

## Health Literacy Education in Sub-Saharan African: A Scoping Review

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**Abstract:** Health literacy is the ability of individuals to understand health information and to make informed health decisions. We completed a scoping review to consider the question “To what extent does teacher education in sub-Saharan Africa currently include a focus on health literacy?” In this first of two papers, we provide an overview of the methodology we followed and examine the first overarching area: health literacy. Within the area of health literacy, we present multiple themes from the literature including rural communities’ ability to access health information, health literacy education for healthcare workers, and gender in health literacy. A subsequent paper examines the second overarching area of teacher education. In the second paper, which also appears in this journal, we present the following themes: teacher training in health-related aspects, current teacher education efforts on health literacy, and the use of OER to scale teacher education efforts. Conclusions are provided in the second paper.

**Keywords:** health literacy education, sub-Saharan Africa, gender

### 1. INTRODUCTION

According to the *Global Burden of Disease 2010* report [1], communicable, maternal, nutrition and newborn diseases continue to dominate in sub-Saharan Africa. This is not unique to sub-Saharan Africa; the situation is Africa-wide. To illustrate, in 2015, about 1.6 million Africans died of three main communicable diseases: malaria, tuberculosis, and HIV-related illnesses [2]. Children are often the most vulnerable to disease. According to the World Health Organization, 50% of children under five who die of pneumonia, diarrhea, measles, HIV, tuberculosis, and malaria are in Africa [3]. In addition, 9 out of 10 of the world’s 2.8 million children and adolescents aged 0–19 years living with HIV in 2018 were in sub-Saharan Africa [4]. Without commitments to creating change on the part of governments and partners around the globe, these children will not be able to experience long, productive lives [5].

The situation is exacerbated by the emerging challenge of non-communicable diseases in the region due to transition in demographics. People are living longer, but they are not necessarily living healthier. Between 1990 and 2017, all-age total Disability-Adjusted Life Years (DALYs; one DALY represents the loss of the equivalent of one year of full health) due to non-communicable disease increased by 67% from 90.6 million in 1990 to 151.3 million in 2017 [6]. Diabetes and cancers are on the rise in the region [6].

These statistics underscore the urgent need for solutions as well as effective systems of prevention. The Millennium Development Goal 6, to “combat HIV/AIDS, malaria, and other diseases”, and the Sustainable Development Goal 3, to “ensure healthy lives and promote well-being for all at all ages”, expressly address health issues [7]. Unfortunately, despite the efforts of the United Nations and other organizations to develop strategies and set targets for eliminating diseases, and to address emerging ones, a lot remains to be done.

COVID-19 provides a fitting example of the world’s preparedness to handle a major public health event; the pandemic also provides an opportunity to address some of the weaknesses of the health care system. In early 2020, it was not conceivable that one event could affect every aspect of human life in

ways that COVID-19 has done. COVID-19 has not spared any nation or region; the developed and the developing world have been hit. All aspects of a country's health and education system have been impacted. An important issue is the populations' reaction to the disease and the various guidelines that have been provided to mitigate its spread. A large proportion of the population globally is sceptical about COVID-19, with extensive reports of vaccine hesitancy in many parts of the world [8]. The scepticism and the hesitancy are a result, in part, of the lack of health literacy education in many parts of the world.

Although many factors can explain people's choice on what health information to believe and what to do with it, one factor is that people do not have the efficacy in health literacy to critically assess pieces of information and to determine what to believe and what not to believe [9]. Formal education provides the foundation to build efficacy in the health context. The 2004 Institute of Medicine (now the National Academies of Sciences, Engineering, and Medicine [NASEM]) report, *Health Literacy: A Prescription to End Confusion* noted that formal education is a major pathway to improve health literacy. The report suggested integrating health knowledge and skills into existing curricula of primary and secondary schools [10]. However, the consensus is that in general, most learners are not gaining the requisite knowledge and skills, and the efficacy, to handle life after school [11].

Health literacy is the skills set that enables individuals to appreciate the severity of a health situation or a health issue, find ways of protecting themselves and others, and understand the scope of their choices [12]. It is the degree "to which an individual has the capacity to obtain, communicate, process, and understand health information and services to make appropriate [and informed] health decisions" [13]. The World Health Organization defines health literacy as the individual's ability to "gain access to, understand and use information in ways which promote and maintain good health" [3]. Health literacy goes beyond individuals' skills and ability; it includes the ability to use the skills on behalf of their families, their communities, and the regions where they belong [3].

