disease, understanding of and assistance with self-management skills, and ongoing support from health care providers. Improved patient outcomes are achieved with the use of evidence-based strategies that emphasize patient activation or empowerment, collaborative goal setting, and problem-solving skills (Institute for Healthcare Improvement [IHI], 2015). Patient outcomes are further dependent upon HL. Research suggests that HL is directly related to outcomes. Low HL often results in poorer outcomes (Berkman et al., 2011; Smith et al., 2013; Wolf, Gazmararian, & Baker, 2005). Health literacy assessments (HLAs) are used to determine levels of HL, enhancing the care provider's ability to support patients with chronic disease. To date, there are a number of HLAs available for use by providers, but there is no practice standard for utilization of these assessments in the setting of chronic disease (Institute of Medicine [IOM], 2004). This raises further concern, as poor HL is a major predictor of a person's health; more so than age, income, employment status, education level, and race according the American Medical Association (AMA) (2007; Al Sayah et al., 2012). Examining what is known about HLAs and their use in patients with chronic disease, will build upon nursing science, inform research and practice, and facilitate policy initiatives to standardize practice. Serving as a call to action, this review will raise awareness among health care providers to support optimal outcomes in chronic disease patients with low HL.

Background

National Assessment of Adult Literacy

The National Assessment of Adult Literacy (NAAL), completed in 2003, was the first and most recent national assessment of English literacy skills of Americans aged 16 and older since 1992. The assessment provided information about the status and progress of literacy in the nation as a whole and among key population groups, including the nation's least literate adults (National Center for Education Statistics [NCES], n.d.). Over, 19,000 adults participated in the assessment. The NAAL included six components: background questionnaire, prison component, state assessment of adult literacy, HL component, fluency component, and an adult literacy supplemental assessment (NCES, n.d.). Of interest, the 2003 assessment was the first-ever to include a HL component.

The NAAL (2003) reported that only 12% had a proficient level of HL; approximately 36% of adults in the United States had limited HL, 22% had basic HL, and 14% had below basic HL (NCES, n.d.). With 90 million adults having limited HL skills, there is a pressing need to acknowledge this subject matter in care delivery, especially in the setting of chronic disease (Gazamararian et al., 2003).

Health Literacy Skills and Health Outcomes

Health care is riddled with complex information and demands, from treatment plans and medication management, to lab values and diagnostic tests. Care providers are constantly providing information to patients. The patient must understand, remember, and act on it. From knowing how to access health care services to analyzing relative risks, from calculating dosages and evaluating information for credibility and quality to interpreting health information—the demands are great for the patient in the health care

setting. In order to accomplish these tasks, patients need to be visually, computer, and information literate (Almader-Douglas, 2013). In addition, oral skills and Internet navigation skills are important, as patients need to articulate concerns, ask questions, and be able to make decisions regarding their health. It is critical that these skills are assessed to support optimal health outcomes.

The relationship between HL and health outcomes has been amply shown in research. It is imperative that care providers acknowledge this relationship and recognize the “symptoms” of limited HL (Jeppesen, Coyle, & Miser, 2009). This is of particular interest today as health care is in the midst of great transition. Historically, care delivery has been reactive and provider-centered. Today, the environment of care demands proactive, patient-centered care in support of optimal patient outcomes. This transition has major implications for health care providers. To date, health care professionals have lacked awareness of the significance of limited HL and its effect on quality care delivery (Welch, Vangeest, & Caskey, 2010). Limited HL is a shared problem, between the provider and the health care system according to Welch, VanGeest, and Caskey (2010). The Agency for Healthcare Research and Quality (AHRQ) (2010) notes that low HL is associated with a higher risk of death and more emergency room visits and hospitalizations. Limited HL has also been associated with less knowledge of health care services, increased disease prevalence and severity, and lower utilization of screening and preventative services according to the AHRQ (2010).

Limited HL is prevalent and often associated with education, ethnicity, and age (Paasche-Orlow et al., 2005). The association between age and limited HL is of most interest; given the high incidence of chronic disease among older adults (CDC, 2015).

The vulnerability of the elderly, adults over age 65, is of particular concern as the population ages. The Census Bureau (2012) notes that by 2050, 88.5 million adults aged 65 years of age and older will be living in the United States. Other HL statistics of critical concern include: 71% of adults older than age 60 have difficulty using print materials; 80% have difficulty using documents such as forms or charts; 68% have difficulty interpreting numbers and performing calculations (AMA, 2007). Further, people 65 and older make nearly twice as many physician office visits per year and two-thirds are unable to fully understand the information given to them about their prescription medications (Almader-Douglas, 2013).

While the relationship between literacy and health is complex, its impact on health outcomes among older adults with chronic disease is especially severe. A poorer ability to take medications correctly and interpret medication labels and health messages; results in poorer overall health status and higher mortality (Berkman et al., 2011). These outcomes support a pressing need for health care providers to acknowledge HL and to consider standardizing the use of a HLA in patients with chronic disease.

Health Literacy Assessments and Chronic Disease

The Center for Managing Chronic Disease (2011) defines chronic disease as a condition that can be controlled, but not cured. Chronic disease is described by the CDC (2015) as the leading cause of death and disability in the United States, accounting for 70% of all deaths. In addition, chronic disease is a major cause of premature death worldwide (WHO, 2010). However, the use of HLAs in the management of chronic diseases remains limited. This is counterintuitive, given that the underuse of preventative services, worse self-management skills, and poor outcomes among patients with chronic

diseases is associated with limited HL (Omachi et al., 2012). Despite the burden of chronic disease and the impact of HL in health outcomes there are no guidelines specific for health care providers that support the use of HLAs in patients with chronic disease. There are a number of HLAs available for use by care providers though. In fact, most recently an online database was created to catalogue HL measures (Health Literacy Tool Shed, 2015). The limited use of the assessments is thought to be related to the absence of an easy-to-use single assessment measure that is able to address the complexity of HL in its entirety (O'Neill et al., 2014). According to health care professionals, current tools are complex and impractical (Dennis et al., 2012). The use of HLAs is addressed further in a number of landmark reports, which suggest the importance of addressing HL as a determinant of health.

Health Literacy Landmark Reports

There is strong support for HL awareness, policy development, and interventions (Affordable Care Act, IOM, the Joint Commission, the United States Department of Health and Human Services, and the AHRQ). Landmark reports have helped to move HL from an under-recognized issue to one that is in critical need of health policy reform (Almader-Douglas, 2013). For example, the IOM's 2004 report, *Health Literacy: A Prescription to End Confusion*; suggests that concerted efforts by public health and health care systems, the education system, media, and consumers of health be considered to improve HL. *The National Action Plan to Improve Health Literacy* (2010a) published by the United States Department of Health and Human Services (2010b) seeks to engage key stakeholders in an effort to improve HL. *Healthy People 2020* advocates for the use of health communication strategies to improve population health outcomes supporting the

need for awareness of HL in practice settings. The AHRQ's publication entitled, *Health Literacy Interventions and Outcomes: An Update of the Literacy and Health Outcomes Systematic Review of the Literature* published in 2010 was an update to the 2004 systematic review of health care service use and health outcomes related to HL and interventions to support improving outcomes in patients with low HL. Lastly, *Health Literacy: Past, Present, and Future*, published by the IOM in 2015, discusses progress in the field of HL, the current state of HL, and possible directions for future HL efforts. These reports provide a vast amount of information that is well supported and suggests immediate attention by health care providers.

Problem Statement

Noted as a social determinant of health, health literacy needs to be addressed in the care delivery of patients with chronic disease (United States Department of Health and Human Services, 2010b). With the incidence of chronic disease on the rise and the number of older adults expected to reach an all-time high, there is an urgency to support this call to action. Health literacy has been minimally acknowledged among care providers and therefore poorly assessed in patients with chronic disease. If HL continues to be overlooked, the health status of patients with chronic disease will continue to prove costly, materially and physically; negatively impacting individuals, families, and communities at large.

Purpose of This Scholarly Project

The purpose of this scholarly project is to describe the need for the utilization of HLAs among health care providers in patients with chronic disease, through the adoption of standardized national practice guidelines. This will support optimal outcomes in the

setting of chronic disease and will increase the awareness of HL among health care providers in practice settings, both in the acute care and community environments.

Significance of the Project

Health literacy demands the attention of health care providers; particularly in the setting of patients with chronic disease. With an estimated 90 million adults having limited HL and over 117 million adults living with a chronic disease, establishing a voice and vision for the integration of HL in care delivery is imperative. The following facts will be used to support this project:

- 1) There is a critical need for clinicians and patients alike to acknowledge low HL in the setting of chronic disease management.
- 2) Health literacy is a multi-dimensional, complex issue that needs to be approached in a manner that supports the greatest good of the public.
- 3) No one professional body owns HL; as a result advocacy is limited and the concept often is not addressed.
- 4) Literature is voluminous regarding HL, and is often in the setting of limitations and discrepancy leading to skepticism among health care providers.
- 5) Numerous landmark reports support the need to raise awareness for HL, yet there are limited reports of action among health care providers.
- 6) Health literacy standards and practice guidelines are lacking.

Clinical Questions

This integrative review will address the following clinical question: For adults living with chronic disease, diseases requiring self-care and management, do patients who receive a HLA by their health care provider have improved patient activation

compared to patients who do not have an assessment? The following supporting questions will serve to focus the review:

- 1) What HLAs are currently available?
- 2) What HLAs have proven to be most effective in patients with chronic disease?
- 3) How are patient outcomes affected by limited HL in the setting of chronic disease?
- 4) What type of professional knowledge and skills do health care providers need to support the integration of HLAs in practice?
- 5) What factors contribute to the health care provider's ability to carry out a HLA?

Project Goals

The goals of this project were:

- 1) To provide a systematic integrative review of the research related to the use of HLAs in patients with chronic disease.
- 2) To explore the feasibility and advantages of HLA use among health care providers.
- 3) To provide evidenced-based recommendations for future research and program development, to inform policy and practice.

Methods

The methodology for the integrative review used the robust conceptual framework, devised by Harris Cooper (2001), and Whittmore and Knafl (2005). The processes suggested by researchers were closely followed to maintain rigor and decrease bias and inaccuracy.

Synthesis reviews are “powerful knowledge development tools” because evaluation transcends strengths and weaknesses of existing knowledge and seeks to create a more informative understanding (Kirkevold, 1997, p. 981). An integrative review of literature was conducted to consider the use of HLAs by health care providers in patients with chronic disease. Specifically, this integrative review sought to summarize past research and present a current state of knowledge that calls attention to issues that research has not resolved (Cooper, 2001). Institutional review board (IRB) approval was not required for this type of research because it does not involve the review of medical records or use of human subjects (see Appendix E for IRB letter). The Collaborative Institutional Training Initiative (CITI) training was completed, in support of promoting quality in the setting of the integrative review (see Appendix B for training certificate). Research was focused on the identification and use of HLAs by health care providers in patients with chronic disease.

Framework

Defined further as research of research, integrative reviews require methodological rigor which is supported by a detailed framework. The framework for the scholarly project was underpinned by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) and by Polit and Beck’s (2012) guidelines for critiquing evidence. The overarching framework for the proposed project however, is defined by Harris Cooper (2001) in the conceptual context, and further supported by the updated methodology of integrative reviews documented by Whitemore and Knafel (2005).

PRISMA statement. The aim of PRISMA is to support the reporting out of a wide array of systematic reviews in an effort to assess the benefits and harms of a health care intervention (Liberati et al., 2009). The 27-item checklist and a four-phase flow diagram was utilized to support the reporting out of information. The flow diagram maps out the number of records identified in the review; those included and excluded, and the reasons for exclusions (see Appendix A for PRISMA flow diagram). The items for reporting were further secured via the 27-item checklist, which supported the documentation of items deemed essential for the transparent reporting of systematic reviews (Liberati et al., 2009).

Polit and Beck. Polit and Beck (2012) notes that a “good review requires thorough familiarity with available evidence” (p. 95). The thorough review supports the researcher in determining how to respond to existing evidence. Identifying gaps and inconsistencies, as well as considerations for next steps were facilitated by the integrative review. The researcher concurred with the recommendations of Polit and Beck (2012), which suggested that primary sources be mostly relied on in review of literature. Secondary sources and non-research references were also reviewed as a means to better understand the problem, demonstrate a need for research, and describe aspects of clinical practice (Polit & Beck, 2012). Polit and Beck (2012) suggest further that reviews must be comprehensive, systematic, free of bias, up to date, and strive to provide insight that is more than “the sum of its parts” (p. 97). The guidelines for review according to Polit and Beck (2012) served as a supplement to the researcher.

