

# Health literacy and physician-patient communication: a review of the literature

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## Abstract

*There is a growing emphasis in the literature on how interpersonal processes of care such as quality physician-patient communication can impact measurable health outcomes and patient satisfaction. Poor communication between the patient and physician has been significantly associated with rates of hospital admission, unintentional non-adherence to treatment, and incomplete understanding of self-care instructions. An important contributor to effective physician-patient communication is the concept of health literacy, which can be simply defined as the patients' capacity to read, understand, process, communicate, and critically analyze health information so that they are able to make informed health-related decisions. This review seeks to evaluate the current literature on health literacy and its influence on the physician-patient interaction during the medical consultation. Four overriding themes emerged: 1. the effect of health literacy on patient participation, 2. patients' communication preferences, expectations, and perceptions, 3. communication recommendations for physicians when encountering low literate patients, and 4. proposed interventions. Future research should focus on elucidating the pathway in which health literacy affects physician-patient communication and what aspects can be addressed to improve the health of both patients with adequate and inadequate HL skills.*

**Key Words:** Doctor-patient relationship; Health literacy; Health outcomes; Interpersonal processes of care; Patient participation; Physician-patient communication; Physician recommendations; Review literature

## Introduction

As the literature on standard practices of care continues to grow, physicians are gradually pulling away from what is known as a disease-oriented process of care and moving towards a more patient-centered model of care. Under this model, the physician is encouraged to not only treat the condition, but also meet the patients' emotional needs and be able to understand the illness within the context of their patients' lives (Cegala & Post, 2009; Reynolds, 2009). Additionally, the relationship between patients and their physician has evolved from a paternalistic one to more of a partnership, where features such as shared-decision making and negotiation are emphasized (Cegala & Post, 2009; Stewart et al., 2000). This is particularly important at a time where the prevalence and maintenance of chronic diseases and associated comorbidities place greater demand on patients to be capable of self-monitoring their conditions outside the healthcare setting.

Subsequently, the responsibility of a patient's health does not solely rest on the physician, but also is influenced by the patient's knowledge and skills [or lack thereof].

The brief summaries below provide an overall picture of how health literacy and physician-patient communication, an integral component of the patient-centered model, can impact health outcomes and other related factors.

## Health Literacy

Though the foundation of health literacy (HL) has evolved from the studied relationship between literacy and health, the expanding literature on this topic has focused on two distinct perspectives: clinical care and public health (Nutbeam, 2008). Within the clinical setting, HL is mostly viewed as a risk factor; patients with inadequate HL skills are more likely to face health problems, with the provider being responsible with addressing this clinical risk. However, according to the

public health perspective, HL is seen as a personal asset, where the role of health education is emphasized so that individuals are empowered and able to exert more control over their health and other health determinants (Nutbeam, 2000a, 2008). In other words, HL from the public health standpoint is an outcome of effective health education and communication whereas addressing HL as a clinical risk is a means to improving clinical measures.

Partly because of these two different approaches and the overall complexity of the concept, there has been no consensus concerning the definition of HL. Yet, among the definitions proposed by many different institutions such as the Ad Hoc Committee on Health Literacy for the American Medical Association (AMA), the World Health Organization (WHO), and the Institute of Medicine (IOM), the WHO definition views HL from a health promotion orientation and encompasses more than just the ability to understand and act on health information. WHO defines HL as “the cognitive and social skills which determine the motivation and ability to gain access to, understand, and use information in ways which promote and maintain good health” (“WHO | Track 2,” n.d.). This definition offers a broad perspective, where HL is not only a set of functional skills necessary to navigate the healthcare system, but is also critical to everyday life and being able to more fully participate in society (Nutbeam, 2008).

Just as literacy is categorized into different “types” of literacy based on use and practical applications (i.e. functional, interactive, critical literacy), Nutbeam proposes that HL can also be categorized into different levels (i.e. functional, communicative, and critical HL) depending on the cognitive ability, social skills, and experiences needed to make an appropriate health decision (Freebody & Luke, 1990; Nutbeam, 2000b). Functional HL refers to the basic reading and writing skills needed to function in everyday situations whereas communicative and critical HL includes more advanced cognitive abilities, along with social skills, in order to “apply new information to changing circumstances” and critically analyze health information (Nutbeam, 2000a). Presently, measuring communicative and critical HL remains a challenge, as most validated HL tools such as the Test of Functional Health Literacy in Adults (TOFHLA), the Rapid Estimate of Adult Literacy in Medicine (REALM), and their abbreviated versions S-TOFHLA and REALM-R measure only functional HL (Ishikawa & Yano, 2008).

