The COVID-19 Infodemic: A Reminder of the Importance of Health Literacy

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Abstract

In an era of widespread internet and social media usage, the COVID-19 pandemic has taken these outlets by storm. While there are obvious positive aspects of the wide availability of medical and public health information, it can be argued that an overabundance is burdensome. Although it may be attributable to the lack of knowledge surrounding a new pandemic, contradictory information being put forth by federal health agencies has also been worrisome and contributed to confusion. Delineating between fact and fiction during the pandemic has been a momentous task, even for those who are well-educated. It is of utmost importance for individuals to be able to understand, navigate, and make appropriate decisions as it relates to their health. Therefore, we must focus on improving health literacy on both an individual and societal level in order to provide an informed, unified front against the pandemic.

The COVID-19 pandemic has momentously changed our way of life, and as a result, the practice of medicine. It has served as a stark reminder of the importance of specific fields in both medicine and public health, such as mental health, preventive medicine, vaccinology, and digital technologies including telemedicine and machine learning. In many ways, this health crisis has manifested as an unwelcome learning experience for society as a whole, shedding light on various widespread and serious problems, none more apparent than low health literacy.

What is Health Literacy?

Health literacy (HL), as defined by The Affordable Care Act (2010), is *"the degree to which an individual has the capacity to obtain, communicate, process, and understand health information and services to make appropriate health decisions"* (PPACA, 2010). Dunn et al. expand on this definition, describing a progression model of the individual components that make up HL. They include: the acquisition of knowledge and understanding of disease (knowledge), the ability to process numerical information regarding health (numeracy), understanding what to do with health information (navigation), effective communication skills (communication), and the ability to make decisions with regards to health (decision making) (Dunn & Conard, 2018). Given these various components, it is understandable that HL is challenging to measure. Despite this difficulty, there are a vast array of

validated tools that measure HL, with The Test of Functional Health Literacy (TOHFLA) and The Rapid Estimate of Adult Literacy in Medicine (REALM) being the most popular.

Beyond general literacy skills of reading and writing, factors such as education level, age, language, immigration status, income level, disability, sex, race and ethnicity have all been correlated to HL. These relationships were highlighted by results from the National Assessment of Adult Literacy, which assessed the HL of 19,000 adults. For example, results demonstrated that people who live below the poverty line, have less than a high school degree or graduate equivalency degree, are over the age of 65, or speak languages other than English before high school struggled most with understanding health information. Similarly, Black and Hispanic adults had lower health literacy scores on average when compared to White and Asian/Pacific Islander adults (Kutner, Greenburg, et al., 2006). With so many determinants, further research is needed to better understand the causal relationship between HL and its constituents.

Why is Health Literacy Important?

Low HL has been a well-documented issue in the U.S., even before the pandemic. In 2008, the U.S. Department of Health and Human Services reported that approximately 36% of adults have basic or below basic health literacy (HHS, 2008). Limited HL has been linked to worse health outcomes (DeWalt et al., 2004) and higher rates of hospitalization and death (Wu et al., 2013).

There is even evidence to suggest that low HL in parents has an effect on children's health outcomes (e.g. persistent asthma) (DeWalt et al., 2007). Additionally, low HL has been associated with decreased medication adherence (Pignone & DeWalt, 2006), immunization, and screening rates (White et al., 2008). Thus, an emphasis on improving HL is of utmost importance moving forward.

The Challenge COVID-19 Presents

The distribution of mixed information as well as misinformation during this pandemic has highlighted the importance of improving HL in society. With any public health crisis, a certain degree of rumors and contradicting information will exist, but social media has accelerated the spread of such information. This dilemma has been acknowledged by the WHO Director-General, stating at the Munich Security conference on Feb 15th 2020, "We're not just fighting an epidemic; we're fighting an infodemic" (Zarocostas, 2020). Additionally, the high degree of knowledge uncertainty surrounding the virus has created a landscape in which acquiring the understanding and skill necessary to manage one's health, as put forth in Dunn's progression model, has been extremely difficult. Contentious topics such as social isolation versus herd immunity, the efficacy of masks, and the necessity of lockdowns have sparked passionate debates. Once an effective COVID-19 vaccine became available, the topic of vaccine safety attracted a similar disarray of ideas. The politicization

of many of these opposing ideas has added complexity to these issues. Furthermore, conspiracy theories that have emerged surrounding the origin of the virus (e.g. 5G mobile networks causing the pandemic) have added even more confusion to an already difficult-to-navigate environment.

