

Title: Building individual and community resilience through Open Education Resources for health literacy education in sub-Saharan Africa

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Abstract:

Health literacy is the ability of individuals to understand health information and to make informed health decisions. As part of a larger project, we completed a scoping review to consider the question “To what extent does teacher education in sub-Saharan Africa (SSA) currently include a focus on health literacy?” In this paper, we specifically address the question, “How might OER support teacher education in health literacy to support individual and community resilience in sub-Saharan Africa?” We examine the extent literature on health literacy, its relevance to teacher education and OER, and how OER can be used to support health literacy education in SSA. A discussion on the ways in which health literacy education in SSA can be fostered through governments and through other partnership is explored.

## **Introduction**

An important lesson from COVID-19 is the need to build individual and community resilience in the face of adverse health events especially in under-resourced communities. A key way to foster individual and community resilience is through health literacy. 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" (WHO, 2016). Health literacy incorporates both an individuals' skills, and the ability to use these skills on behalf and to the benefit of their families, their communities, and their region.

Health literacy is important to individual and community health outcomes, and it is an important component of the United Nations sustainable development goals (SDGs) (United Nations, 2017). Low health literacy is associated with low health outcomes. Individuals with limited health literacy are less involved in health-promoting and disease-detection behaviour, (Berkman et al., 2011) and they are also more likely to die prematurely (WHO, (2013). In this paper, we consider the context of Africa and specifically sub-Saharan Africa (SSA). The continent has the world's lowest total gross domestic product (GDP) (World 101) and a significant proportion of global disease burden (World Bank, 2013). On the more positive side however, Africa has been dubbed the world's youngest region (Brookings, 2021) due its large youth population. This population holds the promise for the future of the continent; for this to happen, this population needs to be physically, mentally, and socially healthy.

We report on key themes from a scoping review which was completed as part of a larger project exploring health literacy education in sub-Saharan Africa. The scoping review focused on health literacy in teacher training and development in sub-Saharan Africa, with the objective of finding out if health literacy was included in teacher training and development, and what aspects or components of health literacy were included in teacher training curricula. The review also considered the availability and use of health literacy OER in teacher training and development. We targeted teacher training because of the role teachers play generally in improved learning outcomes. In this paper, we explore the research question: *How might OER support teacher education in health literacy towards individual and community resilience in sub-Saharan Africa?*

We begin with a review of the term health literacy and then turn to the literature which addresses the relationship between education and OER as well as the results of our scoping review in relationship to SSA. In the discussion, we consider how health literacy OER can improve individual and community resilience in SSA.

## **Methodology of the Scoping Review**

We conducted a scoping review in order to identify key themes in the research around health literacy, teacher education, and OER 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 through a structured examination of the existing literature.

Initially, the research team identified keywords to guide database searches. These keywords included: health literacy, teacher education, teacher training, and Open Education Resource. We specifically looked at these words in association with sub-Saharan Africa. We examined the academic literature from 2015-2022 which was completed in English and in indexed journals. The team then conducted thorough searches of all the large academic including ProQuest, Ebsco, SCOPUS and PubMed. We also examined the websites of large multinational organizations such as UNICEF, UNESCO, the World Bank, and the Brookings Institute. We identified 150 scholarly papers which met some of the search criteria and completed a full examination of 90 of them.

## **Key Findings of Relevance to this Paper**

Our scoping review incorporated a variety of key findings including health literacy in curriculum documents in SSA, the intersection of gender and health literacy, and teacher training and health literacy (Gatobu et al., 2022). Here we focus on providing a summary of health literacy and how OERs might serve as a mechanism in fostering sustainable change in education to foster health literacy.

## **Health Literacy**

The term "literacy" is generally used to refer to both the ability to read and understand written information (document literacy) and the ability to interpret numbers (numeracy), implying that numeracy is a component of literacy (Montori & Rothman, 2005; Nelson & Reyna, 2007). However, some researchers differentiate the two constructs, but acknowledge that literacy levels may influence numeracy (Charette & Meng, 1998). This is not always the case. Research has shown that even highly educated individuals struggle to understand information presented in numbers (Lipkus et al., 2001).

Health literacy is distinct from literacy. 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 (Damian & Gallo, 2020). 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.

Just as there is a distinction between literacy and numeracy, health literacy and health numeracy are distinct skills sets. Numeracy or facility with numbers is important because most health information often includes whole numbers and approximations, percentages, probabilities, and proportions (Apter et al., 2006). The skills set necessary for individuals to adequately apply numbers in health settings is health numeracy (Nelson et al., 2008). It is the degree to which individuals are able to access, process, interpret, communicate and act on numerical, quantitative, graphical, biostatistical, and probabilistic health information needed to make effective and informed health decisions (Golbeck et al., 2005).

