



4-19-2016

Improving the State of Health Literacy among American Adults: Why Community Outreach Methods are more effective than Literacy-Level Screenings

Lydia Simpson

Western Michigan University, lydiasimpson23@gmail.com

Follow this and additional works at: http://scholarworks.wmich.edu/honors_theses

 Part of the [Community Health Commons](#), [Medical Education Commons](#), and the [Public Health Commons](#)

Recommended Citation

Simpson, Lydia, "Improving the State of Health Literacy among American Adults: Why Community Outreach Methods are more effective than Literacy-Level Screenings" (2016). *Honors Theses*. Paper 2720.

This Honors Thesis-Open Access is brought to you for free and open access by the Lee Honors College at ScholarWorks at WMU. It has been accepted for inclusion in Honors Theses by an authorized administrator of ScholarWorks at WMU. For more information, please contact maira.bundza@wmich.edu.



Improving the State of Health Literacy amongst American Adults: Why Community Outreach

Methods are More Effective than Literacy-Level Screenings

Lydia J. Simpson

Western Michigan University

Table of Contents

Abstract	3
Improving the State of Health Literacy amongst American Adults: Why Community Outreach Methods are More Effective than Literacy-Level Screenings	4
Purpose.....	4
Background.....	5
Current Health Literacy Statistics.....	7
Approaches to Health Literacy	9
Measuring Health Literacy	10
Intervention Methods	13
Effectiveness of Intervention Methods	16
Conclusion	20
References.....	21
Tables.....	24
Figures.....	31

Abstract

Health literacy refers to an individual's ability to access and process health information to make important decisions about their health. Unfortunately, millions of American adults have inadequate health literacy skills and are not able to navigate their way through the world of health care. This may lead to disastrous consequences and poor health outcomes. To improve health literacy, nationwide health education programs are imperative. Despite this, low health literacy is often ignored, or only considered for individuals suspected of having low health literacy who might then be administered a screening instrument. A better model for the American health care system is to move to a public health disease prevention model in which the focus is upon making sure health information is accessible for the great majority of people.

Improving the State of Health Literacy amongst American Adults: Why Community Outreach Methods are More Effective than Literacy-Level Screenings

Purpose

To begin, it is important to formally identify what health literacy entails. One generally accepted definition of health literacy from Ratzan (2001) refers to “the degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make appropriate health decisions” (p. 210). Numerous other definitions of health literacy exist (Table 2).

People with low health literacy use more health care services, are at a greater risk for hospitalization, and have a higher utilization of expensive services such as emergency care than do individuals with adequate health literacy, according to the Institute of Medicine (IOM) (2004). Low health literacy is a widespread issue that not only affects people on an individual basis but nationwide as well.

I first learned about health literacy when I took an introductory course on the topic during my junior year. On the first day of class, the instructor asked if anyone could define health literacy. No one could formulate a decent response, which was quite surprising considering that we were all majoring in health care-related fields. Throughout the course of the semester I came to learn that health literacy is a complicated and difficult topic both to research and to teach, because health literacy interventions and the suspected reasons for low health literacy are constantly changing. Health literacy is also a sensitive and politically-charged topic as it pertains to race, ethnicity, income, education, age, and gender. However, addressing health literacy can also be an opportunity for health care providers to bond with their patients and offer a safe environment where patients feel safe to talk about their limited literacy. Enabling patients to

take control of their health decisions through enhanced health literacy skills can be a huge source of empowerment for patients.

It is my goal with this thesis to delve into the world of health literacy and analyze the various approaches to and measurements of health literacy. I will then argue that community-based approaches to improving health literacy are more effective in terms of cost, time, and effort than individual patient interventions, as suggested by many different studies. I will soon begin my career as a health care administrative professional, where I hope to implement my findings from this research to positively impact the lives of patients.

Background

The term health literacy was first introduced in the 1970s by Scott Simonds in his article “Health Education as Social Policy”. In the thirty years that passed between Simonds’ publication in 1974 and the IOM’s report in 2004 which addressed health literacy, the definitions of the subject have changed many times and have often been a point of contention between scholars. Initially, individuals with low health literacy were seen as a risk and the responsibility for the problem was placed on the individual. It was not until Don Nutbeam introduced the asset model of health literacy in 2001 that the rhetoric began to focus on developing individual health literacy skills of patients.

For many years, the health care system of the United States has focused on health literacy as a solely individual-based issue that should be dealt with privately. This perception prompted individualized interventions for a person who was diagnosed with low health literacy. The tailor-made interventions were designed to assist the patient in overcoming their day-to-day struggles and a close relationship between the health care provider and the patient. Now, we are starting to realize that the principles of health literacy can be applied to all interactions between

patient and provider. Signs, brochures, consent forms, medication instructions, and even conversations can be simplified so that the message conveyed is universally understood. Health literacy has to do with not only one's ability to read and write, but also with the health care system's ability to communicate effectively with its patients.

There are multiple types of literacy as it relates to health. Nutbeam's "Health promotion glossary" (2001) proposed that life skills play a critical part in autonomy. Health literacy can also refer to the motivation required to take control over one's health, and levels of knowledge needed to improve living conditions and lifestyle habits. Many authors also believe that higher-level critical thinking, media literacy, numeracy skills, and interpersonal skills relating to communication are closely linked to health literacy. According to Hersh, Salzman, and Snyderman, these "skills include reading, writing, numeracy, communication, and, increasingly, the use of electronic technology" (2015, p. 1). The IOM proposes that there are four realms of health literacy: (1) cultural and conceptual knowledge, (2) oral literacy, including speaking and listening skills, (3) print literacy, including writing and reading skills, and (4) numeracy (2004). Unfortunately, most health literacy assessment tools measure only reading/comprehension and occasionally numeracy skills (Pleasant, McKinney, & Rikard, 2011).

The IOM's 2004 publication regarding health literacy also highlighted the fact that there is often a social context involved in making health decisions. General community factors impact individual patients through language, perspectives of health care measures depending on culture, and family relationships which the patient values. Some patients may value the input of their family members when making a health decision more than other patients, and certain cultural groups seem to more readily accept new and unfamiliar health information than other groups.