Cooper, Whittemore and Knafl. Copper (2001) notes that the integrative review seeks to “summarize past research by drawing overall conclusions from many

separate investigations that address related or identical hypotheses” (p. 3). This integrative review provides a synthesis of published literature, both empirical and theoretical, in support of the subject matter of interest. Specifically, this scholarly project identifies and clarifies the use of HLAs in patients with chronic disease. The review supports a raised awareness for the subject matter via a five stage, research synthesis process as defined by Cooper (2001) and Whitemore and Knafl (2005): (a) problem formulation; (b) data collection or literature search; (c) data evaluation; (d) analysis and interpretation; and (e) presentation of results.

Problem Formulation Stage

This stage provides focus and boundaries for the review process, by determining the clear identification of the problem and defining variables of interest. The problem addressed in this integrative review of literature is the paucity of HLA use by health care providers in patients with chronic disease. Variables of interest for the project included currently available HLAs, their specificity for use in patients with chronic disease, health care professional knowledge needed to support the use of HLAs in practice, and factors that contribute to the health care provider’s ability to use HLAs. Other variables of interest include the awareness of HL as a predictor of health and its effect on patient outcomes. "Poor HL is a stronger predictor of a person's health than age, income, employment status, education level, and race" according to the AMA (2007, para. 1; Al Sayah et al., 2012). Al Sayah et al. (2012) further recognized low HL as a predictor of health and notes its effects on care processes and outcomes. Patient activation and empowerment, collaborative goal setting, and problem-solving skills in the setting of chronic disease are necessary to support optimal patient outcomes and all require a

proficient level of HL (IHI, 2015). Note that these variables are broad, supporting Cooper's (2001) insight that too narrowly defined variables can be a threat to validity.

The purpose of this scholarly project is to raise awareness for HL and for the use of HLAs among health care providers, in support of optimal outcomes in the setting of chronic disease. Having a well-specified review purpose and variables helped to differentiate between information of relevance and that which was irrelevant and further provided a focus and boundaries for the review process (Whittemore & Knafl, 2005).

Data Collection

Search strategies are critical to the review process and must be clearly defined and documented, in an effort to support enhanced rigor and the most complete unbiased results (Whittemore & Kanfl, 2005). Whittemore and Knafl (2005) note that obtaining all of the relevant literature on a problem can be a challenge. The goal of a comprehensive search of literature is to attain the maximum number of eligible sources, using two or more strategies. Information sources and eligibility criteria were clearly defined to support data collection.

Information sources. Three primary strategies were used to search for research evidence, searching in bibliographic databases, an ancestry approach, and a descendency approach. Polit and Beck (2012) note that owning the research requires adopting all of these strategies. The bibliographic search strategy for the review included a comprehensive, computer-assisted search of the Cumulative Index of Nursing and Allied Health Literature (CINAHL), Cochrane Library, Google Scholar, Medline, and the National Guideline Clearinghouse from 2003 to 2015. This time frame was selected because it allowed for the inclusion of research which stemmed from the NAAL. The

NAAL was a pivotal document that offered valuable insight and augmented further study. In addition, an ancestry approach was used to gather citations from studies done earlier on the same topic. A descendancy approach was also used to search forward to find studies that cited the key studies identified.

The information sources were mapped using key words and phrases. Key words and phrases used for the search included: health literacy, health literacy assessment, self-care, chronic disease, engagement, activation, health care providers (physicians, nurses, nurse practitioners, and advance practice nurses), and outcomes in no one particular order. Boolean operators were used to expand the search (Polit & Beck, 2012). A professional librarian was also consulted to determine the adequacy of the literature search.

Eligibility criteria. Data collection was supported further by defined eligibility criteria, which included identifying a target audience, setting, and inclusion and exclusion criteria. The target audience for this scholarly project was health care providers, to include: physicians, nurses, nurse practitioners, and advanced practice nurses. The secondary population for this review was adults, persons 19 years of age and older, living with a chronic disease requiring self-care and management. The inclusion of a target audience allowed for generalizations throughout the continuum of care. Settings of all types were also considered as part of the eligibility criteria for the project. Acute and primary care, as well as community-based care settings were all included.

Data collection was supported further by determining inclusion and exclusion criteria (Table 1). The search included publications dated from January 1, 2003 to December 31, 2015. Research was narrowed by considering the age of subjects;

specifically, research involving subjects aged 19 years and older was included.

Publications that involved health care providers, defined as physicians, nurses, nurse practitioners, and advanced practice nurses were also included. Further inclusion criteria considered the availability of reports in full text; practice settings of all types—inpatient and outpatient; and reports written in the English language.

Literature Search Results

The literature search identified 939 references. Twenty additional articles were identified through other sources. Thirty of the 959 were duplicates and removed from the review. After duplicates were excluded titles and abstracts of the remaining 929 were reviewed. An additional 786 were excluded as not meeting the established selection criteria, leaving 143 full-text articles to assess for eligibility. The assessment further resulted in 122 additional studies excluded based on established exclusion criteria, leaving 21 studies for critical review. The critical review of the 21 studies are available in Tables 2-5. All 21 studies were of a quantitative study design. Fifteen (15) additional articles, that were excluded based on the nature of the work were not included in the critical analysis, as not providing useful contextual information; but are included in the integrative review discussion as providing useful contextual information.

Data Evaluation Stage

Critical judgments about the data reported in the selected literature were made in the data evaluation stage (Cooper, 2001). Empirical and theoretical sources, as well as both primary and secondary sources were included for evaluation. Evaluating the quality of data sources involved giving consideration to two criteria: *methodological rigor* and *informational value*. Each criteria was scored using a two-point scale (high or low).

There is no gold standard for evaluating quality in research reviews according to Whitemore and Knafl (2005). No source was excluded based on the evaluation rating system. The rating system score also served as a variable in the data analysis stage.

Evaluating the quality of sources for the integrative review was addressed in a meaningful way utilizing the PRISMA checklist and critiquing guidelines suggested by Polit and Beck (2012). Sources were also leveled, I-VII respectively, according to a hierarchy of evidence rating system, the Nursing: Melnyk Pyramid (2011).

Data Analysis Stage

The data analysis stage involved coding, categorizing, ordering, and summarizing data found in the articles selected (Whitemore & Knafl, 2005). A formal recording system for key information was devised to support data analysis (Polit & Beck, 2012). The system supported the use of a coding scheme for the project variables, which further coincide with the review's focus—HLAs (1), HL and chronic disease (2), HL and health outcomes (3), and HL and health care providers (4). Records were kept during the entire data analysis process to ensure that analytical integrity, as well as process transparency were consistently applied (Whitemore & Knafl, 2005).

A literature review protocol was also used to categorize various aspects of the studies in a systematic manner. A citation and research focus was initially collected and recorded for each source. Subsequently, information regarding the source's theoretical foundations (HLA tool and what chronic disease was addressed); methodological features (sample size and setting); evaluative information (level of evidence and source); and support for specific clinical questions was recorded consistently across studies. Each category was subsequently compared and further analysis and synthesis was completed.

This approach according to Whitemore and Knafl (2005) is most conducive when there is varied data from studies involving multiple methodologies. Since this study was not specific to a certain research design and included the results from various types of studies, a qualitative analysis was most appropriate.

The qualitative analysis involved devising results matrices to support discerning themes within the results. Whitemore and Knafl (2005) suggested having a matrix for every project variable that was coded; thus, four matrices were devised accordingly. Tables 2-5 present the twenty-one studies used to discern themes. This approach was systematic and further consisted of data reduction, data display, data comparison, and conclusion drawing and verification (Whitemore & Knafl, 2005).

Data reduction. Data reduction involves two phases. The first phase supported the determination of a classification system for managing the data, via subgroups. The proposed initial subgroup classification was based on level and source of evidence. Each level of evidence represented was analyzed sequentially. The second phase involved extracting and coding data from sources into a manageable framework to display. This stage was essential to ensure methodological rigor and further provides a succinct organization of literature for display (Whitemore & Knafl, 2005).

Data display. The extracted data was displayed within four matrices. Each matrix supports an enhanced visualization of patterns and relationships within and across all data sources according to Whitemore and Knafl (2005).

Data comparison. The data comparison step involved an iterative process of examining the data displays and identifying patterns, themes, and relationships (Whitemore & Knafl, 2005). A concept map was drawn for each variable of interest, to

further showcase the majority of patterns, themes, and relationships identified. Similar themes were grouped so that depicting relationships was easier to capture. This process of comparison and visualization supports earlier interpretive efforts and brought more meaning to the review findings.

Conclusion drawing and verification. During the final phase of data analysis, generalizations from each subgroup became evident and commonalities and differences among sources was identified. After each subgroup was analyzed, synthesis of the important conclusions of each subgroup was completed. This supported the development of a new conceptualization of the sources, which integrated all subgroups into a comprehensive portrayal of the subject matter of interest, completing the review process as recommended by Whitemore and Knafl (2005).

Presentation of Results

There were three presentations of results for this project: a flow map, tables, and concept maps. A flow map was devised to highlight the systematic approach of the literature search and screening for the inclusion of sources. Details from the sources and evidence to support the conclusions were reported in a narrative table format. The tables allow readers to better assess the basis for conclusions drawn and make key evidence easily discernable. The tables were organized to include levels of evidence, sources, background information, and conclusions and recommendations. Concept maps were used to showcase the majority of patterns, themes, and relationships identified. Similar themes were grouped together, making relationships easier to capture.

Reviews of this nature are complex and challenging, as they include diverse data from several studies and multiple study methodologies. The data capture of this

integrative review revealed the depth and breadth of the topic and offers further support for a more comprehensive understanding of the phenomenon of interest; implications for practice; and policy initiatives. This review also identified gaps in research and the need for further research.

EVALUATION METHODS

The scholarly project was evaluated by the author, chair, and committee members continuously to assure that the evolving document maintained rigor and met the requirements of the Doctor of Nursing Practice program at Liberty University.

RESULTS

The integrative review included 21 research studies. The characteristics of the studies were homogenous regarding type of research, but varied by design. The research papers were all quantitative. The types of designs included: 1 systematic review of a randomized control trial (Dennis et al., 2012); 1 randomized control trial (Seligam et al., 2005); 4 quasi-experimental studies (Carpenter et al., 2014; Gerber et al., 2011; Hahn et al., 2011; Pagels et al., 2015); 6 correlational studies (Omachi et al., 2012; Shah et al., 2007; Smith et al., 2013; Welch, VanGeest, & Caskey, 2010; Wolf, Gazmararian, & Baker, 2005; Schillinger et al., 2003); 5 systematic reviews of descriptive studies (Al Sayah et al., 2012; Altin et al., 2014; Berkman et al., 2012; Coleman, 2010; O'Neill et al., 2014); and 4 descriptive study designs (Heinrich, 2010; Jeppesen, Coyle, & Miser, 2009; Johnson & Weiss, 2008; Kirk et al., 2012). Three studies were published in the period 2003-2006, six between 2007 and 2010, and 12 between 2011 and 2015. Results are discussed further via a descriptive narrative and concept mapping.

Health Literacy Assessments

What health literacy assessments are currently available? Health literacy assessments were discussed and/or reviewed in seven of the 21 studies (Altin et al., 2014; Carpenter et al., 2014; Hahn et al., 2011; Johnson & Weiss, 2008; O'Neill et al., 2014; Shah et al., 2007; Welch, VanGeest, & Caskey, 2010). The majority of the seven articles focused on appraising and evaluating existing HLAs; specifically considering development and feasibility of the assessments (Altin et al., 2014; Carpenter et al., 2014; Johnson & Weiss, 2008; O'Neill et al., 2014; Shah et al., 2007; Welch, VanGeest, & Caskey, 2010). There are 112 HLAs available for use (Health Literacy Tool Shed, 2015).

The review discussed and/or reviewed 50 HLAs and noted that most HLAs are studied and utilized most in primary care settings (Al Sayah et al., 2012; Dennis et al., 2012; Gerber et al., 2011; Hahn et al., 2011; Heinrich, 2010; Jeppesen, Coyle, & Miser, 2009; Johnson & Weiss, 2008; Kirk et al., 2012; O'Neill et al., 2014; Omachi et al., 2012; Pagels et al., 2015; Schillinger et al., 2004; Seligam et al., 2005; Shah et al., 2007; Smith et al., 2013; Welch, VanGeest, & Caskey, 2010). The main concepts addressed in the literature were the development of HLAs and feasibility for their use in care delivery. See Figure 1.