As populations develop higher levels of health literacy, many social benefits emerge, including communities that are empowered and equipped to "address the social, economic and environmental determinants of health" [3]. These determinants of health include the factors that are critical to addressing causes and effects of disease namely, poverty, education, and violence [14]. Importantly, equipping school-going children and youth with health literacy skills has the potential of creating a critical mass of in the population that is able to identify and address individual and community health needs, including accessing, critically analyzing and using credible and quality health information to make individual and collective health decisions.

In this scoping review, we examine literature around the two overarching issues of health literacy and teacher education in sub-Saharan Africa (SSA) in relationship to the key research question: *To what extent does teacher education in sub-Saharan Africa currently include a focus on health literacy?* This scoping review helped us to identify the opportunities and challenges for improving health literacy in SSA, as well as the benefits of achieving this goal. In the course of our review of the literature, we identified and explored two overarching issues related to the research question: health literacy and teacher education. In this paper, we examine the first area of health literacy. In the subsequent paper, we examine the second area of teacher education. Conclusions are provided in the subsequent paper in which we address the potential of Open Education Resources (OERs) to help train teachers in knowledge and skills around health literacy, the impact of COVID-19 on home-school connections, and the need for OERs to address health literacy.

## 2. METHODOLOGY

We conducted a scoping review in order to map out the key themes, evidence and gaps in the research around health literacy and teacher education in sub-Saharan Africa. A scoping review is a form of knowledge synthesis that generates and analyzes data; it starts with an exploratory question and outlines the resulting themes "by systematically searching, selecting and synthesizing existing knowledge" [15]. As such, they "are an ideal tool to determine the scope or coverage of a body of literature on a given topic" and also enable researchers to provide an overview of the topic which can be as general or detailed as needed [16]. As we started with a broad concept and could not predict the exact outcomes of the literature searches, this format was well suited to our needs.

In the initial stage of this project, the research team identified a set of core concepts and keywords to guide their database searches. The team consulted with expert researchers in the area of international education and health and determined that two parallel literature searches should take place: one focused on health literacy and one on teacher education, but both centered in the context of sub-Saharan Africa. Based on these discussions, the team identified a set of keywords for their literature search, including “health literacy” and “critical health literacy” as well as “teacher education” and “teacher training”. Additionally, the team developed a set of search parameters that narrowed the scope of the research to materials published from 2017 onwards, written in English. With these boundaries in place, the team then conducted thorough searches of all the large databases of academic research articles, such as Pro Quest, Ebsco, SCOPUS and Pub Med in order to survey the relevant literature. Similarly, websites of large multinational organizations, such as UNICEF, UNESCO, the World Bank, and the Brookings Institute, were also mined for additional sources of relevant, if non-academic, information related to the areas of health literacy and teacher education in sub-Saharan Africa.

Once the researchers had identified and collected all relevant materials on the topics of health literacy and teacher education in sub-Saharan Africa, the next step was to review the content in order to determine the key themes in the literature. An initial review of the collected literature was conducted in order to assemble an initial list of themes emerging from the literature. The team then consulted with the expert researchers again to consolidate a list of themes and keywords that had emerged from the database searches. In some cases, the emerging themes and keywords were as expected, such as the theme of training for educators in the area of HIV and AIDS; in others, new themes, such as rural misconceptions of health, came to the forefront as they were discovered to feature significantly in the literature. They then reviewed the articles again and sorted them into categories based on these approved themes and keywords. These concepts became the major themes discussed in the scoping review.

### **3. OVER-ARCHING AREA 1: HEALTH LITERACY IN SUB-SAHARAN AFRICA**

Within the concept area of health literacy, the focus of this first paper, we discuss the themes of what is health literacy, health literacy within sub-Saharan African countries, rural communities’ ability to access health information, health literacy education for healthcare workers, the benefits of health education for students, and gender equality and health literacy.

#### **3.1. Major Theme 1: What is Health Literacy?**

Being health literate implies that individuals have the skills, knowledge, and motivation to find, understand, assess, and use health information [17]. The Center for Disease Control and Prevention notes that for individuals to be health literate, they must be able to understand and act on health the information [12]. Further, Berkman and colleagues indicate that health literacy is “the degree to which individuals can obtain, process, understand, and communicate health-related information needed to make informed health decisions” [18]. Health literacy encompasses other domains including health numeracy, environmental health literacy, and health education that are addressed in this scoping review.