Current Health Literacy Statistics

The IOM's publication *Health Literacy: A Prescription to End Confusion*, the basis upon which many U.S. health literacy policies are made, declared that “nearly half of all American adults – 90 million people – have difficulty understanding and acting upon health information” (2004). Alternatively, an article by Hersh et al. (2015) cited a more conservative statistic by stating that “more than one-third of U.S. adults, an estimated 80 million persons, have limited health literacy” (p. 118). This comprehensive study evaluated various demographic factors such as gender, race, ethnic group, education level, and age to prove how they affect health literacy levels differently. Women tend to have higher levels of average health literacy than men, while Hispanic adults have the lowest average health literacy rates of any racial or ethnic group. Health literacy increases with each level of higher education that is attained and American adults over the age of 65 have lower health literacy than those in younger age groups. Populations most likely to experience low health literacy are adults over the age of 65, racial and ethnic minorities not including Asian/Pacific Islander, people with less than a high school degree or GED certificate, people with low income levels, non-native speakers of English, and people with compromised health status, according to the National Center for Education Statistics (2006).

People with low health literacy experience difficulty with, for example, deciding what lifestyle changes they need to make when confronted with a diagnosis of diabetes or high blood pressure. They may also find it difficult to properly fill out an informed consent form before going into surgery. This is not to imply that individuals with low health literacy are unintelligent. Rather, these individuals may lack the skills, experiences, or circumstances necessary to navigate their way through the realm of health care. Access to reliable health information, critical thinking skills, and personal motivation are all components of how

individuals steer their way through health care. Although it is something that many people with high literacy never think twice about, people struggling with low health literacy may be confronted on a daily basis by complex issues related to health literacy. And since health literacy and health outcomes are linked, everyday decisions made about what to eat, where to find health information, whether to take a medication, and which doctor to visit can have lasting effects on an individual's health.

One study conducted amongst 92,749 veterans in the North Florida/South Georgia region found that, from 2007 to 2009, the cost associated with marginal and inadequate health literacy amounted to \$143 million more than costs associated with adequate health literacy (Haun, Patel, French, Campbell, Bradham, & Lapcevic, 2015). This region of the United States is unique in that it was an early adopter of routine health literacy assessments and documentation. Health literacy screening in this study was conducted using the method of BRIEF health literacy screening tool. This tool asks the patient four simple questions: (1) How often do you have someone help you read hospital materials? (2) How confident are you filling out medical forms by yourself? (3) How often do you have problems learning about your medical condition because of difficulty understanding written information? and (4) How often do you have a problem understanding what is told to you about your medical condition? It is a reliable method for predicting inadequate and marginal health literacy skills in a patient. Although the sample group of this study, which was mostly older white males, cannot be considered representative of the U.S. population, the results that show medical care for patients with poor health literacy skills cost, on average, over \$1,500 more than care for patients with adequate health literacy skills is not a figure to be ignored.

Approaches to Health Literacy

Don Nutbeam (2008) defines the approaches to health literacy as health literacy as a risk versus health literacy as an asset. Both of these conceptual models are illustrated in Figures 1 and 2. The model for health literacy as a risk has been used practically to support more screenings for low health literacy in clinical settings, and has been more widely researched and implemented. The approach to health literacy as an asset is not quite as developed, and its foundations are more deeply rooted in theories about adult learning styles and health promotion techniques. This approach is more focused on helping patients to develop self-empowerment skills that will help in the navigation of health information and decisions. Both of these approaches are valuable for developing community-based educational outreach as well as improving communication between health care providers and their patients.

The approaches to health literacy as a risk factor have mainly been focused on the relationship between poor health literacy and negative health outcomes. This would then be followed by literacy-level screenings and interventions tailored to the individual patient. Much of the research conducted regarding health literacy in the United States has been on risk-based approaches, according to Nutbeam (2008). This approach tends to highlight the responsibility of the patient for improving their health literacy levels, with some interventions made on behalf of the health care providers. These interventions may include tailored health information, education, and communication to provide the patient with self-empowerment, and thus better health outcomes. Risk-based approaches are being used especially to emphasize to clinicians the importance of sensitivity towards patients with low health literacy and how best to overcome disadvantages those individuals face.

On the other hand, approaches to health literacy as an asset are used to enable patients to take control over their health as well as the social, personal, and environmental determinants of their health outcomes by “developing competencies for different forms of health action” (Nutbeam, 2008, p. 2074). Some examples of the social, personal, and environmental determinants of health that this type of approach targets include: diet, exercise habits, personal hygiene, quality of family and friend relationships, motivation, pollution, and more. By targeting these behaviors, health care providers can help patients to make changes that have the potential to greatly improve their long-term health. Skills in self-care can be taught both through education and continued personal practices in everyday life, such as choosing to compare the nutrition labels of two different foods and choosing which is the healthier option. Developing knowledge and capabilities from targeted education provided by health care providers, as well as new skills in self-care contribute to improved health literacy. This should lead to changes in health behaviors, which improve health outcomes.

Measuring Health Literacy

A comprehensive study of 17 publications was completed in 2014 to determine how various instruments measure health literacy levels. The publications in this review were limited to those written in English and instruments that targeted both adolescents and adults. In addition, this study focused only on instruments that were published during the search period from January 2009 to April 2013. The findings of this report concluded that the majority of studies conducted measure health literacy either through an objective measurement approach, a subjective (or self-reporting) measurement approach, or a mixed measurement approach that combines elements of the above two approaches (Altin, Finke, Kautz-Freimuth, & Stock, 2014).

One example of an objective measurement approach is the Medical Term Recognition Test (METER), a very short 2-minute test in which the patient is given 40 medical terms and 40 words that do not have a meaning. The aim of this test is to see how many medical terms the patient is able to correctly identify in the time allotted. This type of measurement is completed in a clinical setting. There is also a Spanish language version available, called the Short Assessment of Health Literacy-Spanish and English (SAHL-S&E). The SAHL-S&E was developed by the Gillings School of Global Public Health at the University of North Carolina (Lee, Stucky, Lee, Rozier, & Bender, 2010). The SAHL-S&E asks participants to “read aloud 18 medical terms and associate each term with another word similar in meaning” (Altin et al., 2014, p. 4). According to the researchers, “the SAHL-S&E score was highly reliable for individuals with a low level of health literacy” (Saroja, 2016, p. 1105).