Development. More precise measurements of HL will help determine the level at which low literacy adversely effects health outcomes (Hahn et al., 2011). This requires the development of new HLAs. Existing HLAs have inconsistencies related to the definition and measurement of HL, limited evidence of construct validity, and weakness is psychometric properties (Hahn et al., 2011). The most common factors associated with the development of HLAs were their validation and reliability in practice (Altin et al., 2014; Carpenter et al., 2014, Hahn et al., 2011; O'Neill et al., 2014). Construct validity is a concern in HLA development (Altin et al., 2014; Carpenter et al., 2014; Hahn et al., 2011). Health literacy is multifaceted and is defined in the setting of a number of constructs, this makes the development of a universally accepted HLA challenging. Newer HLAs are considering the multiple dimensions of HL, which support improved measurement and greater acceptability among health care providers. Currently, there is not a universally accepted measure to assess HL in the clinical setting (Altin et al., 2014; Johnson & Weiss, 2008; Welch, VanGeest, & Caskey, 2010).

Feasibility. The decision to use a HLA is most often associated with feasibility. Administration time is the most limiting factor in HLA use according to the literature (O'Neill et al., 2014; Shah et al., 2007; Welch, VanGeest, & Caskey, 2010). The literature notes that the Newest Vital Sign (NVS) is the HLA of choice when considering feasibility (Johnson & Weiss, 2008; Shah et al., 2010; Welch, VanGeest, & Caskey, 2010). The NVS also considers a number of HL constructs, including numeracy (Weiss et al., 2005). The NVS was particularly helpful for new patients with chronic disease (Shah et al., 2007).

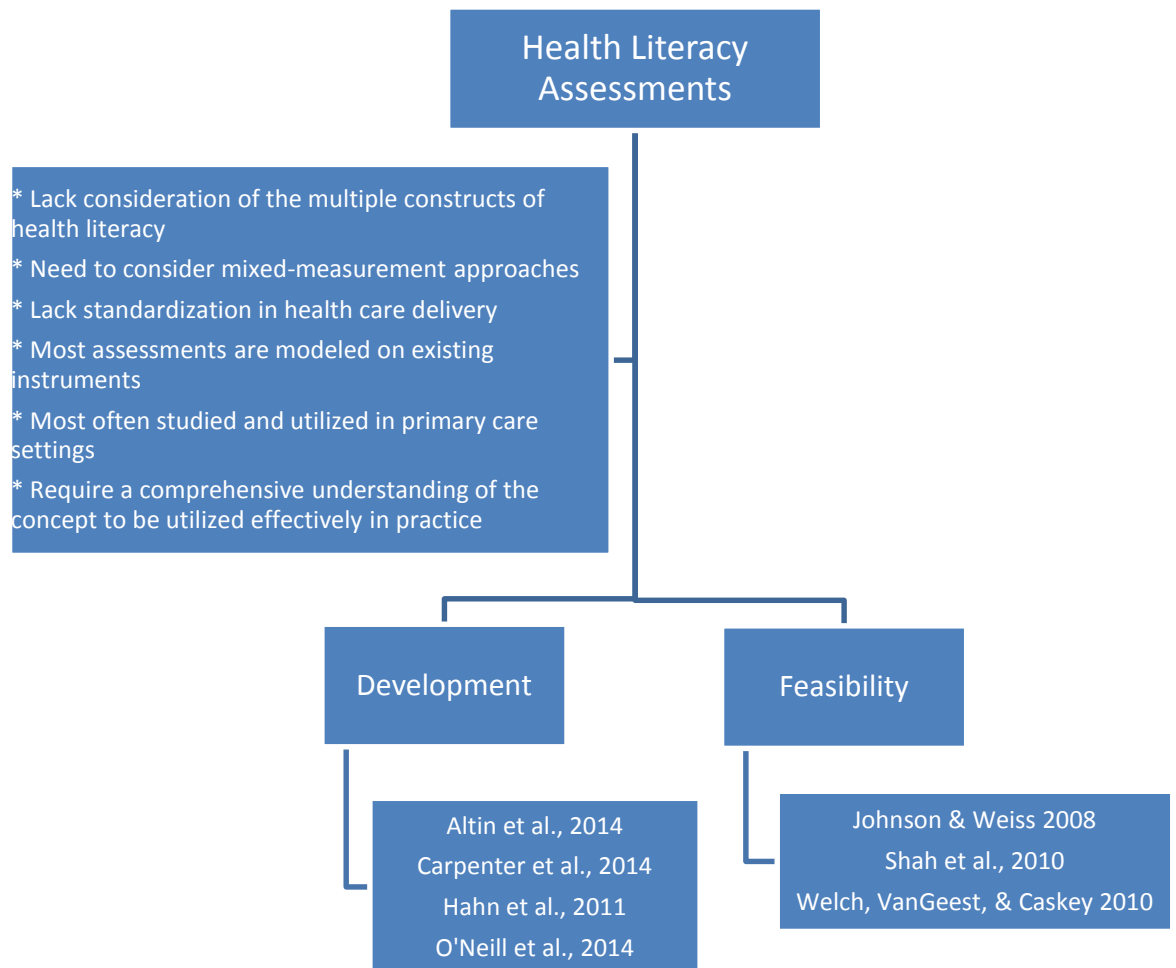


Figure 1. Flowchart of health literacy assessment research themes.

Health Literacy and Chronic Disease

What health literacy assessments have proven to be most effective in patients with chronic disease? Health literacy and its relationship to chronic disease was described in five research articles (Al Sayah et al., 2012; Gerber et al., 2011; Heinrich, 2010; Kirk et al., 2012; Omachi et al., 2012). Diabetes was the chronic disease most often studied in the context of HL; four of the five articles discussed the impact of HL in the setting of diabetes (Al Sayah et al., 2012; Gerber et al., 2011; Heinrich, 2010; Kirk et al., 2012). None of the articles reviewed gave preference for the use of a particular HLA in the setting of chronic disease. See Figure 2.

Chronic disease. Several studies indicate that patients with chronic disease need support and information in order to be effective managers of their health according to the literature (Al Sayah, et al., 2012; Gerber et al., 2011; Heinrich, 2010; Kirk et al., 2012; Omachi et al., 2012). This includes basic information about their disease, understanding of and assistance with self-management skills, and ongoing support from health care providers. Literature suggests that low HL is associated with poorer outcomes and is a barrier in people with chronic conditions; making disease specific self-care and management a challenge in this population (Al Sayah et al., 2012; Gerber et al., 2011; Kirk et al., 2012; Omachi et al., 2012). The evidence suggests that low HL is not disease specific. Literature reveals that HL is often an issue of opportunity in the context of chronic disease however; specifically related to patient activation and self-management (Al Sayah, et al., 2012; Gerber et al., 2011; Kirk et al., 2012; Omachi et al., 2012).

Awareness. Research suggests that health care providers have minimal understanding of the impact of low HL in patients with chronic disease (Gerber et al.,

2011; Heinrich, 2010; Kirk et al., 2012; Omachi et al., 2012). Best practices need to be developed to address how and when to assess HL to support raising the health care provider's awareness of limited HL (Gerber et al., 2011; Heinrich 2010). Research also suggests that health care providers be vigilant in identifying HL deficits to support referrals and the need to tailor communication based on the level of each patient (Gerber et al., 2011; Heinrich, 2012; Omachi et al., 2012). Synthesis of results notes that awareness among health care providers is necessary to appreciate the impact of limited HL in the case of chronic disease.

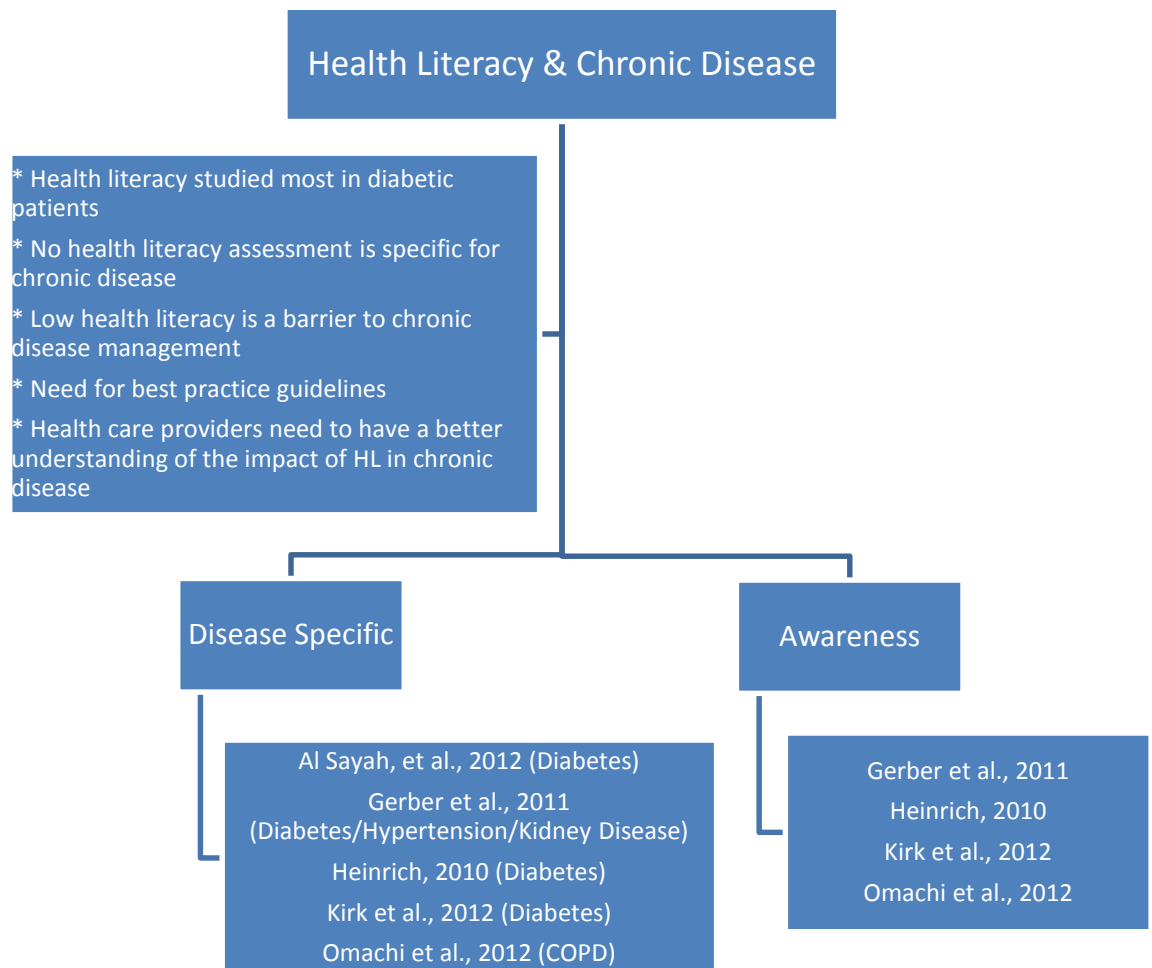


Figure 2. Flowchart of health literacy and chronic disease research themes.

Health Literacy and Health Outcomes

How are patient outcomes affected by limited HL in the setting of chronic disease? Three of the studies evaluated the effect of limited HL on health outcomes in the setting of chronic disease (Berkman et al., 2011; Smith et al., 2013; Wolf, Gazmararian, & Baker, 2005). Common themes in the literature regarding HL and health outcomes include: the relationship of low HL to poorer outcomes in patients with chronic disease (Berkman et al., 2011; Smith et al., 2013; Wolf, Gazmararian, & Baker, 2015); the need for a gold standard to measure HL, as a way to support improved outcomes (Berkman et al., 2011); and the need to support health care providers managing care for patients with limited HL (Wolf, Gazmararian, & Baker, 2015). See Figure 3.

Poor health outcomes. People with limited HL are at a greater risk for limited access to care, poorer use of health care services, and poorer health outcomes (Berkman et al., 2011). Evidence suggests this is particularly true in the elderly population (Berkman et al., 2011; Wolf, Gazmararian, & Baker, 2015). Individuals with low HL have less health knowledge, worse self-management, lower use of preventative services, and higher hospitalization rates (Berkman et al., 2011; Smith et al., 2013; Wolf, Gazmararian, & Baker, 2015).

Health care provider awareness. Analysis reveals that health care providers lack an understanding of the negative impact of low HL on quality care (Berkman et al., 2011; Smith et al., 2013; Wolf, Gazmararian, & Baker, 2015). Clinician awareness of patients with limited HL is minimal (Berkman et al., 2011; Smith et al., 2013; Wolf, Gazmararian, & Baker, 2015).

