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Chandler Allen Sparks and Dorothy A Heedt

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ORGANIZATION-LEVEL SOLUTIONS TO ADDRESS LOW LEVELS OF HEALTH LITERACY AND ITS NEGATIVE IMPACTS ON PATIENT OUTCOMES

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ABSTRACT

Low-health literacy is incredibly prevalent in the United States. Furthermore, health literacy is disproportionately distributed, with groups that face the worst health outcomes having the lowest health knowledge. This reflects a great need to improve the rates of health literacy in the United States. However, achieving desirable levels of health understanding amongst a society is more than an individual endeavor and requires the efforts of organizations to promote health education. This article aims to identify both barriers to obtaining health knowledge as well as existing disparities in health literacy. Using this information, possible measures that organizations can take to improve health literacy rates are described. Thus, an initial review on the subject of health literacy is provided and, from this review, potential means that organizations can take to provide better access to health information are devised and suggested.

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Introduction

It is estimated that only 12% of adults in the United States have the health literacy skills required to navigate the U.S. healthcare system (Agency for Healthcare Research and Quality, 2020). Furthermore, contextual factors such as stress and illness may hinder the ability of people with health literacy to employ their knowledge and skills. This is problematic because low levels of health literacy are associated with poor mental and physical health, poor use of healthcare services, increased risk of hospital admission, and even increased risk of mortality (Berkman et al., 2011; Bostock & Steptoe, 2012). This suggests that efforts to address low levels of health literacy can prevent human suffering, death, and the economic burdens of hospital admissions. Fortunately, low health literacy is a modifiable risk factor that partly results from individual capacities, but it is also a result of demands placed on the individual by society and the healthcare system (Baker, 2006).

The Center for Disease Control and Prevention recently re-defined health literacy. Specifically, the organization has proposed two definitions of health literacy, 'personal health literacy' and 'organizational health literacy.' 'Personal health literacy' is defined as "the degree to which individuals have the ability to *find*, *understand*, and *use* information and services to inform health-related decisions and actions for themselves and others." 'Organizational health literacy' is "the degree to which organizations equitably enable individuals to *find*, *understand*, and *use* information and services to inform health-related decisions and actions for themselves and others" (Center for Disease Control and Prevention, 2020). Both definitions emphasize the importance of health literacy for patients to make informed decisions. However, the latter definition emphasizes the role and responsibility of organizations to influence and *equitably* address low health literacy. Herein, a summary of the factors contributing to low health literacy, factors influencing the inequitable distribution of health literacy, and strategies by which organizations can enhance health literacy are provided.

Barriers of Health Literacy

As noted, the definitions offered by the Center for Disease Control and Prevention only differ in terms of subject. Agency is given to the individual in 'personal health literacy' whereas 'organizational health literacy' places the responsibility of promoting health literacy on organizations. Both definitions contain three core components: *finding*, *understanding*, and *using* health-related information and services. Thus, each of these three components reflects an area where health literacy can be either enhanced or weakened. Deficits in any one of these three components leads to low health literacy. Because of the importance of these three pillars to health literacy, this review focuses on each pillar and the factors that can impede it individually, but also recognizes the interdependency of the pillars to one another.

Finding Health-Related Information and Services

The first step to building an understanding of one's health and the healthcare system is receiving information. If information is not made available to an individual, there are no messages to process and *utilize*. For instance, if an individual never receives instruction on administering a medication to themselves or a loved one by a nurse, physician, pharmacist, or other source of health-related information, then the individual will not be able to proceed to the *understanding* and *using* phases of medication administration. There are, however, several factors that limit the amount of information made available to an individual. One of the most significant barriers to *finding* and obtaining information is provider-patient trust (Egbert & Nanna, 2009). Patients often feel uncomfortable asking questions or disclosing certain health information. Many patients see this activity as embarrassing and/or impolite (Egbert & Nanna, 2009). As a result, many patients hide their misunderstandings and confusion, such as the parent of a child feeling too embarrassed to request instruction on medication administration out of fear that the provider may see their actions as impolite or the reflection of a deficiency in intelligence/knowledge. In this example, the parent's fears and lack of trust hinder their ability to *find* information and, therefore, *understand* and *utilize* information, which may result in improper medication administration.