A self-reporting, or subjective measurement of health literacy, was observed in five instruments included within this study. The All Aspects of Health Literacy (AAHLS) is one example, based on Don Nutbeam’s health literacy framework, as discussed earlier. Like other subjective measurements of health literacy, AAHLS views health literacy as a rather complex and multidimensional concept, and it integrates parts of functional, communicative, and critical literacy. The assessment is based on a 14-part scale aimed at measuring “skills in using written health information; communicating with health care providers; health information management and appraisal assertion of individual autonomy with regards to health” (Chinn & McCarthy, 2016, p. 247).

It is important to take note of one study which systematically reviewed 51 different health literacy measurement tools. The authors of the study, Haun, Valerio, McCormack, Sørensen, and Paasche-Orlow (2014) concluded that most tools are limited by the fact that reliability

cannot be ensured across subgroups of people being tested, such as age, race, and gender. Additionally, most of the tools represented only a small range of health literacy dimensions in their assessments. Another issue noted with nearly all of the measurement tools studied had to do with how the assessments are administered. Due to the fact that some people respond better to spoken or written or graphic information better than another form, being given a test in one mode may limit the outcome of their assessment. The authors suggested that future assessment tools should include the full range of health literacy dimensions, have more representative testing samples, and be offered in multiple different administration modes.

Systematic reviews of assessment tools such as this one demonstrate that no assessment can ever be completely valid or totally predictive of an individual's health literacy. It is important to look at the results of these measurements objectively. In the future, health care institutions may begin to combine several methods of health literacy measurement to get the most accurate reading on an individual's literacy level. Mixed-method approaches that combine self-reporting and objective measurements have the potential to yield more accurate results.

In March of 2015, an article published in BMC Public Health discussed the importance of moving away from assessing health literacy on an individual basis in clinical settings and instead addressing health literacy needs on a community or even a population-wide scale. The authors argued that our current methods of assessing health literacy, and the interventions that are associated with those measurements, are no longer suitable for the needs of the American population. The authors Guzys, Kenny, Dickson-Swift, and Threlkeld (2015) propose that our methods of measuring and improving health literacy have adapted according to our conception of what health literacy is.

Perhaps part of the reason why our definitions of health literacy have changed so vastly and so often since its conception is due to the fact that the realm of health literacy is an ever-changing, constantly growing field of research and study. As new information is discovered about how best to treat low health literacy, our methods of measurement and thusly improvement have evolved accordingly. It is becoming clearer that individual screenings for health literacy levels are simply not as effective as community-based health education in improving our nation's average health literacy level, as discussed next.

Intervention Methods

There are many different intervention techniques for improving health literacy, ranging from quick fixes to the more sophisticated, and often expensive, changes. The following are examples of evidence-based strategies that can be used to ensure that all patients are provided with the access to care and information that they need. As time goes on and the research surrounding health literacy grows, these interventions hopefully will evolve to include new techniques.

“Universal precautions” is a term used in relation to the treatment of infectious disease and refers to the approach that doctors and other health care providers take when dealing with all patients. The idea behind the universal precautions method is that it is impossible to know if someone has, for example, a blood-borne disease by looking at them. Therefore, it is important to treat all patients with the same precautions. In an article written to address the transformation of the public health system to improve health literacy, Paasche-Orlow, Schillinger, Greene, and Wagner (2011) reasoned that this same mindset may be applied to health literacy. Therefore, methods should be taken to ensure that patients fully understand information that is given to

them. “The universal precautions approach does not require practitioners to assess or even know the health literacy of individual patients,” stated Batterham, Hawkins, Collins, Buchbinder, and Osborne (2016), “It does, however, require that practitioners understand health literacy and good practice related to it” (p. 5).

Another intervention method that can be implemented rather easily is related to the universal precautions approach, and it is commonly called the “teach-back” method. In this intervention, the physician or health care provider will communicate the important information about diagnosis, treatment, prognosis, or any other related topic to the patient in a way that the provider believes will be best received by the patient. Then, to ensure comprehension, the provider will ask the patient to teach them what they have just learned. This can manifest itself in many ways, from having the patient explain how they would tell a loved one how they take their medication each day, to asking the patient to describe their diagnosis in their own words.

An experimental study conducted in Amsterdam found that the best method for teaching information to patients, regardless of health literacy level, is a multifaceted approach that combines spoken information with animations. The study found that participants with low health literacy were able to recall the same amount of information as their high health literacy counterparts when this method was employed. Interestingly, participants with high health literacy levels were not negatively influenced by this method, making the spoken animation approach to health education suitable for people of all literacy levels. Participant’s health literacy levels were measured using the Short Assessment of Health Literacy-Dutch (SAHL-D). The authors note that this method’s effectiveness could be limited in a real-life setting by the quality of the animations and narration (Meppelink, van Weert, Haven, & Smit, 2015).

Another study by many of the same authors corroborated the findings of the Amsterdam study and suggested that all people can benefit from simplified transmission of health information. The authors of this study Meppelink, Smit, Buurman, & van Weert (2015) found that, as in the Dutch study, subjects with high health literacy skills were not negatively affected by more simplified health information. In addition, this study looked at informed consent decisions, which can be jeopardized by a patient's lack of health literacy. The study found that all patients may potentially benefit from simplified informed consent text, and those with low literacy were able to make better informed consent decisions when the simplified information was supplemented with illustrations. This information could be useful in a practical setting for health care providers to help their patients make better, more informed health care decisions.

Some common complaints from patients with low health literacy is that their physicians use words that they do not understand, speak too quickly, and do not stop to ask if the patient has understood all of the information they have been given. Fortunately, there is a simple solution to this problem: teach doctors and other health care providers to use words that all people will understand, not just those who are medically trained. Removing medical jargon from the conversation helps patients with low health literacy to understand more of the information they are being given about their health. Besides this, one of the most valuable skills that a health care provider can learn to adopt is empathy. Patients who feel at-ease and safe with their provider will be more willing to admit when they do not understand.

One study was conducted at a pediatric hospital in the Midwest to determine how well physicians and other health care personnel were able to define health literacy. Surprisingly, only 37% of personnel and 65% of physicians were able to identify health literacy adequately. More importantly, the authors Lewis, Morgan, Wang, Calderon, Rammel, and Ozer (2014) found that

the majority of those health care professionals interviewed agreed that there was a serious need for more health literacy training. In additional study of a cohort of first-year medical students by Coleman, Peterson-Perry, and Bumstead (2014), the authors concluded that health literacy training for health care providers must be implemented in a longitudinal format and one-time training sessions are inadequate. This study looked at the perceived health literacy knowledge of the medical students, which refers not to actual knowledge but instead asks the students to give a subjective rating of their knowledge. After twelve months, the benefits of one-time health literacy training for medical students were largely gone, and most students rated their performance back at baseline levels.