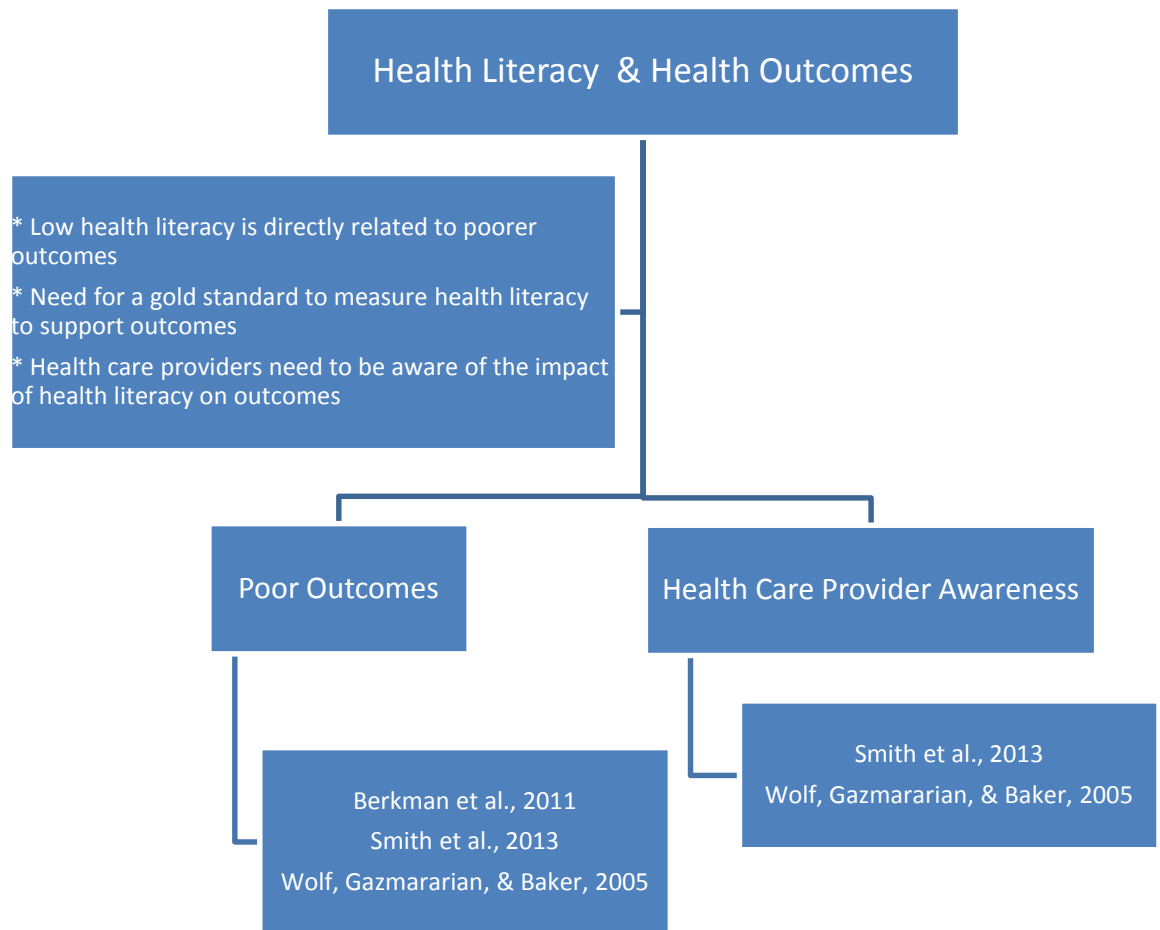


Figure 3. Flowchart of health literacy and health outcomes research themes.

Health Literacy and Health Care Providers

Six of the twenty-one articles evaluated address HL and health care providers (Coleman, 2011; Dennis et al., 2012; Jeppesen, Coyle, & Miser, 2009; Pagels et al., 2015; Schillinger et al., 2004; Seligam et al., 2005). The literature was reviewed to determine the type of professional knowledge and skills needed by health care providers to support the integration of HLAs in care delivery and to acknowledge what factors contribute to the care provider's ability to carry out a HLA. No articles were found that addressed guidelines specific for health care providers to assess HL in patients with a chronic

disease, nor does the literature address ownership of the concept within the health care profession. See Figure 4.

What type of professional knowledge and skills do health care providers need to support the integration of HLAs in practice? The limited knowledge of HL among health care professionals was acknowledged in six research articles (Coleman, 2011; Dennis et al., 2012; Jeppesen, Coyle, & Miser, 2009; Pagels et al., 2015; Schillinger et al., 2004; Seligam et al., 2005). Research examined in this project notes gaps in awareness, knowledge, and clinical recognition of HL, skills and practices to address HL, and attitudes about patients with low HL exist among health care providers. Identifying patients at risk for poorer outcomes due to low HL is the responsibility of the health care provider according to the literature (Jeppesen, Coyle, & Miser, 2009). One study suggests that there is the need for specific HL training for health care professionals to acknowledge low HL in care delivery (Seligam et al., 2005).

What factors contribute to the health care provider's ability to carry out HLAs? Health care professionals lack training to support their ability to care out HLAs (Coleman, 2011; Jeppesen, Coyle, & Miser, 2009; Pagels et al., 2015; Seligam et al., 2005). A gap exists between the health care providers understanding of the HLA and the need for assessing HL (Dennis et al., 2012; Pagels et al., 2015; Seligam et al., 2005). The lack of training regarding HL and the use of HLA is the health care provider's biggest deficiency (Coleman, 2011; Dennis et al., 2012; Pagels et al., 2015; Seligam et al., 2005). Time constraints and the environment of care also contribute to the health care provider's ability to assess HL (Dennis et al., 2012). Only one study in the review addressed the drivers and barriers for HLAs directly (Dennis et al., 2012). Research analysis notes that

workforce development, specifically among primary health care providers is needed to support the assessment of HL (Dennis et al., 2012).

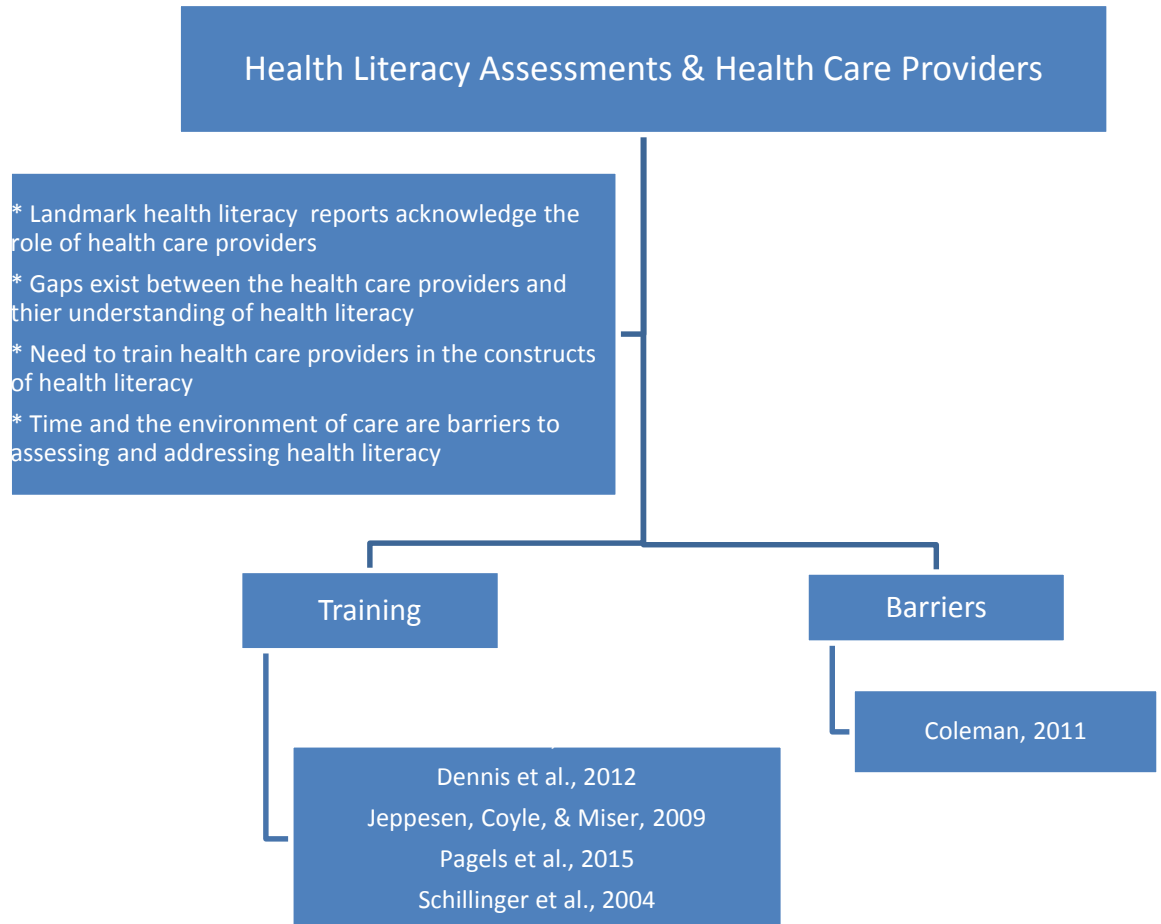


Figure 4. Flowchart of health literacy and health care providers research themes.

Synthesis of Results

Health literacy literature is voluminous, but proved to be lacking in the context of the clinical questions asked in this project. Over half of the articles reviewed revealed the complexity of the subject matter and the need to understand this complexity in the environment of care. The review of literature revealed a plethora of HLAs available for use. However, none exist specifically for use in the setting of chronic disease. Chronic

disease demands that patients engage in self-care and management, yet there are mixed results regarding the correlation between patient activation and limited HL. Specific guidelines for the use of HLAs by health care providers is also lacking according to the review of literature. Results reveal further that health outcomes are strongly correlated with HL; yet the literature is not specific to which health care professionals should address HL and how it should be done.

Additional Analysis

Additional analysis of the review of literature revealed that the strength of evidence is lacking, as there were no studies found that answered the problem statement specifically. A defined opportunity exists to acknowledge and integrate the identified themes, to better inform research and to support a comprehensive understanding of the phenomenon of interest. The overall strength of evidence was low to moderate. Almost sixty percent of the literature reviewed was level four or higher on the Nursing: Melnyk Pyramid, which levels literature one to seven respectively. The strength of evidence supports the need to increase awareness of HL in care delivery among health care providers and to act in support of HLA use in patients with chronic disease.

Generalizability of the evidence was threatened by the vast amount of information that lacked specifics for addressing HL within the context of chronic disease. Low HL was a challenge for both providers and patients, though for different reasons. Specifics for a global approach in the setting of chronic disease were not well discussed (Al Sayah et al., 2012; Carpenter et al., 2014; Dennis et al., 2012; Heinrich, 2010; Jeppensen, Coyle, & Miser, 2009; Johnson & Weiss, 2008; Kirk et al., 2012; Seligam et al., 2005; Shah et al., 2007; Welch, VanGeest, & Caskey, 2010). The evidence acknowledges low HL as a

problem in care delivery, but was not specific to one population or one group of care providers (Al Sayah et al., 2012; Altin et al., 2014; Berkman et al., 2011; Carpenter et al., 2014; Coleman, 2011; Dennis et al., 2012; Gerber et al., 2011; Hahn et al., 2011; Heinrich, 2010; Jeppesen, Coyle, & Miser, 2009; Johnson & Weiss, 2008; Kirk et al., 2012; O'Neill et al., 2014; Omachi et al., 2012; Pagels et al., 2015; Scillinger et al., 2004; Seligam et al., 2005; Shah et al., 2007;. Smith et al., 2013; Welch, VanGeest, & Caskey, 2010; Wolf, Gazmararian, & Baker, 2015). Formal policy in support of HLA use by health care providers in patients with chronic disease was also lacking (Berkman et al., 2011; Dennis et al., 2012). The correlation between low HL and poorer outcomes in patients with chronic disease was well supported (Berkman et al., 2011; Smith et al., 2013; Wolf, Gazmararian, & Baker, 2015). Research further suggests that health care providers and policy-makers appreciate the need for a standardized HLA in patients with chronic disease (Coleman, 2011; Dennis et al., 2012; Jeppesen, Coyle, & Miser, 2009; Pagels et al., 2015; Schillinger et al., 2004; Seligam et al., 2005).

DISCUSSION

Summary of the Evidence

Research revealed that HL was an influential factor in the care delivery of patients with chronic disease (Al Sayah, et al., 2012; Gerber et al., 2011; Heinrich, 2010; Kirk et al., 2012; Omachi et al., 2012). This integrative review was intended to identify studies that specifically addressed HL and the use of HLAs among health care providers, in support of optimal outcomes in the case of chronic disease. However, not one of the twenty-one studies fully addressed the problem statement as devised. Several studies discussed HLAs, HL and chronic disease, HL and outcomes, and HL and health care

providers. A defined opportunity exists to acknowledge and integrate the identified themes, to better inform research and to support a comprehensive understanding of the phenomenon of interest.