The limited time that patients have with physicians also hinders the amount of information a patient can receive from their provider (Egbert & Nanna, 2009). Often, physicians face great demands and time constraints in their day. As a result, the median time a patient spends with a physician during an office visit is only 15.7 minutes (Tai-Seale et al., 2007). The entirety of the stay, however, is not spent communicating. During the visit, the median time the patient spends talking is 5.3 minutes, and the median time spent talking by the physician is 5.2 minutes (Tai-Seale et al., 2007). In this time, an average of 6.5 topics are discussed, leaving very little time to discuss very important matters such as medications, follow up appointments, post-visit care, concerns, and important considerations for patients and their families to weigh, to name a few (Tai-Seale et al., 2007). Given such limited time, discussing important matters in detail and ensuring that the patient has the time to gather information about their care becomes challenging.

Healthcare professionals, however, are not the only source of information that individuals look to for knowledge about their health. The internet is commonly cited as a significant source of information for people looking to understand health and healthcare (Egbert & Nanna, 2009). This presents numerous issues for accessing knowledge. First, misinformation is rampant on the internet. Many websites offer false medical information in a manner that is appealing and seemingly credible (Grant et al., 2015). This becomes problematic for health literacy because it limits a person's ability to *find* accurate information and make well-informed decisions. Second, the internet is not accessible to everyone. Notably, the elderly, poor, and people whose first language is not English have limited access to the internet (Egbert & Nanna, 2009). Even if an individual has access to a device with the internet, the information may still not be accessible due to computer literacy issues; computer literacy and health literacy are linked.

Understanding Health-Related Information and Services

Even if a person *finds* and *receives* information, they may not fully *understand* it. Without a complete understanding of health-related information, a person's ability to make informed health-related decisions and actions is limited. It is no surprise that many adults have difficulty understanding the information presented to them, given the complexity of medical terminology and jargon. Often, providers offer information in a way that is not understandable to the patient (Koch-Weser et al., 2009). Furthermore, it has been found that providers think they are using common language and only explain the words they use about 21% of the time (Koch-Weser et al., 2009). Often, patients do not respond in ways that express an understanding or misunderstanding of the provider's terminology (Koch-Weser et al., 2009). Furthermore, patients rarely ask for clarification and frequently hide misunderstandings out of embarrassment. Thus, an individual may *find* information from their provider but not *understand* it and, therefore, be unable to *utilize* it. This leads to misunderstandings between a provider and patient, patient anxiety, and bad outcomes.

Though the vocabulary and concepts that compose medical communication are complex enough to confuse the average adult, some people have difficulty understanding even the more straightforward topics. Much of a person's ability to understand and process medical information is related to their basic literacy level; basic literacy and health literacy are also linked (Egbert & Nanna, 2009). Thus, people who lack basic literacy skills are likely to have much more difficulty understanding their care than those who are not entirely health literate but have basic literacy. This is another significant barrier in achieving widespread health literacy because one in five adults in the United States lack basic literacy skills (U.S. Department of Education, 2019).

Using Health-Related Information and Services

Once an individual has acquired and processed information, they should be able to make good decisions and *utilize* the information. Specifically, they should be able to act independently and advocate for themselves as well as others. Three types of health literacy have been proposed that encompass the *utilization* of information to varying degrees (Nutbeam, 2000). 'Functional health literacy' is defined as the ability to apply literacy skills to health-related materials, such as understanding the directions to a medical device. Further encompassing the *utilization* of health information is 'communicative/interactive literacy,' which is defined as the literacy required to participate in one's care, extract information, and apply knowledge to challenging circumstances. The most encompassing definition, 'critical literacy,' emphasizes a person's ability to critically evaluate information and exert control over one's life.