Patients with poor HL skills are more likely to be hospitalized, incur higher healthcare costs, and have poorer understanding of disease management strategies compared to patients with adequate HL (Baker et al., 2002; Baker, Parker, Williams, & Clark, 1998).

Additionally, patients with inadequate HL are often reluctant to disclose their problems to healthcare providers due to deep feelings of shame and the stigma associated with illiteracy; this may in part explain why low literate patients are less likely to use preventive care services (Parikh, Parker, Nurss, Baker, & Williams, 1996; Scott, Gazmararian, Williams, & Baker, 2002). Functional HL is also associated with knowledge of chronic disease and treatment in diabetic and hypertensive patients (Williams, Baker, Parker, & Nurss, 1998). Of particular interest is the fact that diabetic patients with inadequate HL who have attended formal diabetes classes scored lower than those with adequate HL, which proves the ineffectiveness of current patient education programs (Williams et al., 1998). These findings indicate that low literate patients are unable to fully comprehend medical information and carry out self-care instructions provided to them by physicians.

The high prevalence of health illiteracy not only in the United States but around the globe can have important financial and economic implications in the near future should the issue not be addressed promptly (Hironaka & Paasche-Orlow, 2008). According to the National Assessment of Adult Literacy (NAAL) conducted in 2003, an estimated 77 million Americans have limited HL skills (Hironaka & Paasche-Orlow, 2008; Kutner, Greenberg, Jin, Paulsen, & White, 2006). Inadequate HL, mostly manifested by incorrect intake of prescription medication and avoidable hospital admissions, contributes to an excess of \$238 billion in annual healthcare costs in the United States (Roett & Wessel, 2012; Vernon, Trujillo, Rosenbaum, & DeBuono, 2007). It is reasonable to believe other countries with high rates of health illiteracy (i.e. 40% of adults in Canada, 80% of adults in Italy) have similar problems concerning an increase in health costs.

#### **Physician-patient communication**

As previously mentioned, physician-patient communication is an intrinsic component to the patient-centered model of care. Physicians' communication skills have been shown to impact the quality of care the patient receives; effective physician-patient communication is a precursor to developing a healthy, trusting relationship and when it is employed, patients are more likely to acknowledge their health problems, make lifestyle changes, and follow medication schedules (M. A. Stewart, 1995; Travaline, Ruchinskas, & D'Alonzo, 2005). Contrarily, poor physician-patient communication is associated with higher rates of readmission, incomplete understanding of self-care instructions, and post-discharge related adverse effects (Kripalani et al., 2010; Schillinger, Bindman, Wang, Stewart, & Piette, 2004).

When considering the physician communication aspect, research has focused on how physicians can develop and improve their communication skills with patients. The ability to listen effectively, elicit information using questions, provide information using effective explanations, counsel and educate patients, and share in the decision-making process are all areas to consider when interacting with the patient (Travaline et al., 2005). Research has shown patients were more likely to actively participate during the medical consultation depending on the physician's communication style. Patients whose physicians used partnership-building and supportive talk were more likely to ask questions and express concerns than patients whose physicians did not (Street Jr., Gordon, Ward, Krupat, & Kravitz, 2005). Thus, physicians play an important role in facilitating patient involvement, which leads to better understanding of treatment options and improved adherence to treatment plans (Street Jr. et al., 2005).

Patients' ability to participate in the clinical setting also plays a significant role in the quality of care they receive. Though there is no universally accepted definition for patient participation, a fundamental aspect is the way in which the patient communicates with the physician (Cegala & Post, 2009). Based on this context, Cegala & Post go on to define patient participation as engaging in any verbal communication behavior that seeks information (i.e. asking questions), provides information (i.e. detailing symptoms and medical history), expresses concerns, and asserts preferences or opinions (Cegala & Post, 2009; Street Jr., 2001). Patients who can effectively communicate not only help their physicians provide care pertinent to their needs but also receive more overall and question-elicited information (Cegala, Street Jr., & Clinch, 2007).

Yet, despite all of the research done focusing on either physician or patient communication style and behavior, it is important to note that many factors influencing outcomes are likely to be unaccounted for unless bidirectional interactions are considered (Epstein et al., 2005). As in any form of social interaction, one interactant can "exert considerable influence over the other" because of the reciprocal nature of communication (Street Jr., 2001; Street Jr., Gordon, & Haidet, 2007; Street & Millay, 2001). Additionally, distinguishing physician-patient communication with other known psychosocial constructs such as trust and self-efficacy is difficult with the current measures being used to quantify and assess patient-centered communication (Epstein et al., 2005). The complexity of physician-patient communication calls for additional qualitative studies that determine contributing factors and what role they play during the medical encounter.