The studies as reviewed, provided more insight to themes of interest but not an integrated understanding of the phenomena. In addition to the twenty-one studies gathered for critical analysis, fifteen additional expert opinion articles were also identified and reviewed, which offered further insight to the call to action in health care delivery today regarding HL. Most of the research identified for critical analysis was published between 2011 and 2015. Interestingly, over half of the fifteen additional articles were published after 2010; signifying the possible influence of the 2010 Affordable Care Act on HL.

The analysis found that HL was a pressing concern in health care delivery, but the complexity of the concept makes it challenging to address in the setting of chronic disease. With 17 definitions, 12 concept models, and 12 dimensions, HL is indeed complex and multifaceted (Sorenson et al., 2012). In fact, the volume of literature has even created skepticism within the health care community about the best approach to address this health disparity. The concept having been studied some 30 plus years has received the greatest attention most recently. This uptick in interest further acknowledges the need to act on findings in the literature to support the care continuum at large. Although the call is there to acknowledge this concept in care delivery, there is yet to be a defined approach to address HL. There are no specific guidelines for providers to address HL in the context of chronic disease; yet, research amply correlates low HL with poorer outcomes (Al Sayah et al., 2012; Gerber et al., 2011; Heinrich, 2010;

Kirk et al., 2012). Research also provides insight regarding multiple HLA tools available to support care providers (Altin et al., 2014; Carpenter et al., 2014; Hahn et al., 2011; Johnson & Weiss, 2008; O'Neill et al., 2014; Shah et al., 2007; Welch, VanGeest, & Caskey, 2010). Research further reveals however, that these tools are poorly utilized due to time constraints and the environment of use; as well as decreased awareness and knowledge of their use among health care providers (Coleman, 2011; Dennis et al., 2012; Jeppensen, Coyle, & Miser, 2009; Pagels et al., 2015; Schillinger et al., 2004; Seligam et al., 2005). This is most disconcerting, especially in the setting of chronic disease, due to the demand of self-care and management that is required to support optimal outcomes for this population. The research also confirms that health care providers need more insight and education about HL and its impact on patients with chronic disease (Selgiam et al., 2005; Schillinger et al., 2004; Pagels et al., 2015; Dennis et al., 2012; Coleman, 2011).

In addition to health care provider awareness for the concept of HL, there needs to be awareness for the resources available to support low literacy in the setting of chronic disease. This awareness will further support interventions and a better understanding of the synergy between chronic disease and HL and the imperative need for health care providers to assess this concept in care delivery—leading to advocacy and action in the context of practice guidelines and policy.

Limitations

There were noted limitations to this review. It is necessary for integrative reviews to be systematic and rigorous in order to present a comprehensive understanding of a problem (Whittemore & Knafel, 2005). The volume of literature related to HL made it difficult for the novice reviewer to identify an initial subset of articles. The initial search

of key words did not reveal literature that specifically addressed the problem statement in its entirety. This led the reviewer to use ancestry and descendancy approaches to gather information specific to the devised clinical questions; this contributed to the complexity of data tracking. Data tracking is pivotal in integrative reviews to support reproducibility (Polit & Beck, 2012). The reviewer identified, screened, and considered the eligibility criteria of the literature using PRISMA guidelines. The PRISMA guidelines did not pair well with the use of the Nursing: Melynk Pyramid, hierarchy of evidence rating system and therefore created a mismatched eligibility on occasion. This led to the inclusion of most of the articles regardless of rating. This limitation was also noted due to the use of a single reviewer, who was also the primary researcher.

There was a noted risk for bias within and across studies. External validity was seemingly the most concerning bias. The majority of the studies had relatively low sample sizes, without controls, and only addressed lower socioeconomic clientele. Settings of the studies were predominately out-patient, non-acute environments, in underserved settings. History further contributed to bias, as the concept of HL continues to morph in the context of an ever-changing health care system. This was most evident as the number of HL studies increased after the Affordable Care Act recommendations in 2010.

Study selection for the review was based on the problem statement for the project, as well as five clinical questions. Unfortunately, out of the 21 research papers, not one addressed the problem statement in its entirety. This led the reviewer to draw conclusions based on the devised supporting clinical questions. Themes were further

acknowledged to guide the review in support of this limitation—HLAs, HL and chronic disease, HL and health outcomes, and HL and health care providers.

The data evaluation stage of the review was also limited, as there was only one reviewer, the primary researcher. This increased the risk of bias and threats to internal validity. This was most evident as there was a tendency for the reviewer to positively evaluate research that supported the researcher's hypothesis, and negatively evaluate research that contradicted the researcher's hypothesis. Cooper (2001) notes that threats to data integrity are common in the evaluation stage. In addition, the diverse sampling frame for the integrative review made the evaluation complex. Whittemore and Knafl (2005) confirm that data evaluation in the setting of a diverse sampling is complex and less conducive.

Implications for Research

Additional research is needed to further explore HL initiatives specific to chronic disease; educational curriculum guidelines for clinicians, both practicing and non-practicing; and chronic disease management guidelines specific to education. This additional review of research should seek to further uncover HL issues that research has left unresolved and will further support the understanding of this complex phenomenon. In turn, this will build upon nursing science, inform research further, and facilitate initiatives that will give credence to a call to action for health care providers.

Implications for Practice

Health care providers have an important stake in addressing HL, especially in the setting of chronic disease. Understanding HL needs in patients with chronic disease will further support prescriptive interventions for optimal patient outcomes. Health care

providers need to be able to recognize the “symptoms” of low HL, to better personalize patient education (Jeppensen, Coyle, & Miser, 2009). The use of screening questions and the recognition of certain predictive demographics will also support health care providers recognition of limited HL (Jeppensen, Coyle, & Miser, 2009). Pagels et al. (2015) suggests there is a need to train health care professionals with effective methods to overcome communication barriers and empower patients to become better managers of their health; noting that health care provider curriculum should be designed to teach the knowledge and skills necessary to determine HL levels. Due to the multifaceted nature of HL, considerations should be made to teach HL throughout the professional career of health care providers (Coleman, 2011). Further research is needed to recommend a specific curriculum, strategy, technique or tool to support health care providers in their efforts to address HL however (Coleman, 2011).

It is evident that research supports the use of HLAs in the setting of chronic disease. Awareness of a patient’s HL level can help health care providers determine a patient’s ability to understand health regimens and support the delivery of better patient-centered instructions and information (Kirk et al., 2012). This is a major practice implication, as research suggests the strong correlation between HL and poorer health outcomes. There is opportunity to further consider subpopulations, particularly the elderly, due to the higher incidence of chronic disease in this population.

Furthermore, there is a defined opportunity in practice to move from the theoretical understanding of HL to one that is grounded in more empirical evidence, by concentrating research efforts in chronic disease (Fitzgerald & Poureslami, 2014).

Awareness, advocacy, and action are needed to support HLA use by health care providers for patients living with chronic disease.

DNP Essentials

Essential I. The DNP scholarly project sought to raise awareness for HL and for the use of HLAs among health care providers, in support of optimal outcomes in the setting of chronic disease. *Essential I* has been demonstrated in this project by integrating nursing knowledge with knowledge from other sciences in support of laying a foundational approach to address a pressing practice issue. The project further used scientific-based theory to review literature in a meaningful manner.

Integrative research according to Kirkevold (1997) is a strategy of great importance to further nursing science and practice. The doctor of nursing practice (DNP) is supportive of the integrative approach to research. Specifically, the integrative process involves generating knowledge from separate research studies to provide a more comprehensive understanding of the subject matter. This is brought to fruition via the collection, analysis, and integration of separate research findings into meaningful wholes. “Sound integrative nursing research promises to improve the development of nursing science” (Kirkevold, 1997, p. 977). This approach will further showcase the scholarship of the DNP—seeking to raise the awareness of limited HL among health care providers and to standardize an approach to address this multifaceted concept in the setting of chronic disease.

As a result, new practice approaches will be advocated for based on an improved understanding of HL and HLA use among health care providers. This will be pivotal for health care providers, to support their efforts in managing chronic disease patients.

Securing underpinnings for practice will further support devising guidelines and policy for the integration of a HLA, in the care delivery of patients with chronic disease. The overall effect of these efforts stand to ameliorate health care delivery and support optimal, patient-centered, quality care.

Essential II. Attainment of *Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking* according to the AACN (2006) is demonstrated by utilizing organizational and systems models and a myriad of clinical science knowledge to support health care delivery approaches (AACN, 2006). This project focused on the complex concept of HL in a high risk population (chronic disease patients). Challenges for this population were addressed, specifically the limited awareness of HL and HLA usage by health care providers managing chronic disease. *Essential II* was demonstrated initially by appraising organizational culture and populations, including patients and providers. Having an appreciation for these populations and their roles in care delivery was pivotal as new practice approaches were being considered to raise HL awareness. This work further supported quality health care and patient safety, essential components of health care delivery. For example, acknowledging low HL as a determinant of health facilitated the consideration of new practice approaches to support both patients and health care providers. Initial practice approaches included health care provider education; as well as garnering support for a regional HL coalition.

As a result of practicing *Essential II*, the DNP was able to better understand the dynamics of the organizational culture and its leadership to further support planning for future integration of HLAs in the care delivery of chronic disease patients. The project

gave further credence for the DNP to organize care to address emerging practice problems and the ethical dilemmas that emerge as new diagnostic and therapeutic technologies evolve. In the case of HL, this is most important due to its relationship to poorer outcomes and higher costs of care delivery. According to the AACN (2006), a DNP is able to assess risk and collaborate with others to manage risks in care delivery; invaluable to answering the call to action to bring attention to HL in patients with chronic disease. This project afforded opportunity for collaboration with organizational leadership, health care providers, collegiate academicians, HL experts, community advocates, and health care consumers. These collaborative efforts by the DNP will serve to lay the foundational support necessary for the establishment of a regional HL coalition; seeking to develop an increased awareness for HL in care delivery.

Essential III. *Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice* attainment according the AACN (2006) is shown by engaging and leading clinical scholarship at the highest level of nursing practice. This project afforded opportunity to critically appraise existing literature to determine best evidence to support care delivery (AACN, 2006). An integrative review supports varied perspectives on a phenomena and has been advocated as important to nursing science and nursing practice (Whittemore & Knafl, 2005). Clinical scholarship served to drive the project, as current evidence suggested that HL, was sorely misunderstood among health care providers (Coleman, 2011). Identifying this gap in health care provider performance and the increased incidence of chronic disease, supported the need to review literature seeking to better inform practice, and support establishing guidelines and policy. Gathering and reviewing existing knowledge with a robust methodological approach will

facilitate the integration of theoretical and empirical evidence in practice. Specifically, the project afforded a showcasing of clinical scholarship by summarizing past research and presenting a current state of knowledge that calls attention to issues that research has not resolved (Cooper, 2001).

Recognized as a standard of care by the Joint Commission (2007), HL demands the attention of health care providers. This attention is spawned from evidence acquired through research. *Essential III* supports the generation of evidence by the DNP through their practice and further requires competence in knowledge application activities: the translation of research in practice, the evaluation of practice, improvement of the reliability of health care practice and outcomes, and participation in collaborative research according the AACN (2006). The result of the project will support the integration of knowledge from diverse sources and across disciplines, and further support the application of knowledge to address the issue of limited HL in the setting of chronic disease, as well as address health care provider practice issues related to HLA use. These efforts will ultimately serve to further inform nursing science and practice; ultimately improving health outcomes.

Essential IV. *Essential IV Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care* has been demonstrated throughout the project as research efforts served as premise for scholarly work. The DNP's ability to utilize technology is invaluable. The AACN (2006) suggests that the DNP be prepared to use technology. In the context of this project, technology was used to support the gathering of research for the integrative review. Whitemore and Knafl (2005) and Polit and Beck (2012) note the significance of gathering information

that is meaningful to adequately inform practice via integrative efforts. This involves a robust approach that supports methodological rigor in support of reproducibility.

Database searches are cumbersome and require a finite understanding of research technology. Specifically, there is a need for the DNP to demonstrate the conceptual ability and technical skills to extract data, in the form of research articles (AACN, 2006). This was evident as over 900 articles were pared down to 21 in support of integrative research methodology, originating from an initial database search.

Essential V. Health policy influences multiple care delivery issues according to AACN (2006). The DNP is prepared to design, influence, implement, and advocate for health care policies (*Essential V*) (AACN, 2006). This project provided an opportunity to advocate for policy based on information gathered from research. The DNP addressed the need for policy in support of the standardization for the use of HLAs in patients with chronic disease. This effort afforded the DNP opportunity to interface with hospital administrators, health care providers, state government officials, and chronic disease experts. The increased knowledge gained from the integrative review supported this collaboration; raising their awareness of low HL and its significance in patients with chronic disease. This increased awareness will further support the efforts of policymakers in respective areas related to health care delivery. The DNP was also afforded practice experiences that will serve to influence policy formation. These practice experiences will foster the integration of knowledge to support the policy process and the ability to engage in politically competent action (AACN, 2006). This will be pivotal in the context of chronic disease management, in support of optimal outcomes for patients with low HL.