These types of health literacy, especially 'critical literacy', go beyond the transmission of information and involve the analysis and application of that information. Such a skill improves one's capacity for autonomy and empowerment. Unfortunately, developing this skill is not the primary focus of health education (Nutbeam, 2000). Health education has previously only focused on transmitting information about disease and illness (Nutbeam, 2000). This, however, neglects the complex interplay of knowledge, beliefs, and social norms that contribute to the confidence to act on knowledge.

Disparities in Health Literacy

Health literacy is not distributed evenly across groups and communities in the United States. There are several social determinants of health literacy, many of which also affect overall health (e.g., education, income, immigration status, etc.) (Rikard et al., 2016). Therefore, efforts to improve health literacy may also narrow gaps in health outcomes – a need that has long been recognized but where there have only been modest improvements. To better understand disparities in health literacy, a review of the social determinants of health literacy is provided.

Age

Older adults tend to have lower health literacy than younger people (Egbert & Nanna, 2009). This disparity likely exists to factors influencing the *finding* and *understanding* of information. Older adults may have more difficulties receiving information than young people at the *finding* phase due to difficulties accessing information on the internet (Egbert & Nanna, 2009). As noted, the internet is often a source of health-related information. This resource, however, is not as accessible to older adults as it is to younger people. Older adults are significantly less likely to have a computer with access to internet in their household than young people (Berry, 2011). Even if an older adult does have access to the internet, the information is likely to be less accessible to an older person because they tend to have lower technology literacy (Egbert & Nanna, 2009).

Furthermore, as people age, cognitive skills tend to decline. This is problematic for *understanding* information because older people will have trouble reading and comprehending information (Egbert & Nanna, 2009). Thus, older people are likely to have more difficulties *understanding* their care than younger people.

Racial/Ethnic Status

Lower health literacy is more prevalent amongst racial and ethnic minority groups (Rikard et al., 2016). This is thought to be due to many other factors that place minority groups at significant disadvantages, including lower socioeconomic status, lower educational attainment, lower employment rates, and language barriers. Each of these factors can influence the *finding*, *understanding*, and *utilization* of health-related information. These factors appear to affect native-born minorities less than foreign-born minorities. It is thought that native-born minorities have better assimilation of language and culture, which allows for greater health literacy. For instance, an individual that has migrated to the United States may have difficulties *finding*, *understanding*, and *utilizing* information because they lack the education to navigate the healthcare system and do not have the English skills to communicate with their providers. Their native-born children, however, may be more familiar with the healthcare system and have better English skills. Still, the native-born offspring may be afflicted by factors such as low socioeconomic status that place them at a disadvantage compared to non-minority individuals.

However, even when controlling for education, income, gender, and age, minority groups still have lower health literacy scores than non-minority groups (Rikard et al., 2016). Thus, another factor likely influencing the disproportionate low health literacy amongst minority groups is unjust power structures. Systemic factors, including limited educational opportunities, racism, mistrust of the healthcare system, and a lack of culturally tailored health information/services, are thought to be barriers that create health literacy disparities in minority groups (Muvuka et al., 2020).

Educational Attainment, Income Level and Occupational Status

Higher levels of income, education attainment, and occupational status are all positively associated with health literacy levels (Rikard et al., 2016). Moreover, each factor is interconnected – higher levels of education are often associated with greater income levels and occupational status. Education is likely associated with higher levels of health literacy because education equips people with the knowledge to *understand* their care. However, each interconnected factor (education, income, and occupation) influences a person's socioeconomic status. Thus, as one factor increases, the other factors and a person's socioeconomic status are also likely to rise. High socioeconomic status is associated with greater access to resources that increase health literacy (e.g., books, courses, social networks, etc.) (Rikard et al., 2016).

Furthermore, the children of people with higher socioeconomic status have higher health literacy levels because they too are granted greater access to resources the increase health literacy (Alseraty, 2015). People with higher socioeconomic status are more likely to have the means to provide both themselves and their children the resources to educate themselves about health-related topics. The availability of these resources to both an individual with higher socioeconomic status and their offspring is likely contributing to a widening gap in health literacy between lower and higher socioeconomic status groups (Alseraty, 2015).