### **Purpose of review**

As HL has come to include not only functional literacy and basic numeracy skills, but also communicative and social skills that patients need to properly navigate various healthcare contexts, it is now important to understand how aspects of physician-patient communication affect the perceptions and understanding of low literate patients and vice versa to improve patient satisfaction and health outcomes. This review outlines the current research being done to elucidate the relationship between HL and physician-patient communication.

### **Literature Search**

Literature search was conducted using two separate databases: PubMed and Scopus. The key terms 'literacy' or 'health literacy' were searched in combination with 'physician-patient communication', 'physician communication,' or 'communication.' The literature search was restricted to the past decade (2004-2014), as most of the work done before this time have either been significantly modified or updated. Publications outside the United States were included if written in English. Literature reviews as well as publications focusing on general patient-provider communication and not specifically on physician communication were excluded.

After compilation of all relevant publications, each paper was read thoroughly to reach an overall impression of the content. Results, key points, and attributes were noted and then categorized into reoccurring themes. This review focuses on four overriding themes found in the literature on the relationship between HL and physician-patient communication: 1. HL and its impact on patient participation, 2. patients' communication preferences, expectations, and perceptions 3. physician recommendations, 4. current interventions.

### **HL and patient participation**

A number of studies in the current literature focus on how HL impacts a patient's ability to actively participate in their own health. Similar to patient-centered communication, the term patient participation does not have a universally accepted definition, as previously mentioned, and can be either broadly or narrowly defined (Cegala & Post, 2009). However, as it is rather difficult to monitor and assess a patient's level of participation that involves self-administration of treatment or seeking of new information outside the clinical setting, most studies use an operational definition of patient participation that include communicative behaviors patients employ when interacting with a

physician, i.e. question-asking, providing and verifying information, expressing concerns (Cegala & Post, 2009).

Patients with inadequate HL skills are often less likely to participate during the medical consultation by asking fewer questions about key aspects of their medical care compared to their health literate counterparts (Aboumatar, Carson, Beach, Roter, & Cooper, 2013; Katz, Jacobson, Veledar, & Kripalani, 2007; Kripalani & Weiss, 2006; Kumar, Mohanraj, Rose, Paul, & Thomas, 2012). When low literate patients do ask questions, these inquiries often seek out clarification or repetition of physician instructions, which do not facilitate the communication of any new or meaningful information (Katz et al., 2007). Additionally, physicians tend to use more physician-centered behaviors of communication, such as closed-ended questions and directive statements, when interacting with low literate patients compared to patients with adequate HL, demonstrating that communication is influenced by both parties (Ishikawa et al., 2009). When asked about their child's care, parents of pediatric patients preferred being offered several different treatment options regardless of their HL skills (Yin et al., 2012). However, low literate parents preferred not being involved in the decision-

making process, instead preferring to rely on the doctor's expertise and having the physician make decisions on their behalf. This partly explains why parents with inadequate HL skills are less likely to feel like a partner in their child's care, which leaves them less likely to actively engage in their child's health.

In terms of actual health outcomes, Ishikawa and Yano found a patient's HL skills and perceived participation to be positively correlated with self-efficacy, which in turn is significantly associated with lower HbA1c levels, a measurable outcome of diabetes self-care (Ishikawa & Yano, 2008). Additionally, low literate patients reported greater self-efficacy when they actively participated during the medical consultation, proving effective physician-patient communication can act as a buffer against poor HL (Ishikawa & Yano, 2008). Similarly, Leung and colleagues report HL to be indirectly associated with diabetes self-care behavior via increasing perceived communication capacity (Leung, Cheung, & Chi, 2014). In effect, it may be reasonable combining the results from both studies to better understand how HL affects patient participation, which leads to improved diabetic health outcomes:

Fig. 1 Indirect effects of HL on health outcomes via participation



Perceived participation of a patient can be greatly influenced depending on whether the physician chooses to use patient or physician-centered communication behaviors; physicians can either encourage or discourage patient participation by their communication skills. Because low literate patients are more likely to have physicians as their sole source of health information, physician attitude and skills are keys to improving health outcomes among the low literate population.

Patient participation has also been associated with patient activation, a health construct related to HL. Patient activation can be defined as the degree to which the patients understand their role in the care process as well as their confidence and attitudes related to managing their care (Hibbard, Stockard, Mahoney, & Tusler, 2004). Highly activated patients view themselves as partners in their health whereas low activated patients view their role as one of compliance (Greene, Hibbard,

Sacks, & Overton, 2013). Though patient activation and HL are associated with similar outcomes such as patient satisfaction and treatment adherence, Smith et al argue that the two influence health via different pathways (S. G. Smith, Curtis, Wardle, von Wagner, & Wolf, 2013). Furthermore, it is possible for patients with adequate HL to be low activated, since patient activation is affected by a number of factors such as personality, prior health care experiences, and physician characteristics. Thus, HL and patient activation should be considered as separate and unique health constructs.