Ali, Ferguson, Mitha, and Hanlon (2014) conducted a study at two community-based medicine programs that sought to determine how comfortably medical trainees interact with low-literacy patients. The results revealed that 10% of those trainees surveyed reported feeling confident in their ability to utilize health literacy skills in communicating with low-health literacy patients. They also had difficulty in diagnosing low health literacy. Two doctors, Weiss and Schwartzberg (2007), created a health clinician's manual for interactions between health care providers and low health literacy patients. They identified some key behaviors that health care providers should be aware of that may indicate low health literacy. These include: incomplete registration forms, missed appointments, inability to explain what medications are for, and the use of excuses when presented with written materials, such as "I will read this when I get home." It is important to note that an absence of these behaviors does not indicate adequate health literacy. Being sensitive to a patient's behaviors, both verbal and nonverbal, is an important skill in interacting with patients who have low health literacy.

Effectiveness of Intervention Methods

I will argue that the goal of health literacy in a real-life setting should not be to screen each individual patient to determine their level of health literacy before treating them; rather, health information should be provided so that services and information will be accessible, intelligible, and helpful for most people regardless of their literacy level. My opinions are corroborated by Batterham et al.: “it is not necessary to assess the health literacy of every patient” (2016, p. 5). In “Health Literacy as a Public Health Goal”, Nutbeam (2000) states that health professionals have long ignored or overlooked the importance of individual patient’s circumstances and how those circumstances had the power to affect their ability to take in information. Of course, we now recognize that these circumstances can be anything from ethnicity to education, socioeconomic status, geographical location, age, gender, lifestyle factors, and health status.

A roundtable interdisciplinary discussion was held in May of 2013 with health literacy experts, clinicians, and policymakers from the U.S., Canada, Great Britain, China, and Australia to discuss the status of health literacy. The roundtable panel, which convened at the University of British Columbia, focused on measurement methods among other topics, and discussed some issues associated with measuring health literacy. One problem with measuring health literacy is that our current methods focus mostly on individuals, which provides very little information about improving methods on a larger scale. Results from individual-based screening methods cannot be applied to larger groups such as health care providers, high-risk groups such as the elderly, or cultural groups (Poureslami, Nimmon, Rootman, & Fitzgerald, 2016). The roundtable panel also noted that healthcare providers need to be more cognizant of the influence that social context has on a person’s health literacy. This means that health literacy should not be evaluated

without also taking into consideration the impact that culture, language, and social norms have on an individual's motivation to increase their health knowledge and improve their health decisions and behaviors.

Improving our nation's health literacy is a matter of great importance as the American health care system continues to change and evolve. Weiss and Schwartzburg (2007) proposed that "shorter hospital stays, polypharmacy, multiple health care providers, and the rising prevalence of chronic disease all contribute to the increasing role that patients have in managing their own care" (as cited in Hersh, Salzman, & Snyderman, 2015, p. 119). As patients are expected now more than ever to manage their own care, it is important that health care providers are able to equip those patients with necessary information to ensure empowerment with good decision-making ability based upon a host of medical and health information. This information may be supplied in a one-on-one conversation, in a web-based format utilizing animations and sound, or in a combined approach, according to the needs of the patient.

Earlier this year, Batterham et al. (2016) suggested an approach to reduce health inequality through differing health literacy interventions. (Table 4) The authors contended that screening the health literacy of individual patients (the narrowest scope of the health service settings) can really only be used "to problem solve for complex patients" or "to train staff in responding to differing health literacy needs" (Batterham, Hawkins, Collins, Buchbinder, & Osborne, 2016, p. 4). Individual health literacy screening can be a beneficial training technique for health care providers within an organization, but other than the patient being tested, there is no widespread positive impact. Poureslami et al. (2016) emphasize the importance "of a solid evidence base to inform policy and practice" (p. 7). Individual screenings for health literacy

cannot be used as evidence upon which a basis for policy reforms are formed, because they are not representative of the larger population that the policy will serve.

On the other hand, results from national surveys (which are conducted with the aim of comparing different regions and groups) can be used to inform policymakers when developing new health education campaigns (Batterham et al., 2016). Broader surveys of health literacy also provide an additional layer of information regarding quality of and access to care. These two factors, which vary widely according to a patient's geographic location, are also affected by the various demographic determinants of health as identified earlier. Such determinants that have the power to influence health outcome include income, gender, age, race, and educational attainment. Policies for health education and improved disease prevention techniques such as cancer screening are more effectively implemented into areas with large concentrations of patients who have low health literacy skills when policymakers have a better understanding of their targeted population.

Baker highlighted an interesting point regarding the inconsistencies between measurements of health literacy in "The Meaning and Measure of Health Literacy". He argued that the health system's methods of health literacy assessment are incredibly problematic because of the many definitions used to describe health literacy and its domains. Baker's 2006 article stated:

If health literacy is a capacity of a person, measures of an individual's reading ability and vocabulary are appropriate. In contrast, if health literacy depends on the relationship between individual communication capacities, the health care system, and the broader society, measures at the individual level are clearly inadequate. If knowledge is part of the definition of health literacy, this too must be measured. (p. 878)

This is yet another problem associated with attempting to measure health literacy according to differing perceptions of what health literacy entails. Until there is a more consistent definition of the health literacy domains that is universally accepted by the health care system, continuing to measure health literacy with individualized assessments cannot be regulated or compared between testing formats.

Conclusion

Many health literacy experts agree that while individual literacy-level screening may serve a useful purpose in providing improved health care to some patients, it is more effective to educate people on a community level according to relevant health needs of the society. Health care providers should employ measures such as universal precautions and simplified health information popularized by initial health literacy research methods, as these have proven effective for communicating with people of all literacy levels. The use of plain language materials and simplified communication techniques is not objected by people with high health literacy and helps those with low health literacy.