Essential VI. *Essential VI: Interprofessional Collaboration for Improving Patient and Population* was demonstrated throughout the course of this project.

According to the AACN (2006), the DNP is positioned to lead interprofessional teams for improving patient and population health. As a result of the information gathered from the review, the DNP was able to identify key stakeholders and seek out opportunities for collaboration. This project afforded opportunity for collaboration with organizational leadership, health care providers, collegiate academicians, HL experts, community advocates, and health care consumers. Collaborative efforts supported further analysis of literature, organizational and community resources, and practice. Ten stakeholders were identified as a result of the scholarly work, with 50% expressing interest in support of future HL coalition efforts.

The AACN (2006) notes also that collaborative teams, as devised by the DNP, are best supported by effective communication and leadership skills. Effective communication and leadership skills will be pivotal to the success of a regional HL coalition. These skills will further support the development and implementation of practice guidelines and health policy in support of HLA use in the setting of chronic disease. Collaborative approaches will support necessary changes within health care delivery systems in support of improved HL awareness among health care providers. These efforts will also build upon nursing science, inform research, and facilitate policy initiatives to standardize practice throughout the care continuum.

Essential VII. The DNP student is charged with supporting clinical prevention and population health, *Essential VII* according to the AACN (2006). These activities support achieving the national goal of improving the health status of the United States

(AACN, 2006). Low HL is a population health concern. Individuals with low HL have less health knowledge, worse self-management, lower use of preventative services, and higher hospitalization rates (Wolf, Gazmararian, & Baker, 2015). The DNP project analyzed data regarding the significance of low HL in the setting of chronic disease. This analysis contributed to gathering further insight to support efforts to increase health care provider awareness of the effects of low HL. Efforts to devise education opportunities for health care providers and efforts to integrate HL in to health care provider curriculums was considered. This project also supported the synthesis of population health concepts to further appreciate the impact of HL. Literature revealed that the elderly population was most impacted, due to their high incidence of chronic disease. These concepts will be addressed further as plans to develop, implement, and evaluate proposed interventions to address low HL in the care delivery of chronic disease patients is considered.

The project experience also identified gaps in chronic disease care delivery. With only 12% of the population having a proficient level of HL, the need to appreciate HL in the context of chronic disease was imperative (NCES, n.d.). While considering the needs of chronic disease patients with limited HL, community, environmental, and cultural dimensions of health were analyzed. This served to support proposed interventions to raise the health care provider's awareness of the impact of low HL, as well as consider methods of evaluation for the proposed efforts.

Essential VIII. Clinical practice issues were identified as a result of the scholarly work. The use of HLAs in patients with chronic disease has been suggested in support of improved outcomes among this population. The project has provided opportunity to

participate in various areas of care delivery and interface with health care providers, as well as patients who were challenged by the effects of low HL. *Essential VIII*, according to the AACN (2006) states that the DNP should be afforded experiential opportunities sufficient enough to inform practice decisions and understand the patient care consequences of decisions. Opportunities were secured and analyzed, in support of devising interventions to improve outcomes. The experiences further prepared the DNP student to develop and sustain relationships and partnerships; demonstrate advanced levels of system thinking; guide and mentor colleagues; provide transitional education; and use conceptual and analytical skills to evaluate links among critical practice issues (AACN, 2006). Advanced practice opportunities will support the success of interventions and serve to secure meaningful interactions to inform practice in the future.

Conclusions

Low HL is a documented concern in care delivery today—the call to action to promote awareness of this social determinant of health among health care providers is imperative. This is especially important in the setting of chronic disease, considering the direct correlation between HL and health outcomes. Serving to increase the awareness of HL among health care providers and to offer support for standardizing the use of HLAs in patients with chronic disease this integrative review lays the path to create change. The review also gives credence to the need for health care provider education, health care policy and practice guidelines. Health care providers are in the best position to implement needed practice changes in support of awareness, advocacy, and action regarding HL. More research is needed to determine the appropriate HLA to use in chronic disease patients. Ways to reduce the effects of low HL on health outcomes and

ways to improve HL skills also need to be studied further. Lastly, research is needed to explore ways health care providers engage patients with low HL in the setting of chronic disease. Given the current state of health care today, and the push for patient-centered, quality care, addressing HL in patients with chronic disease is imperative—answering the call to action.

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TABLES

Table 1

Inclusion and Exclusion Criteria

Inclusion	Exclusion
Publication from 2003-2015	Publications prior to 2003
Subjects aged 19+	Subjects under the age of 19
Health care providers (physicians, nurses, nurse practitioners, and advanced practice nurses)	Health care providers not listed in the inclusion definition
Peer-reviewed, gray literature (i.e. unpublished articles, dissertations, frameworks, policy documents, etc.)	Non-research articles (i.e. commentaries, editorials, briefings, fact sheets)
English language	Publications written in a foreign language
Full-text articles	Abstract only articles

Table 2

Results Matrix Health Literacy Assessments

Focus of Article, Author/year	Level of Evidence/Source	HLAs/ Background	Conclusions/ Practice Implications/ Recommendations
Evaluate the diagnostic accuracy and feasibility of five health literacy screening instruments in the ED (Carpenter et al., 2014)	III/ Primary	<ul style="list-style-type: none"> • 5 HLAs were reviewed • There is a lack of HL measures validated for use in busy clinical settings • There is a knowledge gap regarding the feasibility of HLA use in busy settings such as the ED 	<p>Conclusions:</p> <ul style="list-style-type: none"> • HLAs developed for clinical settings have been studied in the ED, but none of the studies measured HL using a validated assessment to do so • Simplicity and efficiency in training and administration of a HLA in the ED is critical for adoption and reliability • The NVS was the most accurate screening instrument to rule out low HL • The REALM-R was the most feasible tool when considering time • The SILS questions were the most feasible and preformed best for identifying low HL • Routine assessment for HL is controversial at present as environments are not geared to support interventions bases on determined HL levels <p>Practice Implications/ Recommendations:</p> <ul style="list-style-type: none"> • HL needs to be defined in the constructs of the ED environment • Need to consider discharge instructions as an opportunity to explore specific interventions for low HL in the ED setting

			<ul style="list-style-type: none"> • Selection of a HL screening tool should consider optimal personnel, situation, administration time, time on task, and interruptions; as well as goals and objectives for HL screening efforts • Interventions targeting low HL need to be considered in the ED practice environment
Develop a new, more precise HL measurement (Hahn et al., 2011)	III/ Primary	<ul style="list-style-type: none"> • HealthLiTT • More precise measurements of HL will help determine the level at which low literacy adversely affects health outcomes • Existing HL instruments have inconsistencies related to the definition and measurement of HL, limited evidence of construct validity, and weakness in psychometric properties 	<p>Conclusions:</p> <ul style="list-style-type: none"> • HealthLiTT meets high psychometric standards, avoids patient feeling of stigma, without a time limit • HealthLiTT is a new strategy that estimates populations at risk for low HL, identifies vulnerable patients, and provides reliable, valid scores • HealthLiTT minimizes respondent and administrative burden • Ongoing dialogue regarding HLA use in clinical settings <p>Practice Implications/ Recommendations:</p> <ul style="list-style-type: none"> • HealthLiTT offers high standards for measurement reliability; an advantage over existing HLA • HealthLiTT considers real-world health care settings making its use in practice more favorable • Need to understand more regarding the level at which low HL begins to affect health and health care use • Measurement gaps need to be considered further
Determine the acceptability and timeliness of the NVS in primary care	IV/ Primary	<ul style="list-style-type: none"> • NVS • Physicians have difficulty recognizing individuals with poor HL • The Joint Commission on Accreditation of Health Care 	<p>Conclusions:</p> <ul style="list-style-type: none"> • HL is affected by many factors including age, education, race, and gender • The NVS may be particularly helpful for new patients with chronic disease

(Shah et al. 2007)	Organizations established HL benchmarks for hospitals to achieve by 2010	<ul style="list-style-type: none"> • The NVS can be completed in less than three minutes and was comparable to other literacy tests
Explore the business and clinical cases for screening for HL using the NVS (Welch, VanGeest, & Caskey, 2010)	IV/Primary	<ul style="list-style-type: none"> • NVS • Identifying and caring for patients with limited HL is difficult • Clinical screening for HL needs to be considered to support the identification and care for patients with limited HL • There is no consensus on the utility of screening for HL • The importance of limited HL to health care and outcomes, is often overshadowed in clinical practice due to failure to employ direct measures of HL
		<p>Practice Implications/ Recommendation:</p> <ul style="list-style-type: none"> • Administration times of HLAs can be offset by time saved on call-back from patients who lack understanding of diagnoses and medications, as interventions can be utilized earlier to support low HL • HLA information can help determine appropriateness of patient education and need for intensive support from ancillary staff • The effectiveness of interventions, once low HL is identified needs to be considered in practice environments
		<p>Conclusions:</p> <ul style="list-style-type: none"> • Small time allotment and cost constraints were noted with the use of the NVS • Training of staff and clinicians proved most problematic • Health care providers are more likely to improve communication with patients if informed of HL challenges <p>Practice Implications/ Recommendation:</p> <ul style="list-style-type: none"> • Screening for HL may help clinicians improve the identification of high-risk patients, tailor communication, and evaluate patients’ understanding • Understanding the utility of HLAs is important to support increased utilization • Screening for limited HL is supported in primary care, as long as there is training and support in place for the health care provider

<p>Appraises existing HLA tools and analyzes reporting qualities in support of the further evolution of HL measurement tools (Altin, et al., 2014)</p>	<p>V/ Secondary</p>	<ul style="list-style-type: none"> • 17 HLAs • Operationalization is imperative in the context of HL • Limited evidence on whether novel HLAs consider existing recommendations on features a HLA should cover • Uncertain if scholars consider existing guidance when developing HLAs 	<ul style="list-style-type: none"> • Examining clinician utilization of HLA data in decision making and care processes is needed • Patients' perspective should be explored to better appreciate the impact of HLA use in primary care <hr/> <p>Conclusions:</p> <ul style="list-style-type: none"> • Increasing use of multidimensional constructs to measure HL • One-dimensional measurements are used to develop novel instruments • Print literacy and numeracy are assessed most often • Oral literacy assessments increasing; filling a previous gap by considering recommendations of academia • Increase in mixed measurement approaches • Scholars lack explanation for why they choose a certain type of measurement • Assessment formats are modeled on existing instruments <p>Practice Implications/ Recommendations:</p> <ul style="list-style-type: none"> • No clear indication of what HLA should be used in practice • Poor reporting of the scoring methods and weaknesses in existing HLAs needs to be improved to determine construct validity • Measurements should consider HL as a dynamic and comprehensive construct; limit comparing between tests only • The development of new measurement approaches to reduce stagnation is recommended • The development of new measurement approaches should consider the inclusion of skilled-based concepts
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Appraisal of all published, self-administered HLA indices (O'Neill et al., 2014).	V/ Secondary	<ul style="list-style-type: none"> • 35 self-administered HLAs available • HL demands the development and refinement of indices • There are many HL indices available but they are not all of equal quality • HL indices often lack comprehensiveness, effectiveness with specific populations, and have psychometric weaknesses • The acceptability and generalizability of use of HL indices has been challenged as a result of deficiencies • Self-administered HL indices have the advantage of decreasing burden on health care providers 	<p>Conclusions:</p> <ul style="list-style-type: none"> • Average time to administer HLA was 20 minutes • Primary care was a common location for HLA administration • The use of HLAs in clinical practice is impractical due to time required • Unlikely that HLA will be a fixture in clinical practice due to lacking evidence that screening has an effect on health outcomes • Existing measures of HL need to address sensitivity to improved HL over time, no measure addresses this currently <p>Practice Implications/ Recommendations:</p> <ul style="list-style-type: none"> • Conceptual disagreement about what HL is contributes to variations in HL measurement • Resources may be better allocated to develop interventions that mitigate the effect of low HL on health outcomes • New indices need to be developed or existing ones should be tested to determine if they are sensitive to change over time and support transfer to other health systems • Conceptual work is needed in the area of HL to further understand whether it is a static or dynamic construct • When considering HLA use, researchers and clinicians need to consider administration practicality, length, self-completion suitability, and in what other circumstances and populations the assessments has been used with • Use of HLAs in busy practice settings needs to be considered
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Measure time required to administer NVS (Johnson & Weiss, 2008)	VI/ Primary	<ul style="list-style-type: none"> • NVS • HL screening is often not performed in clinical settings due to time constraints • There is no universally accepted method to assess literacy in clinical settings • TOFHLA and REALM are the most commonly used literacy assessments, but are time prohibitive 	<p>Conclusions:</p> <ul style="list-style-type: none"> • The brevity of the NVS makes it a good choice for use in primary care • The English version of the NVS can be administered in three minutes <p>Practice Implications/ Recommendations:</p> <ul style="list-style-type: none"> • Timing of administration of the NVS needs to be considered • The best way to administer the NVS in primary care needs to be considered • Time required to administer and the agreement of patients to be screened based on NVS constructs indicates that it is suitable for use in clinical settings
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Note. ED = Emergency Department; HL = Health Literacy; HLA = Health Literacy Assessment; NVS = Newest Vital Sign; REALM = Rapid Estimate of Adult Literacy in Medicine; REALM-R = Rapid Estimate of Adult Literacy in Medicine, Revised; TOFHLA = Test of Functional Health Literacy in Adults; SILS = Single Item Literacy Screener; S-TOFHLA = Short Test of Functional Health Literacy in Adults.

