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# Health Literacy and Health Outcomes: An Evidence-Based Analysis

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## ABSTRACT

Health literacy has emerged as a critical determinant of individual and population health, influencing health outcomes through the interconnected pathways of knowledge, skills, and health-related behaviors. This evidence-based analysis synthesizes contemporary literature to examine how health literacy affects personal health, population-level indicators, and access to health services, preventive behaviors, and chronic disease outcomes. Conceptual frameworks highlight health literacy as a multidimensional construct encompassing functional, interactive, critical, media, and digital competencies that shape the ability to acquire, understand, appraise, and apply health information across diverse contexts. Despite the proliferation of measurement tools, persistent methodological inconsistencies and the absence of universally validated instruments complicate comparisons across studies and obscure causal pathways. Evidence suggests that low health literacy is associated with increased hospitalization, poorer management of chronic conditions, reduced use of preventive services, and elevated health disparities. At the population level, communities with higher health literacy show superior self-rated health, reduced chronic disease burden, stronger social cohesion, and greater engagement in health-promoting behaviors. Interventions ranging from school-based programs and media campaigns to community partnerships and system-level reforms demonstrate measurable improvements in health knowledge, behaviors, and equity outcomes, though their long-term sustainability remains underexplored. Methodological gaps, including limited longitudinal research and inconsistent consideration of contextual factors such as socioeconomic status and social networks, continue to challenge the evidence base. Overall, this review underscores the need for standardized measurement, equity-centered interventions, and integrated policy approaches to strengthen health literacy as a fundamental component of public health practice.

**Keywords**: Health Literacy, Social Determinants of Health, Health Outcomes, Health Behaviors, and Public Health Interventions.

## INTRODUCTION

Health literacy is perceived as a fundamental determinant of health outcomes and a key condition for the implementation of the social determinants of health approach. Health literacy influences health outcomes via knowledge, skills, and behaviour. It underpins the individual's health knowledge and health-related skills, thus enabling informed decisions about health matters and underpinning healthy behaviours [1]. Low health literacy hampers the acquisition of health knowledge and the development of health-related skills, thus diminishing the ability to act upon health knowledge and undermining individual health. Consequently, health outcomes tend to be poorer among individuals with low health literacy compared with their counterparts with adequate health literacy.

Poor health literacy generates inequalities in health based on access to education, personal attributes, and phrases that characterize the social stratification of society, and the need and motivation to obtain health information. Individual health knowledge and access to information are essential components of health literacy [2]. The health-related skills a person possesses determine their ability to understand health knowledge acquired through formal and informal education channels. Subsequently, the ability to act incorporates both knowledge and skills. Health literacy may thus be considered as comprising three constituent sub-components: knowledge, skills, and

behaviour [2]. Low health literacy leads to poorer health knowledge, less chronic disease, worse disease markers, and a diminished propensity to use preventive services with the associated health benefits.

## Conceptualizing Health Literacy

Health literacy shapes health outcomes through knowledge, skills, and behaviors. A broad interpretation encompasses the ability to access, understand, appraise, and apply health information, as well as navigate healthcare and social service systems 3. Expanding on this foundation, health literacy embodies the capacity to acquire and apply health knowledge, the ability to understand, interpret, and adapt health information and services to improve health decisions and actions, and the competence to acquire, extract, and adapt health-related knowledge to different situations [4]. These definitions underscore that health literacy concerns not only reading or understanding information but also acting on that information to effectuate behavioral change and achieve better health outcomes [5]. Health literacy comprises several domains: functional, interactive, critical, media, and digital, which involve different degrees of complexity [12]. Functional health literacy incorporates basic reading, writing, and comprehension; individuals with functional literacy can locate and comprehend simple health information and comply with straightforward health directions. Interactive health literacy entails a higher degree of complexity; individuals with interactive literacy can extract, interpret, and apply information from various sources, but skills are context-specific. Individuals with critical health literacy analyze and critically assess health information, considering the source and underlying motivations [14].

## Measurement of Health Literacy

The measurement of health literacy, acquiring knowledge, skills, and behaviours necessary to achieve health, is a complex task. Numerous measures have been developed to address its diverse dimensions, but few meet the rigorous standards necessary for population-based surveys [7]. Large-scale surveys that include health literacy and either health behaviours or health outcomes can contribute to the growing body of evidence, but include instruments that are neither population-relevant nor extensively validated. Although evidence has increased significantly in recent years, the studies to date have relied on heterogeneous health literacy measures; methodological limitations and unidirectional relationships have frequently exacerbated the contradictory evidence between health literacy and various health outcomes [13]. Attempts to control for mobilisation of local social networks have pointed out the effect of underdeveloped health literacy on health, but the literature linking it to both generalised perceived trust and sense of belonging remains scarce [14]. Health literacy is complex. It is shaped over a life-course, necessarily combining individual capabilities and the pathways that mediate their effects are as numerous as they are subtle. In substantial part, it remains unmeasured. Its relationship with health-related behaviours, a major pathway through which it affects health, is frequently unexplored or ambiguous. Its associations with objective risk factors are often reported for one or the other sex only. Perceived health is included in broad, longitudinal studies focused either on social determinants of health or on disability in ageing, but health literacy remains largely absent [9]. Health literacy is a multidimensional health-related capability reflecting the interplay of education, cognition, and socio-economic status, and mobilisation of social networks must be a prerequisite to its effect on health [8].