#### ***Patients' communication preferences, expectations, and perceptions***

Patients with both adequate and inadequate HL skills preferred receiving health information directly from the physician during a 1-on-1 private consultation whereas the least preferred method of information delivery were group classes and DVD education

programs (Davis, Jones, Logsdon, Ryan, & Wilkerson-McMahon, 2013; Shaw, Ibrahim, Reid, Ussher, & Rowlands, 2009). Interestingly enough, physicians also believed the most effective way to facilitate communication was spending “one-on-one” time with the patient (Sadeghi, Brooks, & Goldstein, 2013). Additionally, patients and physicians alike reported time constraint as a major barrier to communication. Yet, the reasoning behind the answers are different; patients often felt the physician “gives the impression that their time is valuable” and thus, become reluctant to ask questions whereas physicians identify lack of time as an organizational flaw (Sadeghi et al., 2013). Not surprisingly, the use of medical jargon was another barrier mentioned (Bennett, Switzer, Aguirre, Evans, & Barg, 2006; Gulati et al., 2012; Sadeghi et al., 2013).

When asked to consider their role in the healthcare process, high education (HE) and health literate patients believed in sharing the responsibility with the physician and taking ownership of their health. HE patients also considered themselves as valuable resources to their friends and family members (Smith, Dixon, Trevena, Nutbeam, & McCaffery, 2009). Furthermore, health literate patients understood that physicians are fallible and can make mistakes, prompting them to seek additional information outside the clinical setting (Smith et al., 2009; White, Osborn, Gebretsadik, Kripalani, & Rothman, 2013). On the contrary, low education (LE) and low literate patients were more likely to consent to the treatment options recommended by their physician and looked to their family members as regular sources of care (S. K. Smith et al., 2009). Low literate patients also valued empathy and appreciated physicians that took a genuine interest in their personal problems whereas HE patients valued respect for their professional and socioeconomic status (Brugge, Edgar, George, Heung, & Laws, 2009; Chu & Tseng, 2013; Molina et al., 2014; Smith et al., 2009).

It is important to note that patients sometimes have unrealistic and misplaced expectations of their physicians. Serper and colleagues found that the majority of patients believed their physician “was aware of all prescription and over-the-counter (OTC) medications that they were currently taking” (Serper et al., 2013). However, only 46% of patients reported ever telling their physician about OTC drugs. Additionally, most patients believed their primary care physician was aware of medications that were prescribed by other doctors (Serper et al., 2013). Physicians should be mindful to ask their patients of the medications they are currently on and take the time to carefully review the medication list together.

Concerning patients' perceptions of physicians' overall interpersonal skills as measured by modified

versions of the Interpersonal Processes of Care (IPC) Survey, low literate patients are more likely to give poorer ratings than their health literate counterparts (Kripalani et al., 2010; Schillinger et al., 2004; A. L. Stewart, Napoles-Springer, Gregorich, & Santoyo-Olsson, 2007; A. L. Stewart, Nápoles-Springer, & Pérez-Stable, 1999). Patients with inadequate HL in both studies rated physicians significantly poorer in the domains of ‘explanation of processes of care’ and ‘explanation of condition,’ an expected result as physicians may rely more on medical jargon when explaining a complex medical condition or why a specific test is being done (Kripalani et al., 2010; Schillinger et al., 2004). The ‘responsiveness to patient concerns’ domain was also significantly associated with poor functional HL (Kripalani et al., 2010). This, along with the domain of worst performance (‘consideration of patients’ desire and ability to comply with recommendations’), implies that low literate patients may not have enough time or the confidence to adequately voice their concerns (Kripalani et al., 2010).

In addition to HL, cultural norms also play a large role on how patients view and interact with their physician and vice-versa. Facilitative communication between the patient and the physician is more difficult in non-Western cultures, where Kumar and colleagues point out principles of autonomy and rational decision-making are either not universally accepted or culturally appropriate (Kumar et al., 2012). The majority of patients from Asian descent have implicit faith in the medical profession and hold “the doctor knows best” mentality, discouraging them from asking questions or engaging in the management of their health (Jonkers, Richters, Zwart, Öry, & van Roosmalen, 2011; Kumar et al., 2012). Physicians from non-Western cultures also hold this view and believe patients having increased autonomy and decision-making power may impede the care process (Kumar et al., 2012).