Table 3

Results Matrix Health Literacy and Chronic Disease

Focus of Article, Author/year	Level of Evidence/Source	Chronic Disease/ Background	Conclusions/ Practice Implications/ Recommendations
Examines potential barriers to activation in chronically ill older adults (Gerber et al., 2011)	III/ Primary	<ul style="list-style-type: none"> • Diabetes/ hypertension/ kidney disease • Successful chronic care involves patient engagement • Little is known about chronically ill older adults and their ability to self-manage their health 	<p>Conclusions:</p> <ul style="list-style-type: none"> • Activation levels in older adults living with a chronic disease are independently associated with HL • The ability to understand choices, make informed decisions about care, and actively participate in managing chronic conditions will be critical to maintaining quality of life and reducing illness exacerbations among older adults • As the population of older adults living with chronic illness and functional impairment grows, there will be a critical need to support self-care management efforts of this population <p>Practice Implications/ Recommendations:</p> <ul style="list-style-type: none"> • Effective self-management for older adults with chronic disease will require varied strategies, including the consideration of HL • Clinicians need to be vigilant in identifying HL and hearing deficits to support appropriate referrals • Factors that influence patient and provider attitudes and behaviors to support increased patient activation and barriers to effective self-management need to be considered in care delivery

Examine associations between HL and outcomes in COPD (Omachi et al., 2012)	IV/ Primary	<ul style="list-style-type: none"> • COPD • Limited HL is associated with poor outcomes • Little is known about HL in COPD 	<ul style="list-style-type: none"> • More active interventions are needed to increase activation in chronically ill patients • Adapting approaches to support activation need to consider HL levels in patients • Health care systems need to be prepared to support self-care management in chronically ill patients <hr/> <p>Conclusions:</p> <ul style="list-style-type: none"> • Poor HL is associated with greater COPD severity, helplessness, worse quality of life, and increased utilization of emergency health care—poorer health related outcomes • Developing patient-clinician level and system-based strategies to improve communication and understanding in COPD patients with limited HL may improve health outcomes • Patients with limited HL are more likely to have impaired self-management skills • COPD symptoms were seemingly worse in subjects with poorer HL • Limited HL increases likelihood of emergency medical care for COPD patients <p>Practice Implications/ Recommendations:</p> <ul style="list-style-type: none"> • Understanding the role of HL in COPD outcomes is critical to support the development of self-management approaches (patient-clinician level and system-based strategies) in populations with limited HL • Hypoxemia, associated with COPD may further contribute to impaired cognition and thus worse HL
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Identify, appraise, and synthesize research regarding relationship between HL and health outcomes in people with chronic disease (Al Sayah et al., 2012)	V/Secondary	<ul style="list-style-type: none"> • Diabetes • Low HL is a potential barrier in people with chronic conditions 	<ul style="list-style-type: none"> • Health care professionals should consider HL in their communications with chronic disease patients • Poor HL may play an important role health status and outcomes among COPD patients <p>Conclusions:</p> <ul style="list-style-type: none"> • Low literacy is associated with poorer diabetes knowledge • Evidence is limited suggesting that HL is associated with outcomes • Routine screening for low HL to improve outcomes in diabetic patients may be premature • Positive association between HL and self-care activities in diabetic patients <p>Practice Implications/ Recommendation:</p> <ul style="list-style-type: none"> • Better evidence is needed before routine HL screening is done in patients with diabetes • Improving HL to support improved patient-outcomes in diabetics is also not yet indicated until better evidence is available
Describe the concept of HL and assess HL levels in diabetic patients (Heinrich, 2010)	VI/ Primary	<ul style="list-style-type: none"> • Diabetes • HL is vital information • HL plays a major role in enhancing quality of life and better health outcomes 	<p>Conclusions:</p> <ul style="list-style-type: none"> • HL assessments need to be considered in all clinical practice settings • Positive correlation exists between educational level and HL <p>Practice Implications/ Recommendations:</p> <ul style="list-style-type: none"> • Assessment of actual HL does not need to be completed on a regular basis

Evaluates and compares three HL assessments (S-TOFHLA, REALM-SF, NVS) among older patients with diabetes (Kirk et al., 2012)	VI/ Primary	<ul style="list-style-type: none"> • Diabetes • A lower ability to function in health care systems has been linked with low HL • Awareness of a patient's HL level can help clinicians and researchers determine a patient's ability to understand health regimens and support the delivery of better patient-centered instructions and information 	<ul style="list-style-type: none"> • There is need for best practice guidelines to indicate the frequency of assessing HL • HL scores need to be recorded and shared with other health care providers • HLAs need to be done in a professional manner to consider patients' feelings of shame, doubt, and anxiety • The NVS takes three minutes to administer and can be easily completed with the patient's initial visit • Communication should be based on the HL level of each patient • Need to consider the assessment of HL as a sixth vital sign <hr/> <p>Conclusion:</p> <ul style="list-style-type: none"> • A large number of older adults were not able to complete HLAs in shortened formats <p>Practice Implications/ Recommendations:</p> <ul style="list-style-type: none"> • The REALM-SF and NVS performed comparably in measuring HL in older adults • Careful consideration should be given to choosing the most appropriate HLA especially among older adults
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Note. COPD = Chronic Obstructive Pulmonary Disease; HL = Health Literacy; HLA = Health Literacy Assessment; NVS = Newest Vital Sign; REALM-SF = Rapid Estimate of Adult Literacy in Medicine, Short Form; S-TOFHLA = Short Test of Functional Health Literacy in Adults.

Table 4

Results Matrix Health Literacy and Health Outcomes

Focus of Article, Author/year	Level of Evidence/ Source	Background/ Health Outcomes	Conclusions/ Practice Implications/ Recommendations
Examines the association between patient activation and HL and the associations of patient activation and HL skills with physical and mental health. (Smith et al., 2013)	IV/ Primary	<ul style="list-style-type: none"> • Few studies have investigated the relationship of patient activation and HL with health outcomes • HL definitions do not recognize patient activation as a construct 	<p>Conclusions:</p> <ul style="list-style-type: none"> • Common measures of HL and patient activation are weakly correlated, but are independently correlated with health outcomes • HL is a skill-based construct • HL definitions challenge the development of new methods of assessment • There is a gap between how the construct of HL is defined and assessed • Individuals with low HL find accessing and understanding health information more difficult and result in disparities, fewer disease prevention strategies, and inconsistent medication adherence <p>Practice Implications/ Recommendations:</p> <ul style="list-style-type: none"> • Clinicians attending to HL needs may be missing opportunities to activate their patients • Patient-centered interventions are integral to supporting limited HL in chronic disease • Devising patient-centered interventions to improve outcomes should consider combining HL and activation

			<ul style="list-style-type: none"> • There may be scope for behavioral scientists to develop a comprehensive measure that considers HL and patient activation • Socioeconomic status should be considered in the context of HL and patient activation, to further reduce health disparities
<p>Investigates the relationship between HL and functional health status (Wolf, Gazmararian, & Baker, 2005)</p>	<p>IV/ Primary</p>	<ul style="list-style-type: none"> • Individuals with low HL have less health knowledge, worse self-management, lower use of preventative services, and higher hospitalization rates • National organizations and federal agencies call for research regarding the relationship of HL to health status 	<p>Conclusions:</p> <ul style="list-style-type: none"> • Inadequate HL in older adults was independently associated with poorer physical and mental health • HL is an independent predictor of hospitalizations • Inadequate HL is linked to worse knowledge of proper health behaviors and possibly lower adherence to medical instructions; due in part to a compromised patient-clinician experience <p>Practice Implications/ Recommendations:</p> <ul style="list-style-type: none"> • Consideration should be given to how older adults with lower HL recognize health issues, as well as consider barriers to seeking health care services • Interventions are needed to help health care professionals recognize and address the needs of patients with limited HL
<p>Update to a 2004 SR. Determine whether low HL is related to health outcomes</p>	<p>V/ Secondary</p>	<ul style="list-style-type: none"> • Americans with limited HL are at greater risk for poorer access to care and poorer health outcomes 	<p>Conclusions:</p> <ul style="list-style-type: none"> • No gold standard exists to measure HL • Low HL is associated with poorer health outcomes and poorer use of health care services

(Berkman et al.,
2011)

- Low HL affects health-related outcomes to include ability to take medications and interpret medication labels and health messages
- Elders with low HL have poorer health status and higher mortality
- Relationship between low numeracy and health outcomes is inconclusive
- No relationship was founded between HL and costs

Practice Implications/ Recommendations:

- Sample size and population characteristics need to be considered to support more confidence in the applicability of evidence
 - Ways to reduce the effects of low HL on health outcomes demands the attention of policymakers, clinicians, and stakeholders
 - Need to find ways to improve HL skills and reduce effects of low HL on outcomes
-

Note. HL = Health Literacy; SR = Systematic Review.

Table 5

Results Matrix Health Literacy and Health Care Providers

Focus of Article, Author/year	Level of Evidence/ Source	Background/ Health Care Providers	Conclusions/ Practice Implications/ Recommendations
<p>Determine the effectiveness of primary health care providers in improving HL to support chronic disease reduction</p> <p>Discuss drivers and barriers for health care professionals attempting to improve HL (Dennis et al., 2012)</p>	I/ Secondary	<ul style="list-style-type: none"> • Capacity to self-manage health and reduce the risk of chronic disease is limited in people with low HL • High levels of HL are associated with health promoting behavior • A number of governments, internationally, have policy to address inequities in health that result from poor HL 	<p>Conclusions:</p> <ul style="list-style-type: none"> • Health care providers being able to provide interventions to address HL is important to support lifestyle changes • Referral mechanisms for patients with low HL should be considered to support health care providers constrained by time • Time and provider context, such as support for professional development and funding for health educations were limiting factors for health care providers to influence HL • Skills and attitudes of health care providers also impact interventions in support of improving HL in patients • The level of intervention to support improving HL and lifestyle changes impacted success • Shared decision making and good communication are necessary to foster trust and partnerships to develop HL • Individual, social/community, accessibility, and training were factors that impacted addressing HL <p>Practice Implications/ Recommendations:</p> <ul style="list-style-type: none"> • Creating a time to address HL without the pressure to treat an acute problem is important

<p>Determine whether notifying physicians of patient’s limited HL will improve care processes or outcomes (Seligam et al., 2005)</p>	<p>II/ Primary</p>	<ul style="list-style-type: none"> • Physicians have difficulty identifying patients with limited HL, as a result outcomes are effected • There is a lower knowledge of chronic disease prevention and management in patients with low HL • The relationship between limited HL and poorer outcomes, in patients with chronic disease, may be related to sub-optimal physician-patient communication and patient self-management skills • There is an interest to consider routine screening for HL among health systems, HL experts, and accreditation bodies 	<ul style="list-style-type: none"> • Health care professionals need to be educated about the impact of HL, as it relates to behaviors that manage their health • Many current tools to measure HL may be impractical for use in general practice, but are useful as broad guidelines to help health care providers understand the impact of HL • There needs to be greater understanding of skill and interventions required to improve HL at a policy level
		<p>Conclusions:</p>	
		<ul style="list-style-type: none"> • There is a need for specific training and support for physicians to acknowledge low HL • Instituting HL screening programs in clinical settings without proper training support for physicians and patients is unlikely to improve outcomes • Physicians are responsive to being notified of limited HL in their patients • Patients support the utility of HL screening • Physicians often felt unprepared to discuss results of HL screening 	
		<p>Practice Implications/ Recommendations:</p>	
		<ul style="list-style-type: none"> • Increased attention to HL and changing HL screening instruments have increased interest in developing HL screening in the clinical context • Exploring ways that health care providers can effectively engage patients with limited HL need to be considered in care delivery 	