Social Interaction

Interestingly, numerous social interaction and civic engagement measures, including volunteering, voting, and library use, are associated with greater health literacy (Rikard et al., 2016). It is thought that becoming civically engaged and connecting with others builds informational ties that bring one's attention to health affairs and improve health literacy. It is known that married people have better health literacy than nonmarried people, which is thought to be due to social interaction, as marriage expands one's social network (Rikard et al., 2016). Interestingly, women have greater health literacy than men, which is also believed to be due to social interaction, as women maintain more social connections throughout life (Rikard et al., 2016).

Improving Health Literacy

Measures to improve health literacy have great potential to improve patient outcomes, decrease the economic burdens of healthcare, and narrow disparities in health outcomes. As noted, organizations play a significant role in health literacy improvement. A summary of several organization-level solutions that have the potential to improve health literacy are provided in this article. Healthcare organizations are the main topic of discussion because healthcare environments (hospitals, offices, clinics, etc.) are the major domain where many health information transactions occur. Each proposal that is presented here has been logically devised to draw upon the information provided in the previous reviews.

Measures to Improve the Finding of Health-Related Information and Services

As noted, the significant barriers to accessing health-related information and services are:

- Provider-patient trust
- Limited time spent with patients
- Lack of internet access
- Limited accessibility of information on websites

Given this, creating a comfortable environment for the patient, ensuring the provider has adequate time to answer the patient's questions, providing computers at public facilities, and making websites easy to navigate are some measures that can be taken to improve the acquisition of health-related information and services. Each of these measures has the potential to improve the health literacy of a population.

In particular, providing computers at public facilities and making websites easily navigable can especially improve the health literacy of older adults and low-income populations; both are groups that lack access to computers and/or the technology literacy to extract information from the internet. Improving patient-provider trust is another measure that may have especially impactful outcomes amongst a disproportionately affected group - minority populations; this is due to the limited trust of healthcare that many minority groups hold. There are, however, many proposed ways to achieve greater patient-provider trust. One strong predictor of a patient's trust in their provider, especially amongst minority groups, is perceived cultural similarity to the provider (Earl et al., 2013). This can be achieved through race concordance of provider-patient but can also be achieved in the absence of race concordance through a sharing of values and communication style (Earl et al., 2013). This suggests that efforts to diversify the healthcare workforce and efforts from providers to adapt their interaction style to match the patient's preference may lead to better outcomes.

Measures to Improve the Comprehension of Health-Related Information and Services

Many of the issues people face when comprehending health-related information and services are due to the complex terminology and jargon used within healthcare. If this is the case, then the adoption of simpler, more common vocabulary by healthcare providers and the healthcare industry can improve patients' understandings and outcomes. Physicians should be especially aware of this issue and attempt to communicate in simple terms with all patients, regardless of how well they think the patient understands them. Some easy-to-understand substitutes for standard medical terms are offered in Table 1. Other measures that providers can take to ensure that patients understand their care are speaking slowly, only focusing on two or three key messages instead of bombarding the patient with information, using the teach-back method, and providing patients with a glossary of all essential terms about their condition (Koch-Weser et al., 2009; Weiss 2014).

As noted, people that lack basic literacy skills have an especially challenging time comprehending medical information and services. Thus, the implementation of programs to increase basic literacy rates can decrease the prevalence of low health literacy while simultaneously increasing basic literacy. Like health literacy, certain groups are more likely to lack basic literacy than other groups. People who lack education, older adults, minority groups, people whose first language is not English, and people of low socioeconomic status have lower basic literacy (Doleann et al., 2019; Kyröläinen & Kuperman, 2021; National Center for Education Statistics, 2003). Thus, interventions to increase basic literacy may have an incredibly profound effect on the health literacy of those groups.