### ***Physician recommendations***

#### ***Physician perceptions of patients' HL skills***

Despite the high prevalence of health illiteracy in the U.S. (approximately 40% of American adults) and around the world, physicians tend to overestimate their patients' HL levels (Harrington, Haven, Bailey, & Gerald, 2013). Physicians in one study misjudged the HL skills of 40% of their patients, overestimating 25% and underestimating 15% (Kelly & Haidet, 2007). In a similar study, family medicine residents only managed to correctly identify 47% of low literate patients (Rogers, Wallace, & Weiss, 2006). This percentage is particularly troublesome, as family medicine residents are specifically trained in the psychosocial aspects of care

and should be able to recognize whether a patient has trouble understanding health information. When overestimating patients' HL, physicians may unknowingly adjust their language to a level that patients have difficulty understanding (Kelly & Haidet, 2007). Medical residents and physicians frequently use medical jargon, speak at a much higher grade level and also use significantly more words per speaking turn than their patients (Castro, Wilson, Wang, & Schillinger, 2007; McCarthy, Leone, Salzman, Vozenilek, & Cameron, 2012). Castro and colleagues suggest some reasons why physicians often speak in medical terms, which include being immersed in what is known as the "culture of medicine" (efficient transmission of technical information) and wanting to assert their professionalism to the patient (Castro et al., 2007). Regardless of the reason, physician verbal dominance characterized by medical jargon leads to ineffective communication with low literate patients, which can cause adverse health outcomes. Thus, standard as well as novel recommendations for physicians to improve their communication skills have been well-documented in the literature.

#### **Communication techniques**

Basic techniques such as avoiding medical jargon, using living room language, speaking slowly, repeating instructions, focusing on key messages, and providing handouts and written forms of instructions are almost always insufficient when communicating with low literate patients (McCarthy, Waite, et al., 2012; Oates & Paasche-Orlow, 2009; Roett & Wessel, 2012; Safer & Keenan, 2005). In addition to these techniques, HL advocates strongly recommend more advanced strategies such as using the 'teach-back' approach to ensure patient understanding and encouraging patients to ask questions by using an open-ended approach (i.e. What questions do you have for me) rather than a close-ended approach (i.e. Do you have any questions?) (Green, Gonzaga, Cohen, & Spagnoletti, 2014; Ishikawa et al., 2009; Kripalani & Weiss, 2006; Oates & Paasche-Orlow, 2009; Roett & Wessel, 2012; Rothman, 2010; Safer & Keenan, 2005). However, Schwartzberg et al found the majority of physicians, nurses, and pharmacists use only the most basic communication techniques that do not assess patient understanding; only 39.5% of healthcare professionals reported using the 'teach-back' method on a regular basis, implying that recommendations targeted for low literate patients are seldom incorporated into practice (Schwartzberg, Cowett, VanGeest, & Wolf, 2007).

Both health literate and health illiterate patients have difficulty with numeracy concepts (Apter et al., 2008). Numeracy skills in terms of HL include basic math

skills needed for health-related activities such as timing and dosing of medications. Apter and colleagues recommend six groupings of techniques for physicians when presenting patients with quantitative information: simplification, clear formatting, omission of distracting information, appropriate framing, use of visuals, and confirmation (Apter et al., 2008). Appropriate framing is particularly effective in improving comprehension among patients (Apter et al., 2008; Safer, Cooke, & Keenan, 2006). For example, "a patient may not understand the significance of a cholesterol level of 160mg/dl until told that 160 is within the normal range of 112-200mg/dl" (Apter et al., 2008).

When communicating with culturally and ethnically diverse patient populations, physicians may find asking questions to elicit a patient's explanatory model of illness especially helpful (Misra-Hebert & Isaacson, 2012). A study done by the Center for Disease Control and Prevention (CDC) showed among black women who believe in folk illnesses regarding hypertension, only 37% complied to treatment recommendations compared to 73% of patients who accepted the biomedical explanation (Centers for Disease Control (CDC), 1990; Safer et al., 2006). Thus, it is important the physician understands the patient's perspective and addresses any misleading notions or concepts the patient may have before establishing a treatment plan together. This in turn leads to increased self-efficacy and patient satisfaction as well as improved adherence to medication. Concerning limited English proficiency (LEP) patients, effectively transmitting important health information may be even a more challenging task for physicians. Regardless if a professional or ad hoc interpreter is present, physicians should make extra effort to ensure the LEP patient feels comfortable asking questions by displaying curiosity and using other non-verbal cues (Edison, Jeanetta, & Staiculescu, 2011). Empathic communication skills may also be especially beneficial when working with LEP patients, as employing empathy has been shown to therapeutically soothe patients despite language or literacy barriers (Chu & Tseng, 2013).

The current literature also proposes a number of novel recommendations and strategies that may help improve communication efforts and subsequent health outcomes. For example, Roett and Weissel suggest physicians conduct what is called a "brown bag" medication review, where the patient is requested to bring all prescription and over-the-counter (OTC) medications to the doctor visit (Roett & Wessel, 2012). The physician would then have the opportunity to update the patient's chart and also review each medication and its side effects with the patient.