#### **3.2. Health Numeracy**

In general, numeracy entails the ability to use quantities, to measure, and to calculate; numeracy implies the sum of knowledge, beliefs, inclinations and the life-skills that are used to address real life issues that have mathematical components [19]. Numeracy has a functional role in the application of numeric or mathematical concepts and processes to life situations [20]. Numeracy or facility with numbers is important because health information often includes approximations, percentages, probabilities, proportions and risk assessment [21]. The skill-set necessary for individuals to adequately apply numbers in health settings is termed health numeracy [22; 23]. Health numeracy is defined as “the degree to which individuals have the capacity to access, process, interpret, communicate and act on numerical, quantitative, graphical, biostatistical, and probabilistic health information needed to make effective health decisions” [24]. Mbuagbaw and Ndongmanji note that education is necessary for obtaining essential health numeracy skills, such as the ability to understand the instructions that come with a prescription [25].

### 3.3. Environmental Health Literacy (EHL)

EHL is an aspect of health literacy that focuses on the ability to search for, understand, evaluate, and use environmental health information to promote more informed choices and reduce health risks [26; 27]. EHL encompasses the connection between environmental exposures and human health [28; 26]; it includes environmental and health literacy theories to develop skills and knowledge required to reduce harm in individuals' interaction with the environment [29].

EHL is intricately connected to each individual community and the particular environmental challenges and risks they face. If EHL is grounded in a community's unique circumstances and context, then in order to promote and increase EHL amongst the community members, one must identify those within the community who are best placed to have an impact on the education and understandings of their neighbors. Marsili et al. conducted a study on how best to disseminate environmental health information in Italy, and noted the importance of engaging teachers and students, amongst others, in order to ensure that communities are able to turn information into real understanding and transformative action [27]. This recommendation underscores the role and responsibility that educators have in shaping not only their students' futures but also their present experience, of which, their health and how they live within their environment, is an essential part.

### 3.4. Health Education

The World Health Organization defined health education as "comprising consciously constructed opportunities for learning involving some form of communication designed to improve health literacy, including improving knowledge, and developing life skills which are conducive to individual and community health" [30]. The Joint Committee on Health Education and Promotion Terminology (2001) defined Health Education as "any combination of planned learning experiences based on sound theories that provide individuals, groups, and communities the opportunity to acquire information and the skills needed to make quality health decisions" [31]. Both definitions of health education include components of health literacy. The definitions suggest that health education equips individuals with health knowledge and skills required to make quality health decisions. Health education also includes the component of agency, that is, the inner motivation to engage in positive health behaviors [32].

### 3.5. Major Theme 2: Health Literacy in Sub-Saharan Africa Countries

Ongoing research led by McClintock et al. (2017) has generated several large scale studies with the purpose of establishing a measure of health literacy in 14 SSA countries, namely Cameroon, Democratic Republic of the Congo, Ethiopia, Ghana, Guinea, Côte d'Ivoire, Lesotho, Rwanda, Niger, Namibia, Sierra Leone, Swaziland, Togo, and Zambia. According to their 2017 study, 35.2% of the overall populations were health literate, with men having a higher rate of health literacy (39.2%) compared to women (34.1%) [33]. This study also demonstrated the impact of education on health literacy, as only 8.9% of individuals with a primary education or less were health literate, compared to the 69.4% of individuals who had some secondary education and were considered health literate, and the 84.4% of health literate individuals who had completed secondary education and/or gone onto higher education [33]. Finally, the project also noted that there were significant variations in the health literacy of different countries, from 8.5% in Niger to 63.9% in Namibia [33]. As noted by McClintock et al. (2020) in a later study, these variations between regions and the accompanying differences in culture and populations must be taken into consideration when attempting to evaluate the health literacy of these countries and should highlight the many variables impacting individual experiences and abilities [34].

A more targeted survey of health literacy in Zambia conducted by Schrauben and Wiebe in 2017 reveals the challenges and opportunities faced by this specific sub-Saharan African country and can help shed light on where to target interventions. Their study revealed that in Zambia "only 46.5% of males and 24.5% of females had high literacy" and that "being female, in one of the youngest age groups, and being married or formerly married were associated with a lower likelihood of having high HL [health literacy]" [35]. On the other hand, living in an urban versus rural setting and having a middle or higher level of wealth were factors positively associated with individuals having a higher level of health literacy [35]. Interestingly, the researchers noted that while high health literacy was clearly associated with higher levels of education, particularly within the more educated, wealthy urban populations, there were still a substantial number of individuals (at least 2 in 10) who had low

health literacy but had completed secondary education or higher [35]. Therefore, they concluded that education, though clearly a critical factor in increasing health literacy in Zambia, is not the only factor impacting the development of the necessary knowledge and skills [35]. The evident disparities in health literacy between men and women likely indicates that gender is also a factor in this equation, which will be discussed in further detail later in article. The variety of factors associated with health literacy indicated the necessity of considering education as a solution to the burden of low health literacy along with the clear need to consider it in relationship to other contributing factors, rather than in isolation of them.