References

- Ali, N. K., Ferguson, R. P., Mitha, S., & Hanlon, A. (2014). Do medical trainees feel confident communicating with low health literacy patients? *Journal of Community Hospital Internal Medicine Perspectives*, 4(2), 10.3402/jchimp.v4.22893. <http://doi.org/10.3402/jchimp.v4.22893>
- Altin, S. V., Finke, I., Kautz-Freimuth, S., & Stock, S. (2014). The evolution of health literacy assessment tools: a systematic review. *BMC Public Health*, 14, 1207. doi:10.1186/1471-2458-14-1207
- Baker, D. (2006). The Meaning and the Measure of Health Literacy. *Journal of General Internal Medicine*, 21(8), 878–883. <http://doi.org/10.1111/j.1525-1497.2006.00540.x>
- Batterham, R., Hawkins, M., Collins, P., Buchbinder, R., & Osborne, R. (2016, January 5). Health literacy: Applying current concepts to improve health services and reduce health inequalities [Electronic version]. *Public Health*, 132, 3-12. doi:10.1016/j.puhe.2016.01.001
- Chinn, D., & McCarthy, C. "All Aspects of Health Literacy Scale (AAHLS): Developing a tool to measure functional, communicative and critical health literacy in primary healthcare settings." *Patient Education & Counseling* 90.2 (2012): 247-53. Web. 17 Feb. 2016.
- Coleman, C., Peterson-Perry, S., & Bumstead, T. (2015, December). Long-Term Effects of a Health Literacy Curriculum for Medical Students [Electronic version]. *Family Medicine*, 48(1), 49-53.
- Guzys, D., Kenny, A., Dickson-Swift, V., & Threlkeld, G. (2015). A critical review of population health literacy assessment. *BMC Public Health*, 15, 215. doi:10.1186/s12889-015-1551-6
- Haun, J., Valerio, M., McCormack, L., Sørensen, K., & Paasche-Orlow, M. (2014, October 14). Health Literacy Measurement: An Inventory and Descriptive Summary of 51 Instruments [Electronic version]. *Journal of Health Communication*, 19(2), 302-333. doi:10.1080/10810730.2014.936571
- Haun, J., Patel, N., French, D., Campbell, R., Bradham, D., & Lapcevic, W. (2015, November). Association between health literacy and medical care costs in an integrated healthcare system: A regional population based study [Electronic version]. *BMC Health Services Research*, 15(1). doi:10.1186/s12913-015-0887-z
- Hersh L., Salzman B., & Snyderman D. "Health Literacy in Primary Care Practice." *American Family Physician* 92.2 (2015): 118-24. Web. 18 Dec. 2015.
- Institute of Medicine & Nielsen-Bohlman, L., Panzer, A. M., Kindig, D. A. (2004). *Health Literacy: A Prescription to End Confusion*. Washington DC: National Academies Press.

- Kutner M., Greenberg E., Jin Y., & Paulsen C. "The Health Literacy of America's Adults: Results from the 2003 National Assessment of Adult Literacy." Washington, DC: U.S. Department of Education, National Center for Education Statistics, 2006. Web. 18 Dec. 2015.
- Lee, S., Stucky, B., Lee, J., Rozier, R., & Bender, D. (2010, August). Short Assessment of Health Literacy—Spanish and English: A Comparable Test of Health Literacy for Spanish and English Speakers [Electronic version]. *Health Services Research*, 45(4). doi:10.1111/j.1475-6773.2010.01119.x
- Lewis, K., Morgan, J., Wang, L., Calderon, K., Rammel, J. & Ozer, M. (2014) Health literacy practices of physicians and patient care personnel in a hospital setting. *Journal of Contemporary Medical Education*, 2 (4), 204-212. doi:10.5455/jcme.20141122081418
- Meppelink, C., van Weert, J., Haven, C., & Smit, E. (2015). The Effectiveness of Health Animations in Audiences with Different Health Literacy Levels: An Experimental Study. *Journal of Medical Internet Research*, 17(1), e11. <http://doi.org/10.2196/jmir.3979>
- Meppelink, C., Smit, E., Buurman, B., & van Weert, J. (2015, September 15). Should We Be Afraid of Simple Messages? The Effects of Text Difficulty and Illustrations in People with Low or High Health Literacy [Electronic version]. *Health Communication*, 30(12), 1181-1189. <http://doi:10.1080/10410236.2015.1037425>
- National Center for Education Statistics. 2006. *The Health Literacy of America's Adults: Results From the 2003 National Assessment of Adult Literacy*. Washington, DC: U.S. Department of Education.
- Nielsen-Bohlman L., Panzer A., & Kindig D. *Health Literacy: A Prescription to End Confusion*. Washington, DC: The National Academies Press, 2004. N. pag. Web. 18 Dec. 2015.
- Nutbeam, D. (2000). Health Literacy as a Public Health Goal: A Challenge for Contemporary Health Education and Health Communication Strategies into the 21st Century [Electronic version]. *Health Promotion International*, 15(3), 259-267. doi:10.1093/heapro/15.3.259
- Nutbeam, D. (1998). Health promotion glossary [Electronic version]. *Health Promotion International*, 13(4), 349-364. doi:10.1093/heapro/13.4.349
- Nutbeam, D. (2008, December). The evolving concept of health literacy. *Social Science & Medicine*, 67(12), 2072-2078. doi:10.1016/j.socscimed.2008.09.050
- Paasche-Orlow, M., Schillinger, D., Greene, S., & Wagner, E. (2006). How health care systems can begin to address the challenge of limited literacy. *Journal of General Internal Medicine*, 21, 884–887.

- Pleasant, A., McKinney, J., & Rikard, R. (2011). Health Literacy Measurement: A Proposed Research Agenda [Electronic version]. *Journal of Health Communication*, 16(sup3), 11-21. doi:10.1080/10810730.2011.604392
- Poureslami, I., Nimmon, L., Rootman, I., & Fitzgerald, M. (2016, February). Health literacy and chronic disease management: drawing from expert knowledge to set an agenda [Electronic version]. *Health Promotion International*. doi:10.1093/heapro/daw003
- Ratzan, S. Health literacy: communication for the public good. *Health Promotion International*. (2001) 16 (2): 207-214 doi:10.1093/heapro/16.2.207
- Saroja, S. "Short Assessment of Health Literacy-Spanish and English: A Comparable Test of Health Literacy for Spanish and English-Speakers." *Health services research* 45.4 (2010): 1105–1120. PMC. Web. 17 Feb. 2016.
- Simonds, S. "Health education as social policy". *Health Education Monograph* (1974): 21–25. Web. 29 Dec. 2015.
- Sorensen, K., Van Den Broucke, S., Fullam, J., Doyle, G., Pelikan, J., Slonska, Z., & Brand, H. (2012). Health literacy and public health: A systematic review and integration of definitions and models [Electronic version]. *BMC Public Health*, 12(80). doi:10.1186/1471-2458-12-80
- U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2003 National Assessment of Adult Literacy.
- Weiss, B., & Schwartzberg, J. (2007). *Health Literacy: A Manual for Clinicians: Part of an Educational Program about Health Literacy*. American Medical Association Foundation.