All in all, because HL skills aren't developed or acquired within a short time frame, physicians bear the bulk of the responsibility in effectively communicating and relaying important health messages and self-care instructions to low literate patients. Furthermore, the increasing availability of unreliable and non-credible sources of information on the Internet makes this even more difficult, as physicians often find themselves taking time to debunk and repair online information instead of discussing treatment recommendations and answering pertinent questions related to the patient's condition (Caiata-Zufferey & Schulz, 2012; Chesser et al., 2012). Yet, physicians are still encouraged to use patient-centered strategies in hopes of establishing a physician-patient relationship built on trust, which leads to improved health outcomes. One final recommendation worth mentioning is for physicians to offer patients an uninterrupted chance to ask questions before the end of the visit. As Wynia points out, though physicians may find patients asking one or two difficult questions at the end of the consultation an annoyance, it is crucial to remember that these questions may be the main reason the patient came in the first place; low literate patients lack the confidence and competence to interrupt physicians during the consultation (Wynia, 2006). Developing a proper and caring attitude towards patients precedes improving communication techniques.

#### **Screening for low health literate patients**

In order to assist physicians tailor their communication methods towards low literate patients, some have called for the implementation of HL screening programs; the response has been mixed to say the least. Proponents of HL screening believe that, because physicians often overestimate patients' HL skills, have limited time in the clinical setting, and may embarrass the patient by attempting to assess HL indirectly, incorporating routine screening for HL skills helps avoid these issues (Kripalani & Weiss, 2006; Roett & Wessel, 2012). Additionally, though low literacy has been reported to be significantly associated with stigma and a deep sense of shame, a study by Ryan and colleagues show 98.3% of patients agreed to complete the NVS and that patient satisfaction did not differ with patients in the control group that weren't administered the HL screening tool (Parikh et al., 1996; Ryan et al., 2008; Sadeghi et al., 2013). They argue that patients are already asked very sensitive questions regarding their health and therefore, assessing HL in the clinical setting is acceptable.

Critics, however, argue that HL is context-based, and depending on the patients' cognitive and communicative capacities and the physicians' interpersonal skills, may change even over the course of

a single doctor visit (Edison, Staiculescu, & Hudson, 2012). Furthermore, patients in one study preferred to avoid disclosing to their health providers any literacy problems and in fact, may be even more resolved to do so should HL screening occur (Easton, Entwistle, & Williams, 2013). Instead, patients overwhelmingly preferred physicians to consider universal solutions in addressing low literacy. Paasche-Orlow and Wolf state that current HL screening programs may cause more harm than good and before implementation, such programs should meet the following three criteria: screening tests accurately and reliably detect limited literacy, benefits of early treatment options to reduce adverse health outcomes be proven and evidence-based, benefits should outweigh adverse effects (M. K. Paasche-Orlow & Wolf, 2008). These suggestions are supported by findings from Seligman et al, where physicians notified of their patients' HL skills were uncertain whether their communicative methods were effective due to lack of proper training and systematic support (Seligman et al., 2005). Thus, unless standard and proven procedures are put in place to reliably assess HL and competently train physicians in interacting with low literate patients, HL screening should not be recommended at this time.

#### **Current Interventions**

A variety of interventions targeting both low literate patients and their corresponding physician in hopes of improving physician-patient communication can be found in the literature. Each intervention has unique components and are patient-focused, physician-focused, or incorporate both physician and patient aspects to stimulate positive and effective interaction.

Nearly all patient-directed interventions emphasize the importance of participation by encouraging low literate patients to ask questions. Adopted from the U.S.-based Partnership for Clear Health Communication "Ask Me 3" Program, Byrd and Thompson introduce a similar initiative, "It's Safe to Ask," in Manitoba, Canada that encourages patients to ask three questions to their physicians: 1. What is my health problem? 2. What do I need to do? 3. Why do I need to do this? (Allison-Otley, 2006; Byrd & Thompson, 2008). Simply asking questions puts more responsibility on the physician to adequately respond to the patient in a manner that he/she can understand. Similarly, Kripalani and colleagues designed two low-literacy interventions that sought to empower men to discuss testing for prostate cancer with their doctor. The first intervention consisted of a patient education handout written at a 6<sup>th</sup> grade level with high detail information describing the function and location of the prostate whereas the second intervention was a simple handout, encouraging patients

to talk to their physician about testing for prostate cancer (Kripalani et al., 2007). Patients receiving either of the interventions were significantly more likely to initiate and engage in discussion compared to patients in the control group, demonstrating that cueing patients immediately before the appointment is an effective method in encouraging them to participate in the healthcare process (Kripalani et al., 2007).