## Health Literacy and Individual Health Outcomes

Health literacy connotes the knowledge, motivation, and skills to access, understand, appraise, and apply health information in the context of health-related decision-making in a range of settings [9]. It covers a broad spectrum of activities, including patient safety, drug management, disease prevention, and consumer product safety 6. Health literacy fosters informed health-related decision-making and encompasses reading and understanding prescription labels, consent forms, pamphlets, and other health materials. Higher levels of health literacy are associated with more favourable health-related knowledge, attitudes, and behaviours [7]. Studies indicated that nearly half of the adult population in the United States has inadequate or marginal prose literacy skills, restricting their ability to derive health-related information from text. Additionally, a large analysis of assessments of health literacy conducted in New York City, Massachusetts, and Ontario, Canada showed that the population-level rates of inadequate health literacy in these regions are estimated to be 33–47%. This profound level of health literacy further aggravates inequities in health among individuals, making health literacy a relevant and important issue for public health [9].

## Health Literacy and Population Health Indicators

Health literacy influences population health at the aggregate level, even after accounting for the individual-level effects of health literacy on health characteristics [8]. The relationship between health literacy and population health indicators is consistently negative (M. Hosking et al., 2018). Communities exhibiting higher health literacy levels tend to report superior aggregate health outcomes, demonstrated by self-rated health status, overall life satisfaction, reduced chronic disease prevalence, heightened individual responsibility for personal health, and the importance attributed to individual health by residents [6]. Thus, disparities in health literacy between population groups carry significant public health implications, as they potentially contribute to widening existing health

inequities. Data from Ireland illustrates that individuals' self-assessed health status remains strongly correlated with subpopulation health literacy levels, despite individuals' own literacy proficiency. A similar situation is observed with both population self-rated health and the advancement of common chronic conditions within the United Kingdom [8]. Review studies and aggregate-level assessments advocate for the prioritization of health literacy enhancement at both the individual and macro levels, and the establishment of concomitant national health literacy indicators pivotal across various aggregate examinations [9].

**Determinants and Moderators of the Relationship**

Health literacy shapes health outcomes through knowledge, skills, and behaviors. It determines how individuals seek, understand, and use health information and services [4]. Studies show the health literacy–health outcome relationship is strong at the individual level; yet, little systematic analysis of population data exists [7]. The correlation at this level is weaker and may even take a negative sign. Supplementing health literacy with social ties boosts perceived health outcomes, while efforts to promote health literacy among already literate individuals can be futile [8]. Health outcomes also depend on the filtering and shaping of health information by actors within networks of social ties [3].

**Pathways and Mechanisms**

The review Rouget and Lamy provided on the measurement instruments and tools for health literacy among different populations led to standardising those concepts on a broader scope [6]. Hence, health literacy is the result of the interplay of various competences enabling one to obtain, understand, and process health-related information. To engage in self-care practices or evaluate information, individuals have to resort to communicative literacy (eg, writing, reading, speaking, and listening) and analytical literacy (eg, analysing, reasoning, and summarising), all of which imply knowledge of the data, its context, and the capacity to handle it appropriately [7]. Many studies investigate the relationships between health literacy and different outcomes, but they rarely give sufficient consideration to the paths and mechanisms responsible for these relationships [3].

**Interventions to Improve Health Literacy**

During the past two decades, substantial evidence has accumulated that health literacy is an important public health issue [8]. It has been shown to influence diverse health-related outcomes and may contribute to health disparities. As a result, there is a moratorium on recommendations to implement intervention programs tailored to the normalisation of health literacy, either on a small or large scale. Such limited consideration appears mainly unreasonable, considering the rapid modification of lifestyles, particularly in urban areas, and the equally prompt proliferation of health-related information in the environment [7]. Society must ensure the capacity to comprehend and use such information. Various interventions have been implemented to improve the acquisition and development of health literacy skills, thereby enhancing health literacy. An extensive range of health literacy programs has been executed in low- and middle-income countries [9]. Some of them have been well documented in scholarly literature; only those items featuring skill enhancement are briefly reviewed. Moreover, health literacy intervention programs are categorised into seven types: print resources, audiovisual materials, media campaigns, and community presentations, partnerships with external agencies, health education in schools, and health education in other educational institutions [5]. Scientific studies confirm that health literacy improvement activities, thus framed, have a notable impact on the association with issues of public concern. Efforts from a wider range of organisations to implement neighbouring programs would further promote related health literacy activities [9].