With increased misinformation surrounding COVID-19, one could argue that the link between HL and health outcomes is even more critical during the pandemic. With increased proportions of low HL among minority groups, HL is likely a contributing factor to the racial and ethnic disparities seen in COVID-19 case reporting (Stokes et al., 2020). A similar argument can be made for the elderly, another identified population with lower HL rates in the 'National Assessment of Adult Literacy,' who are affected disproportionately by COVID-19 (Zheng et al., 2020). Although associations exist between populations with low HL and worse COVID-19 outcomes, this does not tell the whole story. The infectious nature of this health crisis has exposed the unique situation in which one's HL level and corresponding actions can have a direct effect on the health outcomes of others. Increased understanding of the importance of hand washing, wearing masks in public, self-isolating when sick, avoiding large gatherings, and acting in a generally responsible manner can have downstream effects on infection rate and ultimately COVID-19 health outcomes. With this in mind, improving HL on a population level is critical moving forward.

Improving Health Literacy

In order to improve HL it is important to understand both the individual and public health aspects of the issue. This shift to a more systemic focus has been captured by Sørensen et al.'s proposed definition of HL, that integrates a public health perspective of the topic. They state that, "Health literacy is linked to literacy and entails people's knowledge, motivation and competences to access, understand, appraise, and apply health information in order to make judgments and take decisions in everyday life concerning healthcare, disease prevention and health promotion to maintain or improve quality of life during the life course" (Sørensen et al., 2012).

With this in mind, a multilevel healthcare response is required to see significant progress in HL improvements. At the highest level, state and federal entities must be cognizant of HL when distributing healthcare information. Readability is a critical component of such information. National literacy surveys suggest that nearly half of the US population is either "functionally illiterate" or "marginally literate" (Kutner, Greenberg, et al., 2006). For these reasons, the Centers for Disease Control and Prevention (CDC) and other healthcare agencies have recommended that patient education materials not exceed an eighth-grade reading level (CDC, 1999). Despite this, a study done by Dartmouth College researchers that evaluated 137 federal and state websites (including CDC pages) with COVID-19 information, found that they uniformly exceeded the recommended

reading level (Mishra & Dexter, 2020). Beyond taking accountability for the accessibility of their reading material, health authorities should also routinely conduct health literacy surveys to regularly assess the HL needs of society and evaluate the effect of HL interventions. This could help build HL in preparation for another unanticipated health crisis.

A similar emphasis on HL is needed at the provider-patient level. Health care providers should be aware of their patients' HL levels and work to improve them whenever possible. As discussed, a HL survey approach could also be utilized on a smaller scale (hospital or clinic) to better understand the needs of a certain patient population and implement the findings accordingly. Other proposed methods for practitioners include using videos or pictures to aid in conveying information to patients. Research also suggests that utilizing the 'teach back method' (patients explain health information in their own words) may be beneficial in reinforcing patient education and ultimately improving HL (Yen & Leasure, 2019). Furthermore, simply being conscious of conveying information in a straightforward and clear manner while avoiding medical jargon could also contribute to improved HL among patients.

With technological advances in medicine rapidly evolving over the past few years, more innovative approaches to combat low levels of HL have become available. Pew Research Polls show that about 81% of Americans own a smartphone (Pew Research Center, 2018). Thus, smartphone apps could be a great avenue to target HL in an easily accessible manner. A notable example of this is the 'icalcrisk' app that can be used to determine a patient's risk of heart disease, and display to the patient (in an illustrative manner) how smoking cessation, blood pressure control, and cholesterol management can decrease their risk. By the same token, smartwatches are being used to record and display health information. They have taken concepts that were once abstract to the average person, such as caloric intake and heart rhythm, and displayed them in a concrete and easily digestible manner. Such technologies provide the public with instant access to their health information in a familiar setting, on devices they use every day. Further utilization of such technologies would unquestionably contribute to increased HL in society.

Conclusion

The pandemic has forced advancements in several fields. Testing, contact tracing and vaccine development capabilities have all seen rapid growth. Telemedicine usage and virtual visits have also increased since the beginning of the pandemic. Widespread misinformation surrounding COVID-19 justifies a similar emphasis on improving HL. A society with increased HL will not only show improved health outcomes long-term but will undoubtedly cope better in the face of a similar health crisis.

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