The use of multi-media channels has also proven to be effective in prompting patients to engage more during the doctor visit. When shown a series of videos portraying a fictional character managing her diabetes, low literate patients were significantly more likely to engage in negotiation of their treatment plan by asking their physician more questions (Shue, O'Hara, Marini, McKenzie, & Schreiner, 2010). Additionally, this type of intervention appears to be more effective than the previous ones mentioned since patients' questions are based on actual content rather than just cues to ask questions. For example, one patient admits asking his physician about vision changes only after the fictional diabetic character in the video mentioned having eyesight problems (Shue et al., 2010).

The majority of patient-centered interventions continue to focus on preparing patients to participate in their own healthcare prior to the medical consultation, whether by providing patients guidelines on how to express their concerns and preferences to their physician or by restructuring the informed consent process so that patients feel more comfortable asking questions (D. J. Cegala, Chisolm, & Nwomeh, 2013; Miller, Abrams, Earles, Phillips, & McCleary, 2011). Yet Giuse and colleagues show tailoring standard of care discharge instructions for patients with low literacy skills improves patients' knowledge of hypertension (Giuse, Koonce, Storrow, Kusnoor, & Ye, 2012). Further adapting educational material to patients' learning style preferences results in even more significant improvement (Giuse et al., 2012). As knowledge of condition is associated with increased self-efficacy and adherence to medication, providing patients with proper instructions for self-care at the end of the appointment may be just as important as encouraging patient communication with the physician before or during the actual encounter.

Physician-directed interventions are more established, with the process following what seems to be a universal protocol focused on improving physicians' communication skills. For instance, each of the interventions found implement some variation of didactic training, informal practice with a standardized patient (SP), and individual or group feedback so that the medical resident or physician are made aware of their mistakes and consequently can make a conscious effort

to improve upon patient-centered behaviors (Aboumatar et al., 2013; Green et al., 2014; Price-Haywood, Harden-Barrios, & Cooper, 2014). Though there are a few promising outcomes, such as increase in use of recommended communication techniques among medical residents, the overall results seem mixed.

Interventions targeting both the physician and patient may be of most value since communication implicitly involves the interaction between the two parties and not just the patient or the physician. One intervention of particular interest involves the incorporation of a diabetes care record sheet (DCRS) (Ricci-Cabello et al., 2013). The purpose of the DCRS is to show the patient the strong relationship between self-care behaviors and glycemic control. HbA1c levels and self-care actions related to diet and exercise are recorded during each appointment so that the patient is visually able to see the correlation (Ricci-Cabello et al., 2013). The DCRS is a "material anchor" where information can be referenced by both parties and also provides the opportunity for patients to ask questions (Lyons et al., 2013; Ricci-Cabello et al., 2013). Another study worth mentioning includes a unique partnership between one medical school and a nonprofit agency supporting literacy efforts for adults (Hess & Whelan, 2009). Adult learners were asked to bring one health topic they wanted addressed by a healthcare professional. Medical students then prepared presentations based on these topics, in which the adult learners were given the opportunity to provide constructive feedback. Results showed that medical students learned the importance of HL and the ability to communicate in plain language with patients whereas adult learners had the opportunity to learn more about a health topic of their interest (Hess & Whelan, 2009).

Because health illiteracy is seen across many different medical contexts and can influence physician-patient communication in a myriad of ways, one type of intervention is unlikely to be the answer. Yet, based on the current literature, interventions to properly address prevailing issues should be directed towards both the patient and the physician. It is also important to consider other components related to health communication such as language and culture barriers when developing and implementing interventions, as these factors may supersede the effect of HL (Sudore et al., 2009).

## Discussion

HL is significantly associated with a patient's level of interaction during the physician encounter and has been shown to indirectly affect measurable health outcomes via perceived communication capacity and perceived participation. Despite these findings, physicians regularly do not meet their patients'



communication preferences and expectations by unknowingly overestimating patients' HL skills and failing to adhere to clear communication guidelines that ensure patient comprehension and satisfaction. Though the majority of interventions addressing HL and communication tend to focus either on the patient or the physician exclusively, a two-pronged approach should be considered more often, as communication by definition involves the exchange of meaningful information of both interactants. On another note, the consistent and rapid growth of HL research has, to some extent, reached a plateau due to the constant redefining of the term and the push for more comprehensive measures of HL that have yet to be fully explored and validated (though attempts have surfaced).