Tables

Table 1

Average Health Literacy Scores of Adults, by Poverty Thresholds

Poverty Threshold	Average Score
Below Poverty Threshold	205
100-125% of Poverty Threshold	222
126-150% of Poverty Threshold	224
151-175% of Poverty Threshold	231
Above 175% of Poverty Threshold	261

Note: This table comes from the 2003 National Assessment of Adult Literacy conducted by the U.S. Department of Education. The table shows the average health literacy scores of adults according to the levels of their poverty thresholds, ranging from below the poverty threshold to 175% and above the poverty threshold. Adults from this sample who were in the category “Above 175% of Poverty Threshold” scored an average of 261, a far higher score than those in the “Below Poverty Threshold” category who scored an average of 205. The middle three groups, ranging from 100 to 175% of the Poverty Threshold, are clumped closely together. Interestingly, the largest gaps between groups occur between the lowest income group and the one above it, and the highest income group and the one below it. Some researchers have suggested that this can be caused by a relationship between factors such as income, socioeconomic status, and education and the level of an individual’s health literacy.

Table 2

Definitions of Health Literacy

1.	World Health Organization (1998)	“The cognitive and social skills which determine the motivation and ability of individuals to gain access to understand and use information in ways which promote and maintain good health.”
2.	American Medical Association (1999)	“The constellation of skills, including the ability to perform basic reading and numerical tasks require to function in the healthcare environment.”
3.	Nutbeam (2000)	“The personal, social, and cognitive skills which determine the ability of individuals to gain access to, understand, and use information to promote and maintain good health.”
4.	Institute of Medicine (2004)	“The individuals’ capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions.”
5.	Kickbusch, Wait, & Maag (2005)	“The ability to make sound health decision(s) in the context of everyday life... It is a critical empowerment strategy to increase people’s control over their health, their ability to seek out information, and their ability to take responsibility.”
6.	Zarcadoolas, Pleasant, & Greer (2003, 2005, 2006)	“The wide range of skills, and competencies that people develop to seek out, comprehend, evaluate, and use health information and concepts to make informed choices, reduce health risks, and increase quality of life.”
7.	Paasche-Orlow & Wolf (2006)	“An individual’s possession of requisite skills for making health-related decisions, which means that health literacy must always be examined in the context of the specific tasks that need to be accomplished.”
8.	European Union (2007)	“The ability to read, filter, and understand health information in order to form sound judgments.”
9.	Pavlekovic (2008)	“The capacity to obtain, interpret, and understand basic health information and services and the competence to use such information to enhance health.”
10.	Rootman & Gordon-Elbihbety (2008)	“The ability to access, understand, evaluate, and communicate information as a way to promote, maintain, and improve health in a variety of settings across the life course.”
11.	Ishikawa &Yano (2008)	“The knowledge, skills, and abilities that pertain to interactions with the healthcare system.”

12.	Mancuso (2008)	“A process that evolves over one’s lifetimes and encompasses the attributes of capacity, comprehension, and communication. The attributes of health literacy are integrated within and preceded by the skills, strategies, and abilities embedded within the competencies needed to attain health literacy.”
13.	Australian Bureau of Statistics (2008)	“The knowledge and skills required to understand and use information relating to health issues such as drugs and alcohol, disease prevention and treatment, safety and accident prevention, first aid, emergencies, and staying healthy.”
14.	Yost et al. (2009)	“The degree to which individuals have the capacity to read and comprehend health-related print material, identify and interpret information presented in graphical format (charts, graphs, and tables), and perform arithmetic operations in order to make appropriate health and care decisions.”
15.	Adams et al. (2009)	“The ability to understand and interpret the meaning of health information in written, spoken, or digital form and how this motivates people to embrace or disregard actions relating to health.”
16.	Adkins et al. (2009)	“The ability to derive meaning from different forms of communication by using a variety of skills to accomplish health-related objectives.”
17.	Freedman et al. (2009)	“The degree to which individuals and groups can process, understand, evaluate, and act upon information needed to make public health decisions that benefit the community.”

Note: This table is presented in Sørensen et al.’s systematic review of health literacy definitions.

It provides a comprehensive list of 17 definitions of health literacy that have been used in the creation of health literacy intervention methods. Although none of these definitions are identical, overarching themes of personal knowledge, skills, abilities, and competencies prevail in the interest of increasing patient empowerment and improving both health outcomes and healthy behaviors/decisions, such as choosing to quit smoking or utilizing preventive screening measures to detect disease. Many of these definitions also refer to functional literacy, the ability to understand the written or graphic forms of communication given to patients by the health care provider. Functional literacy plays a large role in the clinical setting, because low functional

literacy can impact a patient's ability to read and properly fill out medical history forms, sign informed consent documents, and read and adhere to medication instructions. This leads to issues such as signing a consent form that a patient does not fully understand and taking too much or too little of a prescribed drug.

Table 3

SAHL-E Word Sets & User's Guide

Stem	Key or Distracter		Don't know
1. kidney	__urine	__fever	__don't know
2. occupation	__work	__education	__don't know
3. medication	__instrument	__treatment	__don't know
4. nutrition	__healthy	__soda	__don't know
5. miscarriage	__loss	__marriage	__don't know
6. infection	__plant	__virus	__don't know
7. alcoholism	__addiction	__recreation	__don't know
8. pregnancy	__birth	__childhood	__don't know
9. seizure	__dizzy	__calm	__don't know
10. dose	__sleep	__amount	__don't know
11. hormones	__growth	__harmony	__don't know
12. abnormal	__different	__similar	__don't know
13. directed	__instruction	__decision	__don't know
14. nerves	__bored	__anxiety	__don't know
15. constipation	__blocked	__loose	__don't know
16. diagnosis	__evaluation	__recovery	__don't know
17. hemorrhoids	__veins	__heart	__don't know
18. syphilis	__contraception	__condom	__don't know

Directions to the Interviewer:

Before the test, the interviewer should say to the examinee:

"I'm going to show you cards with 3 words on them. First, I'd like you to read the top word out loud. Next, I'll read the two words underneath and I'd like you to tell me which of the two words is more similar to or has a closer association with the top word. If you don't know, please say 'I don't know'. Don't guess."