Measures to Improve the Utilization of Health-Related Information and Services

As noted, the current goal of health education is to transmit information about disease. However, this neglects the factors required to equip a person to think critically about and act on the information. Thus, the ways that the health industry and providers educate people are missing a critical component. Health education should also raise awareness of social, economic, and environmental determinants of health. Furthermore, it should also be directed at promoting individual and collective action that may lead to the modification of those determinants (Nutbeam, 2000). Thus, all sources of health education (healthcare providers, insurance companies, the media, etc.) should provide individuals more context about health and promote action. At the provider level, extra time spent with the patient and shared decision-making between the patient and provider are two steps that can enable this.

Social interaction, one of the determinants of health literacy, may also promote the *utilization* of health-related information and services. As peoples' social networks expand, they build more informational ties that may give them a greater awareness of health contexts (e.g., social, economic, and environmental determinants of health). Furthermore, a robust social network may also provide a person with the confidence, support, and resources to take action or organize collective efforts with the information they have acquired. Given this, measures to increase social interaction may greatly benefit people's health literacy. Organizations, clubs, support groups, community events, and encouragement/incentive to become involved within the community may be some ways to achieve this.

Table 1. Medical terms in plain language (Weiss, 2014).

Medical Term	Plain-Language Alternative
Acute	New/Recent
Anesthetic	Medication to put you to sleep/numb you
Bacteria/Virus	Germ
Benign	Not cancer
Bronchodilator	Medication to open your lungs
Cardiologist	Heart Doctor
Contraception	Birth Control
Electrocardiogram	Picture of your heart
Fracture	Broken Bone
Hysterectomy	Remove the uterus/womb
Malignant	Cancer
Mammogram	Breast X-ray
MRI	Pictures
Occlusion	Block

Implications, Future Directions, and Conclusions

This article is partly review and partly proposition. In the sections "Barriers of Health Literacy" and "Disparities in Health Literacy," reviews are offered to give a complete understanding of what constructs and what impairs health literacy. In the section "Improving Health Literacy," several proposals are offered to improve health literacy in societies. The logic for each proposal comes from the understandings built in the previous section. For instance, if a contributing factor to low health literacy is lack of access to information on the internet, then it is logical that greater access to public computer facilities might be a potential means of improving health literacy. Furthermore, each proposal is something that must occur at the organization level as opposed to the individual level and, thus, recognizes the new definition of health literacy offered by the Center for Disease Control and Prevention.

To summarize the review portion of this article, health literacy can be built or depressed at three key stages:

- *Finding* health-related information/services
- *Understanding* health-related information/services
- *Utilizing* health-related information/services

At each stage, there are barriers that can affect all adults and numerous barriers that disproportionately influence certain groups (older adults, racial/ethnic minorities, and people of low socioeconomic status). As it becomes increasingly recognized that organizations play a significant role in promoting health literacy, instead of the entire responsibility being placed on the individual, organization-level solutions to address low health literacy should be discussed.

Some organization level solutions identified in this article to improve the *finding* of health-related information/services are:

- Diversifying the healthcare workforce
- Ensuring that providers adapt their interaction and communication style to fit the patient's preferences
- Allowing providers more time with patients
- Increasing the availability of public computers
- Making health-related websites more navigable

To allow for greater *understanding* of health-related information/services, healthcare providers should adapt simper language and communities should implement programs to increase basic literacy. Lastly, to promote the *utilization* of information, all sources of health education (providers, insurance companies, the media, etc.) should emphasize the determinants of health and encourage individual and collective action. Furthermore, efforts to increase community engagement may empower individuals to *utilize* health-related information and services.

Of note, each of these measures that might be taken by an organization are proposals. Future investigation could be taken to reveal if the measures proposed do, in fact, improve health literacy. For instance, a researcher might ask if two similar communities where one has readily available public computer access and another that does not differ in their health literacy rates. Another example research inquiry might be whether or not the vocabulary used by a physician is a good predictor of patient outcomes. Furthermore, it should be noted that only a handful of proposals are made here. In the review sections of this article, numerous factors contributing to health literacy are discussed, from which measures to improve health literacy beyond those discussed in the present article might be found.

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