### **3.6. Major Theme 3: Health Literacy and Rural Communities' Ability to Access Health Information**

The current COVID-19 pandemic has highlighted the challenges of effectively disseminating accurate health information in rural Africa, including rural sub-Saharan Africa. Within these communities, the inability to access credible information about the virus has resulted in a lack of awareness of the risks and consequences of infection [36]. Okereke et al. describe the scope of the challenges that include lack of access to technology and internet services, high population density, and poor or low health literacy [36]. The researchers also note, that within the face of multiple and conflicting messages, people within rural communities are more likely to rely on those which are perceived to have the greatest support from their fellow community members [36].

In other research related to rural communities and health issues, Kaddumukasa et al. demonstrated that communities' perceptions, attitudes, and knowledge directly impacted their response to cases of, and treatment options for, epilepsy [37]. The results from their study indicated that not only were the rural locations of the communities a factor in the peoples' understanding of the disease, but so too was their level of education as well as their gender [37].

A study of community knowledge, perceptions and attitudes towards leprosy in rural Cameroon provides yet another example of the effect of low health literacy in SSA. Tabah et al.'s research demonstrated that only a small percentage of the community knew the cause of leprosy, and that, amongst these individuals, multiple false causes of leprosy pervaded the dialogue and story around the disease [38]. Notably, within the community information about leprosy came from multiple sources, including community volunteers, the media and friends. All of these challenges and misconceptions are likely exacerbated by lower health literacy of the people living in these rural communities. Okereke et al. offer a potential solution to these challenges, suggesting that leveraging local opinion leaders, who are already trusted in these communities, will enable governments to spread accurate information and increase health literacy in these communities [36]. Teachers are some of the most trusted individuals in rural areas of Africa and they can provide leaderships with regard to health information [39].

### **3.7. Major Theme 4: Health Literacy Education for Healthcare Workers**

Healthcare workers can have an impact on health literacy in SSA. In a report entitled "National Launch of the Zambia Health Literacy Programme", multiple leaders within the health care field described the positive impact of participatory processes for building relationships between communities and healthcare workers and increasing overall health literacy [40]. In the report, they argue that health literacy can "provide the space for communities to express and shape their health programmes and services at Primary Health Care level"[40]. One of the stated goals of the Zambian national health literacy program was to encourage and enhance relationships between communities and primary health care workers in order to increase the community members' health literacy. It is important to note that this goal is only possible if the healthcare workers themselves are sufficiently health literate.

Davies et al. discuss the need for ongoing health literacy training for nurses in Zambia and South Africa, especially since they are required to be literate in English in order to read and understand medical and health materials and texts, which are generally written in this Western language [41]. When we consider the already challenging nature of being health literate in ones own primary language, and then add the additional challenge of having the English language skills to interpret and apply complex medical texts, we can begin to understand the scope of the difficulties facing these primary care workers.

Another study, which looked at healthcare providers' choices when supplying anti-malarial drugs in Cameroon and Nigeria, highlighted the differences between the information and application aspects of health literacy. Mangham-Jefferies et al. found that healthcare providers supplied certain anti-malarial drugs over other ones because they preferred it and believed it to be more effective, irrelevant of the actual national guidelines on malaria treatment [42]. Based on these results, the researchers argued that when designing training and interventions to address such issues, it is essential to target the actual beliefs and preferences of the healthcare providers, rather than just supplying them with additional information and data on why they should choose certain drugs over others [42]. Thus, this particular study reinforces the importance of health literacy education including a focus on developing the skills to correctly interpret and apply medical instructions.

Mental health is another important aspect of health literacy training. Korhonen et al. demonstrated that few to none of the participating primary healthcare workers in SSA had any specific graduate level education or field experience in the area of mental health [43]. The study also found that primary healthcare workers were "reflecting their own knowledge and attitudes toward mental-health", which often resulted in negative attitudes founded on insufficient knowledge and training [43]. Therefore, Korhonen et al. concluded that it is essential that primary care workers also receive training, and develop higher levels of health literacy, in the area of mental health [43]. While an individual's level of health literacy will likely only impact themselves and their immediate circle of friends and family, a healthcare worker's level of health literacy will have ramifications for the local community and beyond, especially if insufficient knowledge and training result in misconceptions or misunderstandings that will impact their patients' healthcare.