**Policy and System-Level Considerations**

Health literacy strongly influences health outcomes through knowledge, skills, and behaviors. Poor health literacy is associated with unfavorable health outcomes; thus, improving health literacy is necessary to reduce health disparities [13]. Health literacy interventions can enhance health knowledge and promote healthy behaviors such as vaccination uptake, healthy feeding practices, screening for family planning, and parental awareness for acute care or injury prevention [9]. Health literacy impacts child health outcomes and emergency department outcomes and is a fundamental social determinant of health that promotes health equity. Influence strategies are context-dependent and should consider factors such as urban and rural settings, socioeconomic status, level of education, and local languages [8].

**Methodological Challenges and Gaps**

Despite a plethora of studies indicating relationships between health literacy and various health-related phenomena, challenges and gaps in the evidence base remain. Methodological constraints hinder progress, and some significant dimensions remain unexplored [5]. Such challenges vary depending on the level of analysis: individual, population, context-specific, and others. Multiple approaches exist for measuring health literacy across different contexts. However, there is no single universally accepted instrument to assess health literacy by population and context [10]. Research demonstrates that the way health literacy is measured affects observed

relationships between health literacy and specific outcome variables [11]. Standardized measurement tools and consistent implementation of interventions facilitate comparability among studies; the absence of such tools poses major restrictions on national and international knowledge transfer. Longitudinal studies are needed to evaluate the sustained impact of health literacy and the durability and efficacy of interventions [12]. The lack of robust longitudinal evidence limits understanding of the sustained effects of health literacy on health and well-being over time and of the long-term impact of policies and programs to strengthen health literacy [12]. Rich diversity among target populations complicates comprehension and estimation of the magnitude of the impact of situational health literacy and the generalization of findings across contexts in health-related research. The significance of health interacts with behaviors and regulations, yet these specific influences remain underexplored within the body of health literacy literature [12].

### Implications for Practice and Education

Health literacy shapes health outcomes through knowledge, skills, and behaviors. A systematic review found that low health literacy correlates with higher hospitalisation and re-admission rates, emergency department visits, and difficulties understanding discharge instructions [12]. In an adult population with chronic health problems, inadequate health literacy predicted self-reported health status independently of patient characteristics, demographics, and primary language in a survey of 1,721 participants [12]. Similar patterns were evident in a separate survey assessing neighbourhood health status and chronic disease management in 805 adults [13-16]. Concentrating eye care resources on people with very low health literacy could also improve overall outcomes. Research suggests that health literacy level influences smoking cessation outcomes among individuals seeking treatment for nicotine addiction [17-19].

## CONCLUSIONS

This evidence-based analysis reaffirms that health literacy is a foundational determinant of health outcomes, affecting individuals' abilities to access, understand, evaluate, and apply health information in ways that directly shape their behaviors and decisions. The literature consistently demonstrates that inadequate health literacy is associated with poorer chronic disease indicators, reduced adherence to treatment, higher hospitalization and emergency care utilization, and lower engagement in preventive behaviors. At the population level, disparities in health literacy contribute to widening inequities, influencing community health profiles, perceived well-being, chronic disease prevalence, and overall health system performance. Communities with higher aggregate health literacy exhibit superior health outcomes, stronger social connectedness, and a greater capacity to respond to public health challenges. Despite substantial progress, significant methodological and conceptual gaps remain. The absence of universal measurement standards, reliance on heterogeneous assessment tools, and limited longitudinal research hinder a complete understanding of the pathways linking health literacy to health outcomes. Moreover, the influence of contextual factors, including social networks, education, socioeconomic conditions, and digital access, remains insufficiently integrated into existing models. These gaps restrict the generalizability of findings and impede the development of tailored interventions responsive to diverse population needs. Interventions to enhance health literacy have shown promise across multiple settings, including schools, communities, clinical environments, and digital platforms, but their long-term sustainability, scalability, and impact on health equity require further evaluation. Policy and system-level approaches must prioritize the development of health-literate environments, invest in culturally and linguistically appropriate communication, and strengthen national frameworks for health literacy monitoring. Improving health literacy is not solely a matter of individual capacity-building; it is a public health imperative requiring coordinated action across education, healthcare, and social systems. Ultimately, addressing health literacy across the life course is essential for reducing health disparities, promoting equitable access to care, and enabling individuals and communities to achieve optimal health outcomes. Strengthening health literacy provides a powerful pathway to enhance population health, advance social justice, and build resilient health systems capable of meeting the evolving needs of diverse societies.

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