Show the examinee the first card.

The interviewer should say to the examinee:

"Now, please, read the top word out loud."

The interviewer should have a clipboard with a score sheet to record the examinee's answers. The clipboard should be held such that the examinee cannot see or be distracted by the scoring procedure.

The interviewer will then read the key and distracter (the two words at the bottom of the card) and then say:

"Which of the two words is most similar to the top word? If you don't know the answer, please say 'I don't know'."

The interviewer may repeat the instructions so that the examinee feels comfortable with the procedure.

Continue the test with the rest of the cards.

A correct answer for each test item is determined by both correct pronunciation and accurate association. Each correct answer gets one point. Once the test is completed, the interviewer should tally the total points to generate the SAHL-E score.

A score between 0 and 14 suggests the examinee has low health literacy.

Note: The above table is an example of the English version of the Short Assessment of Health Literacy taken from the U.S. Department of Health & Human Service’s Agency for Healthcare Research and Quality website, www.ahrq.gov. The SAHL-S&E was found to be both valid and reliable for identifying patients with low health literacy in a study conducted among “201 Spanish-speaking and 202 English-speaking subjects recruited from the Ambulatory Care Center at the University of North Carolina Healthcare System” (Lee, et al., 2010). Instructions for administering the assessment are given in the table above, and it states that a score of below 14 indicates that a patient may have low health literacy. Administering this test is relatively quick and easy, with the normal test time taking less than five minutes. This type of assessment also requires minimal training for the individual administering it. However, patients testing patients in this way may lead them to feel insecure about their health literacy.

Table 4

Levels at which health literacy can be measured	Potential purposes for measuring health literacy
Health service settings	
1. Individual patients	<ul style="list-style-type: none"> • To problem solve for complex patients • To train staff in responding to differing health literacy needs
2. Patient groups	<ul style="list-style-type: none"> • To identify common factors that contribute to poor access and health outcomes • To plan for services to respond to health literacy needs • To inform advocacy activities
3. Individual health services	<ul style="list-style-type: none"> • To diagnose health literacy strengths and limitations of the target population and how these strengths and limitations contribute to known inequalities of access, participation in health and health outcomes • To develop specific strategies for responding to common health literacy limitations
Community and population settings	
4. Local areas (both health and community services/authorities)	<ul style="list-style-type: none"> • To plan marketing and education strategies across services • To assess the ability of community members to participate in community-based health planning activities (critical health literacy) and develop suitable approaches to enable their participation
5. National surveys (to compare regions and groups)	<ul style="list-style-type: none"> • To identify relationships between health literacy and access, equity and outcomes, in order to develop appropriate health service and public health policies and strategies • Plan health education campaigns, or campaigns to support the introduction of new services, screening initiatives (e.g., bowel or skin cancer) or vaccination programs. • Assess regional 'patient difficulty' for planning and funding purposes (assuming that it takes more intensive resources to improve health outcomes for people with low health literacy than it does for people with higher health literacy)
6. Countries (international comparisons)	<ul style="list-style-type: none"> • Advocacy for governments in countries where there is systemic low health literacy • Identify countries that are role models for how to improve health literacy levels of populations

Note: This table is pulled from Batterham et al.'s article "Health literacy: Applying current concepts to improve health services and reduce health inequalities". It clearly demonstrates that community- and population-level interventions can be used to measure health literacy on a far broader scale than in health service settings, which tend to only target one or a few patients at a time.

Figures

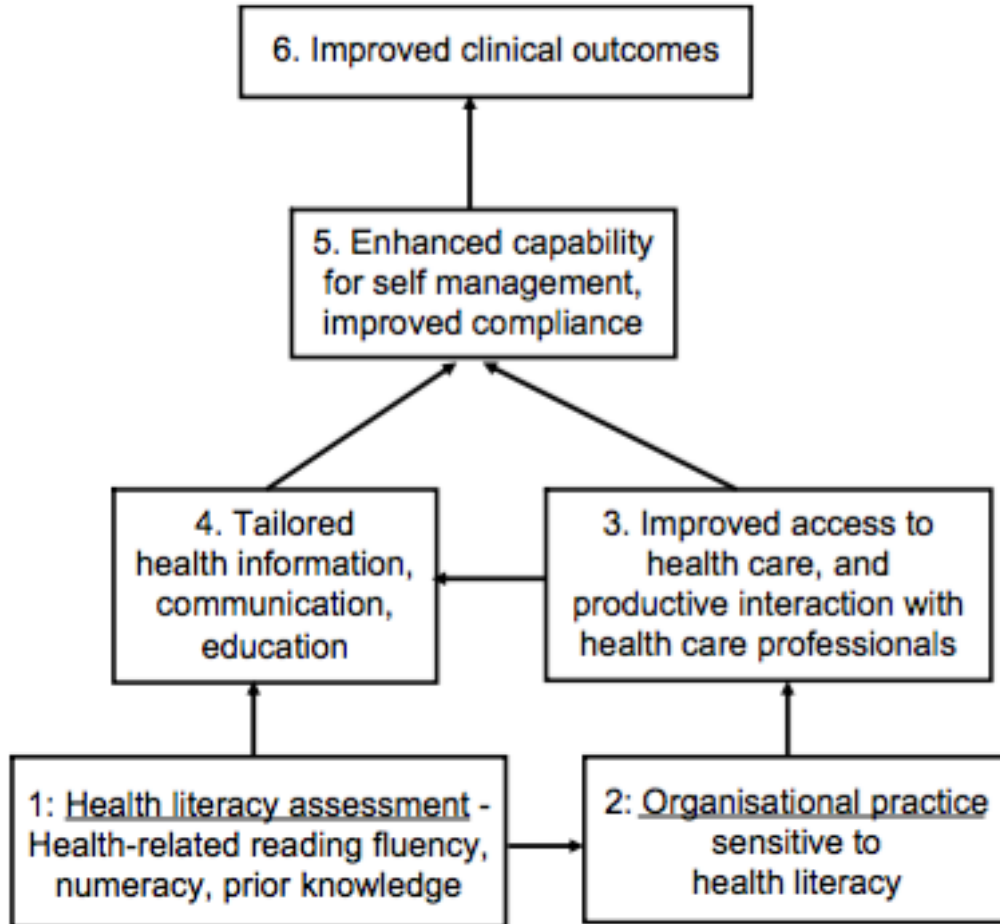


Fig. 1. Conceptual model of health literacy as a risk.