Ishikawa et al introduced the concept and measures for communicative and critical HL (Inoue, Takahashi, & Kai, 2013; Ishikawa et al., 2009; Ishikawa & Yano, 2008). Originally adopted from Nutbeam's levels of literacy approach previously mentioned, Ishikawa and colleagues define communicative HL as the "advanced skills that allow a person to extract information, derive meaning from different forms of communication, and apply new information to changing circumstances," and critical HL as the ability to critically analyze health information and be able to use it to make decisions that help exert more control over one's health (Ishikawa et al., 2009; Ishikawa & Yano, 2008; Nutbeam, 2000a). Yet, both measures are subjective assessments and have no validated cutoff points for classification of adequate or inadequate HL, limiting their value.

In a similar vein, Rubin et al offer a related construct, interactive HL, which emphasizes the information exchange component of HL and uses four indices as its measure: participant talk time, conversational turns, comprehension checks, and information-seeking utterances (Rubin, Parmer, Freimuth, Kaley, & Okundaye, 2011). They argue current HL measures are missing one key element – representation of HL as co-constructed achievement by both the patient and physician. However, doing so may blur the fine line between HL and the actual communication that occurs between the two parties, bringing into question to what extent HL should include in its definition. Instead, HL should continue to underscore the notion of an individual's *capacity* to read, understand, process, communicate, and analyze health information, not as something to be built in teamwork with the physician. Yet, as Paasche-Orlow points out, HL is definitively context-based, and should take into account the contextual demands placed on the patient such as the specific clinical condition, the physician's communication skills, and structure and function of the healthcare system (Paasche-Orlow, 2011). Thus, as

each physician-patient encounter is unique based on patient characteristics and the constantly changing context surrounding the encounter, there may be little benefit in objectively measuring more comprehensive aspects of HL. Alternatively, focusing the attention to how physicians can better follow universal precautions and purposefully tailor their communication to each individual patient rather than to a subpopulation of patients screened for low literacy can help better improve health outcomes.

Because determining whether patients' HL skills are sufficient enough in helping them manage their own health is largely context-driven, it is necessary to address the existing system-based factors that contribute to the HL problem. Though 40% of American adults are considered to be health illiterate, only 12% of adults can successfully navigate the U.S. healthcare system, clearly indicating the need to reduce unnecessary complexities and the literacy-demands placed on the patient (Brach, Dreyer, & Schillinger, 2014). In response, the Institute of Medicine (IOM) identifies ten attributes that define what they call a "health literate organization," with physicians playing a significant role in each attribute ("Ten Attributes of Health Literate Health Care Organizations," n.d.). Brach et al conclude that HL should essentially be "hard wired" into the healthcare system and not be seen as an option or a supplemental "add-on" in providing quality care to low literate patients (Brach et al., 2014).

### Conclusion

As much as the technical processes of care have improved the quality of medicine over the past century, the importance of a patient's HL skills and communicative capacity and a physician's interpersonal skills should not be overlooked, as they also largely influence patients' health outcomes. As we have seen, low literate patients report participating less in their care with the physician, which in turn results in poorer, tangible health outcomes such as HbA1c levels.

HL can serve as an important indicator and can guide health providers in tailoring their communication for patients with limited HL skills. Communicating effectively with low literate patients is especially important as the majority reports the physician as their sole source of health information and active physician-patient communication can act as a buffer against poor HL. Additionally, it is important to keep in mind the increasing diversity of patients that current physicians in the U.S. encounter daily; people of different cultural backgrounds may have different communication preferences and so, it is essential for physicians and other healthcare providers to be trained in effectively working with patients that may not share the same

cultural norms. Physicians should also be taught to gauge a patient's HL skills subtly during the encounter, as screening for HL is not yet recommended.

Current interventions that target low literate patients or physicians have limited value, since the physician-patient dynamic is most effective if both parties are actively involved in the communication process. The incorporation of the DCRS by Ricci-Cabello et al. provides a prime example of using a simple tool that engages both the patient and the physician in enhancing the physician-patient relationship by centering it on the patient's continually changing health status.

Future research should further emphasize understanding the pathway in which HL affects physician-patient communication via qualitative methods and also focus on patients' perceptions of differing

communication techniques employed by the physician. Quantitative studies based on more comprehensive measures of HL, though insightful, may have limited practical applications.

All in all, improving HL leads to clearer communication, which is a prerequisite for trust, an essential aspect of patient-centered care, within the physician-patient relationship (Bains & Egede, 2011). When patients lack the HL skills to adequately convey their problems and needs, the physician has the responsibility to narrow the communication gap by employing HL-based methods such as the teach-back method, use of open-ended questions and effective techniques for delivering quantitative information, etc. Patients, regardless of HL, can then make better-informed decisions and improve their health.

#### Compliance with Ethical Standards Statement

This manuscript does not contain clinical studies or patient data.

#### Acknowledgements

This work was financially supported by the Fulbright U.S. Student Program.

#### Disclosure Summary

The authors have nothing to disclose.

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