Develop and evaluate a curriculum to train family medicine residents to communicate with patients with limited HL (Pagels et al., 2015)	III/ Primary	<ul style="list-style-type: none"> • HL plays a role in effective communication between providers and patients • Few interventions exist to improve patient understanding and communication with providers for patients with low HL • To reduce health consequences in patients with limited HL, an approach is needed to train health care providers to improve communication barriers • The knowledge and skills to determine HL of patients should be addressed in the curriculum for health care professionals 	<p>Conclusion:</p> <ul style="list-style-type: none"> • Residents' confidence in recognizing patients with low HL was greater after training • Improved knowledge of HL increased effective communication skills and utilization of an interpreter among trained family medicine residents <p>Practice Implications/ Recommendations:</p> <ul style="list-style-type: none"> • Health care providers need to be trained to effectively communicate with their patients • Training to communicate with low literacy patients should begin in medical school, and residency should support the refinement of skills • Objective structured clinical examination addresses the need to train medical learners and improve communication in patients with low HL • One-time training is not sufficient to address limited HL • Tailored training is needed for specific populations and should be done early in medical school
Examine the relationship between functional HL and the quality of clinician-patient communication (Schillinger et al., 2004)	IV/ Primary	<ul style="list-style-type: none"> • One in three Medicare patients has poor functional HL • Poor functional HL is associated with poor self-rated health, poor understanding of one's condition and its management, and higher use of services • The quality of patient-physician communication is associated with self-care behaviors and 	<p>Conclusion:</p> <ul style="list-style-type: none"> • Poor functional HL appears to be a marker for global communication problems • Patients with inadequate functional HL are more likely to be confused or under-informed • Poor functional HL leads to trouble with clinical language due to its technicality and the speed it is transmitted • It is inferred that patients with limited HL has a more passive communication style, which limits conversation, particularly asking questions

		clinical outcome in patients with diabetes	<p>Practice Implications/ Recommendation:</p> <ul style="list-style-type: none"> • Understanding the relationship between functional HL and quality of interpersonal processes of care will provide insight for health care providers managing patients with diabetes • Strategies need to be identified for clinicians to support how to communicate with patients who have poor functional HL
Reviews literature on teaching HL to health care professionals (Coleman, 2011)	V/ Secondary	<ul style="list-style-type: none"> • No published guidelines to recommend the content or structure of HL curricula for health care professionals • The National Action Plan to Improve Health Literacy goals note the importance of HL education among health care providers • HL is a key element of effective communication between patients and health care providers • Addressing HL is a priority in the health care system • HL affects every aspect of health care delivery • Gaps in awareness, knowledge, and clinical recognition of low HL, skills and practices to address HL, and attitudes about 	<p>Conclusions:</p> <ul style="list-style-type: none"> • Low HL must be addressed by health care professionals to improve outcomes • Health care professionals lack training in HL • Any health care professional can benefit from training in HL principles • There is inadequate data to recommend any given curriculum, strategy, technique, or tool over another for health care professionals currently • The multifaceted nature of HL makes it a subject matter that should be taught throughout the health care providers professional career • Most HL curricula exists to support medical education <p>Practice Implications/ Recommendations:</p> <ul style="list-style-type: none"> • A variety of teaching methods have been used to teach health care professionals about HL—didactic and experiential components • The development of a core set of measurable competencies is needed to develop and evaluate existing HL curricula

		<p>patients with low HL exist among health care providers</p> <ul style="list-style-type: none"> • Best practices for effective communication with patients with low HL are not routinely used by health care professionals • HL principles are relevant during every clinical encounter 	<ul style="list-style-type: none"> • Continuing education is an extremely important venue to address HL with currently practicing professionals • The use of multiple modalities to teach about HL is trending to date • HL should be taught across the span of health professional training to support the multi-faceted nature of the subject matter • Evaluative measures and specific outcome studies are needed to further support comparing teaching strategies and evaluative work to determine optimal timing for teaching about HL
<p>Identify screening questions and demographics to predict limited HL and support individualized patient education by physicians (Jeppesen, Coyle, & Miser, 2009)</p>	<p>VI/ Primary</p>	<ul style="list-style-type: none"> • Identifying patients at risk for poorer outcomes due to low HL is the responsibility of the clinician • Patients with limited HL have poorer understanding of their chronic diseases, physicians' instructions, poorer disease management, higher levels of disease indicators, and worse self-reported health • Physicians are poor estimators of HL 	<p>Conclusions:</p> <ul style="list-style-type: none"> • Self-rated reading ability was the most reliable predictor of limited HL • Clinicians should be aware of characteristics that predict HL and ask questions to further determine patients at risk <p>Practice Implications/ Recommendations:</p> <ul style="list-style-type: none"> • Clinicians should be aware of patient learning needs to support navigating the health care system and understanding health related materials • Clinician awareness of problems associated with limited HL can support the implementation of effective interventions • Clinicians who screen for limited HL should ask about self-rated reading ability and highest level of education attained—using the mnemonic SOS

Note. HL = Health Literacy; SR = Systematic Review.

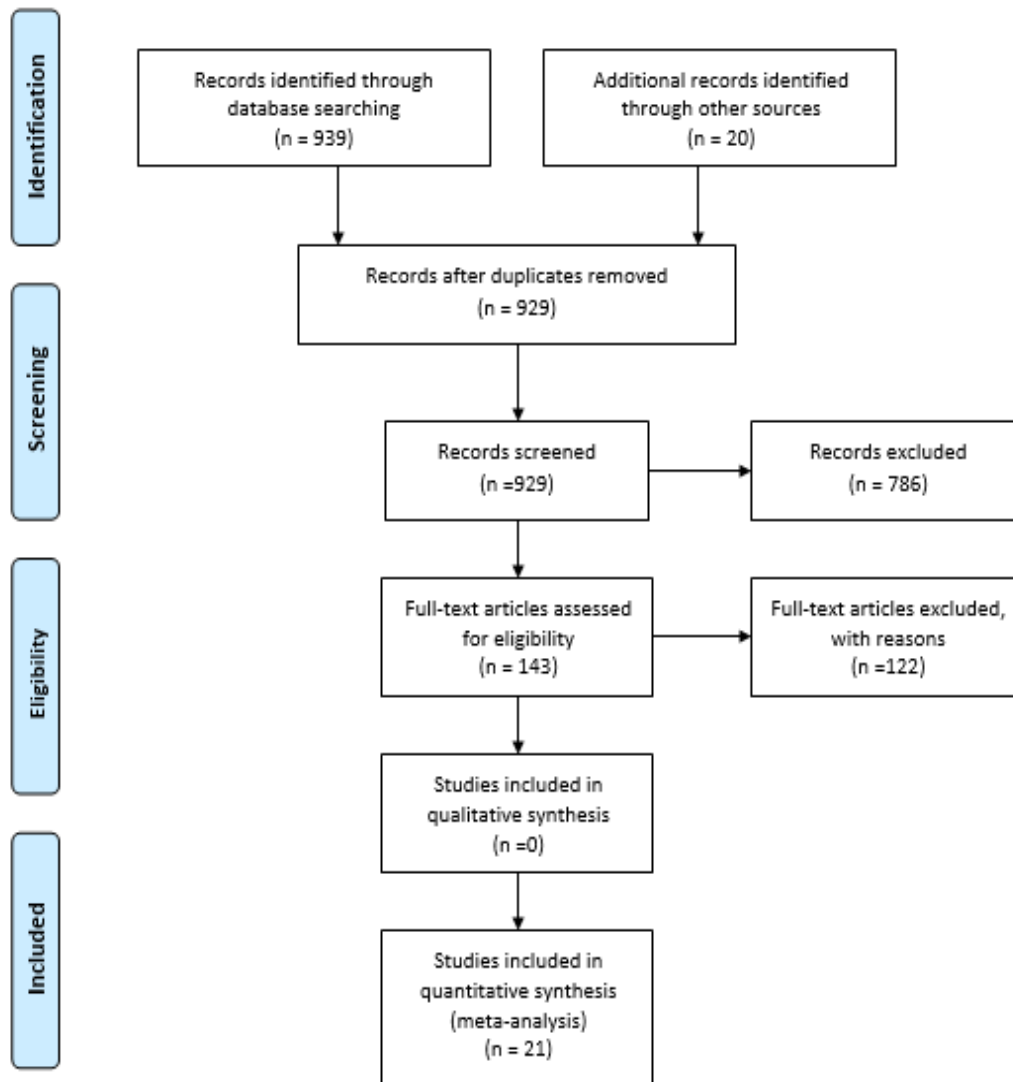
APPENDIX

Appendix A

PRISMA Flow Diagram



PRISMA 2009 Flow Diagram



From: Moher, D., Liberati, A., Tetzlaff, J., Altman, D. The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(6): e1000097. doi: 10.1371/journal.pmed.1000097

Appendix B

CITI Training Certificate

**COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)
COURSEWORK TRANSCRIPT REPORT****

** NOTE: Scores on this Transcript Report reflect the most current quiz completions, including quizzes on optional (supplemental) elements of the course. See list below for details. See separate Requirements Report for the reported scores at the time all requirements for the course were met.

- **Name:** Dana Woody (ID: 4423175)
- **Email:** dwoody5@liberty.edu
- **Institution Affiliation:** Liberty University (ID: 2446)
- **Institution Unit:** Nursing

- **Curriculum Group:** Human subject - Basic
- **Course Learner Group:** Nursing
- **Stage:** Stage 1 - Basic Course
- **Description:** This course is appropriate for students doing class projects that qualify as "No More Than Minimal Risk" human subjects research.

- **Report ID:** 14152038
- **Report Date:** 10/07/2015
- **Current Score**:** 93

REQUIRED, ELECTIVE, AND SUPPLEMENTAL MODULES	MOST RECENT	SCORE
Students in Research (ID: 1321)	10/07/15	10/10 (100%)
Liberty University (ID: 15111)	09/25/14	No Quiz
History and Ethical Principles - SBE (ID: 490)	09/25/14	4/5 (80%)
Data Management (RCR-SBE) (ID: 1523)	09/25/14	4/5 (80%)
Defining Research with Human Subjects - SBE (ID: 491)	09/27/14	5/5 (100%)
Belmont Report and CITI Course Introduction (ID: 1127)	09/25/14	3/3 (100%)
Records-Based Research (ID: 5)	09/27/14	2/2 (100%)
The Federal Regulations - SBE (ID: 502)	09/27/14	5/5 (100%)
Assessing Risk - SBE (ID: 503)	09/27/14	4/5 (80%)
Vulnerable Subjects - Research Involving Prisoners (ID: 8)	09/27/14	4/4 (100%)
Informed Consent - SBE (ID: 504)	09/27/14	5/5 (100%)
Vulnerable Subjects - Research Involving Children (ID: 9)	09/27/14	3/3 (100%)
Privacy and Confidentiality - SBE (ID: 505)	09/27/14	5/5 (100%)
Vulnerable Subjects - Research Involving Pregnant Women, Human Fetuses, and Neonates (ID: 10)	09/27/14	3/3 (100%)
Research and HIPAA Privacy Protections (ID: 14)	09/27/14	4/5 (80%)
Vulnerable Subjects - Research Involving Workers/Employees (ID: 483)	09/27/14	4/4 (100%)
Unanticipated Problems and Reporting Requirements in Social and Behavioral Research (ID: 14928)	09/25/14	3/3 (100%)
Conflicts of Interest in Research Involving Human Subjects (ID: 488)	09/27/14	3/5 (60%)
Cultural Competence in Research (ID: 15166)	10/07/15	5/5 (100%)
Research With Protected Populations - Vulnerable Subjects: An Overview (ID: 7)	09/27/14	4/4 (100%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

CITI ProgramEmail: citisupport@miami.edu

Phone: 305-243-7970

Web: <https://www.citiprogram.org>

Appendix C

IRB Letter

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

October 21, 2015

Dana Woody, MSN, RN
IRB Application 2334: Health Literacy Assessments and Chronic Disease: An
Integrative Review

Dear Dana,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study does not classify as human subjects research. This means you may begin your research with the data safeguarding methods mentioned in your IRB application.

Your study does not classify as human subjects research because it will not involve the collection of identifiable, private information.

Please note that this decision only applies to your current research application, and any changes to your protocol must be reported to the Liberty IRB for verification of continued non-human subjects research status. You may report these changes by submitting a new application to the IRB and referencing the above IRB Application number.

If you have any questions about this determination or need assistance in identifying whether possible changes to your protocol would change your application's status, please email us at irb@liberty.edu.