Figure 1.

This figure, taken from Don Nutbeam’s “The evolving concept of health literacy”, shows health literacy as a risk factor that needs to be managed in the clinical setting. Note that this figure reflects changes suggested by Baker in the 2006 article “The meaning and measure of health literacy”. This figure begins by assessing the patient’s former knowledge by means of a screening tool (1). Next, the organization that is serving the individual must be aware of needs relating to health literacy in order to meet those needs (2). Improving the organization’s awareness of and sensitivity to health literacy needs leads to better access to health care and

more productive interactions with health care providers (3). The health care provider can then provide specialized information and education for their patient (4). Specialized treatment improves chances of adherence to clinician recommendations (5). Finally, the patient experiences improved health outcomes (6).

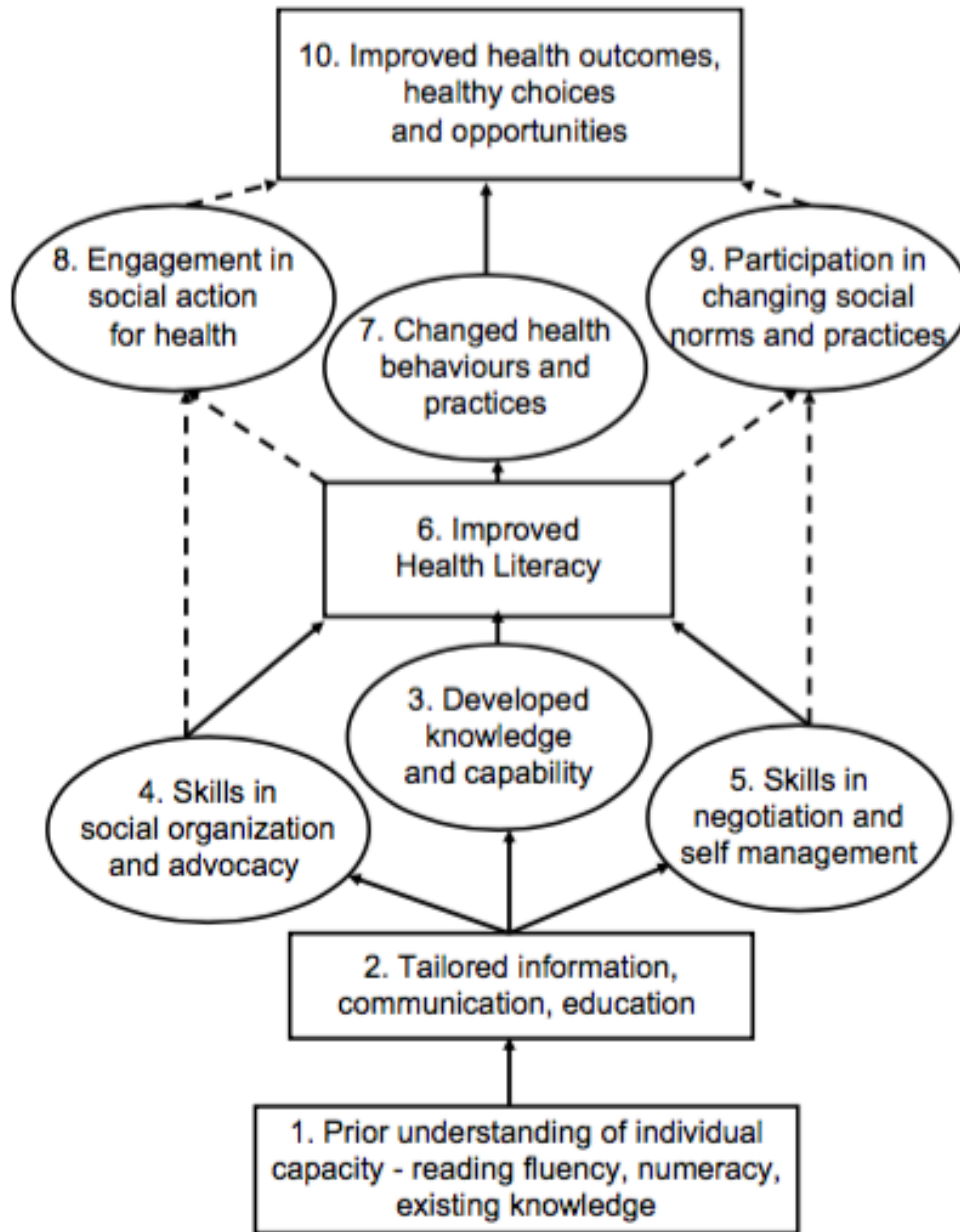


Fig. 2. Conceptual model of health literacy as an asset.

Figure 2.

The second figure from Nutbeam's article shows the model that portrays health literacy as an asset rather than a risk. This figure begins the same as the first, with the assessment of the patient's former knowledge (1) leading to specialized information and communication strategies

from the provider to the patient (2). However, this model now veers off from its predecessor to show that health education is directed towards the development of knowledge and personal capability, both important factors for patient self-efficacy (3). The development of social skills is reflected in the next two steps (4,5). In this figure, health literacy is the outcome of education and the development of personal skills (6). It is not treated as a factor that has the capability to influence the health outcomes, but rather as its own outcome outside of the health outcome. Of course, enhanced health literacy skills change the way that patients interact with their health information, leading to new behaviors (7). This may lead patients to encourage others to take control of their own health, sparking new interest in involvement in social groups that promote healthy decisions (8,9). Finally, the patient is left with improved health outcomes as well as the added benefit of more opportunities for health (10). This is certainly a more positive view of health literacy when compared with the first model.