### **3.8. Major Theme 5: Benefits of Health Literacy for Students**

In 2017, Leila Pakkala, UNICEF's Regional Director for Eastern and Southern Africa highlighted the need to invest in education, health, and protection of children. Health literacy connects to these priority areas [44]. When health literacy is integrated into curriculum and taught in classrooms, the benefits are both immediate and long-term: Immediate to students who use the knowledge and skills to navigate the health challenges at that stage in their lives, and long-term after they leave school. For example, in a study that focused on mental health literacy of young adults in Zambia, increased levels of mental health literacy education were associated with better understandings of the seriousness of mental health conditions and willingness to seek treatment for them, as well as fewer negative attitudes and associations with mental health [45]. Another study demonstrated that students with higher levels of health literacy had more positive perceptions of their own health, as well as higher levels of self esteem and satisfaction with their lives, in addition to having a great lever of health knowledge [46]. This study also demonstrated that higher levels of health literacy in students was related to positive health behaviors, such as less risk of being overweight, or underweight, increased physical activity, better sleeping patterns and less likelihood of smoking or extensive use of alcohol [46].

In addition to the physical, mental, and emotional benefits associated with improved health, the Zambian New Curriculum document also notes that in order to gain these health skills, students will need to build a set of skills essential to thriving in all areas of life. The curriculum document states that youth will need to learn "decision-making, problem-solving, creative-thinking, critical-thinking, effective communication, interpersonal relationships, self-awareness, stress and anxiety management, coping with pressures, self-esteem and confidence" [47]. The incorporation of health literacy education in the curriculum can result in children and youth developing both healthy habits of mind and body, as well as these highly desirable life skills.

Unfortunately, while the benefits of higher levels of health literacy are numerous and well documented, many education systems at all levels fall short of equipping students with these skills and knowledge. The challenges associated with low health literacy are well documented in a study that examined the health literacy of undergraduate students at a Ghanaian university [48]. This study demonstrated that even university students, who are already achieving a significant level of education, still are often not equipped with the necessary health literacy skills to navigate the health care system [48]. The researchers noted that even if healthcare was accessible and available, "without adequate empowerment of the populace" it would be difficult to provide universal healthcare to these students [48]. To respond to these gaps in knowledge and skills, the authors recommended that health subjects

and health literacy courses be integrated into all university programs in order to increase the health literacy levels of all university students [48]. If youth who have already completed secondary school still struggle with health literacy skills to this extent, then there is an evident need to include health literacy in curriculum for students in primary and secondary schools as many youth will not reach these higher levels of education.

### 3.9. Major Theme 6: Gender Equality and Health Literacy

As previously discussed, wide-ranging and country-specific assessments of health literacy in sub-Saharan Africa identified that women on average have lower rates of health literacy compared to men [33;35]. Amoah and Phillips examined the health literacy of men and women within Ghana, and found that men were more likely to have “sufficient health literacy” compared to the women [49]. The authors’ noted that this result may well be due to the fact that in Ghana and many countries across Africa, men are more likely to have access to higher levels of education than women, resulting in higher levels of health literacy which are often correlated with higher levels of education [49]. The study concluded that due to the variations and complexities in men and women’s level of health literacy, interventions that aim to improve health literacy must be equally diverse and interdisciplinary to adequately address the challenges [49].

Similarly, a study that focused specifically on the availability of reproductive and maternal healthcare for women and girls in Sub-Saharan Africa noted that these services are frequently inadequate and unavailable and that “half of women and girls [are] not receiving essential services [50]. This study revealed once again that “wealth, educational level and area of residence (urban/rural)” are the key factors that result in women having unequal access to healthcare [50]. However, it is important to point out that education attainment may not indicate the level of health literacy or healthy numeracy or address gender equality. It has been shown that even highly educated individuals, regardless of gender, struggle to understand information, especially information presented in numbers (Lipkus et al.,2001). Thus, health numeracy must be considered a key component of health literacy.

## 4. CONCLUSION

Countries and populations within sub-Saharan Africa are facing numerous health crises and epidemics. Our review of the major themes in the health literacy literature provides evidence of the low levels of health literacy within this region. Our review also identified key areas where health literacy is being implemented, such as programs for healthcare workers, as well as the benefits of health education and health literacy skills for students. If children and youth are to be equipped with health literacy knowledge and skills then we must look next towards those in a position to guide and educate them: their teachers. In the subsequent paper, we consider the role of teacher education in fostering health literacy education in SSA. We also provide conclusions related to the use of Open Education Resources to provide pre-service and in-service health literacy education for teachers.

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