Limited or low health literacy and health numeracy is a major obstacle to health. Low health literacy is associated with inability to recognize misinformation, and a heightened acceptance of information from unverified sources. Low health literacy is also associated with low health outcomes, including more hospitalizations, higher rates of emergency care, lower uptake of cancer screening and vaccines, poorer ability to adhere to medical regimen, and low ability to interpret labels and health messages (Berkman et al., 2011). Health literacy and health numeracy influence three distinct points in the healthcare process: 1) Access and utilization of health care services; 2) the relationship between the patient and the health care provider and, 3) individual's self-care (National Academies of Sciences, Engineering, and Medicine, 2016; Passche-Orlow & Wolf, 2007).

According to the World Health Organization (WHO), improving health literacy provides the foundation on which populations are enabled to play an active role in improving their own health, to engage successfully with community action for health, and to push governments to meet their [governments) responsibilities in addressing health and health equity (WHO, 2016). The global body encourages stakeholders (governments, civil research and academic institutions, media, and community leaders) to advance health literacy for improved health outcomes.

### **Teachers and OER**

Formal education through primary and secondary schooling is the most effective means of improving health literacy, and therefore, improving individual and community health outcomes and building individual and community resilience. 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 improved health literacy. The report suggested integrating health knowledge and skills into existing curricula of K-12 grade classes (Institute of Medicine, 2004).

Ideally, individuals should leave formal education systems with the knowledge, skills, and disposition to seek, access, analyse, and use credible health information to make informed decisions for their health and the health of their families and communities. The key pillar in preparing populations with the necessary skills sets to navigate life rests largely with the teacher. According to Bruns and Luque, the teacher is the only school level factor with the largest impact on student learning achievement (Bruns, & Luque, 2015). It is estimated that in the United States learners with competent teachers advance 1.5 grade levels or more over a single school year; learners whose teachers have poor skills advance just 0.5 grade levels in the same period (Rockoff, 2004). In Ecuador, differences in learning outcomes at kindergarten level language, math, and executive function have been strongly associated with differences in teacher behaviours and practices (Araujo et al., 2016).

For teachers to be effective, they must receive adequate pre-service and in-service training. Teachers need quality and accessible content during initial teacher training, and during in-service and teacher development. Readily

accessible and affordable teacher training resources can benefit teacher training programmes across resource-constrained countries in sub-Saharan Africa.

Teacher training for both pre-service and in-service professional development can include health literacy as a teaching subject, and as one of the 21-century skills (OECD, 2008) that teachers and learners should have. However, education is an expensive undertaking that requires vast amounts of resources. A major constraint in providing quality education is easily accessible and quality content. OER are becoming widely accepted for use in education because they are easily accessible and generally free.

Covard and colleagues (2018) suggest that the three greatest challenges for education are completion, quality, and affordability. Covard and colleagues found that OERs not only save learners' money and address their debt issues, OERs also improve end-of-course grades and decrease the number of D and F grades, as well as withdrawals from the course. OERs are freely available, and open to be modified and adapted, and existing OERs can be repurposed for use in different contexts. Teachers need to be equipped to identify and repurpose OER for use to teach and for their own professional development. Remixing educational materials, whether partially or completely, OER allows educators to develop the most locally relevant educational experience for their learners as each resource is added for their particular element of a broader teaching mission. The resources are integrated to serve a deliberate pedagogical goal (Hodgkinson-Williams & Trotter, 2018; Oganje & Carr, 2020).

Studies show that use of OER does not affect the quality of resources and learners' performance. On the contrary, beside saving money, OER has a positive impact on learning outcomes; learners too, have a positive view of OER (Jhangiani et al., 2018; Hilton III, et al. 2013). Other benefits of OER are: authors benefit because a wide audience can access and use their work; readers can access an entire body of literature on multiple areas; publishers benefit from wide dissemination of their publications (Downes, 2016). In a Call for Joint Action, UNESCO noted that OER represents a crucial means to support the continuation of learning in both formal and informal settings (UNESCO, 2020). Specifically, OER for health literacy will provide significant opportunities for knowledge and resource sharing, both locally and globally.

### **OER and Health Literacy in SSA**

Our review of OER developed for SSA found a dearth of courses around health literacy topics specific and relevant to SSA. Some OER exist to support teacher education in SSA, but health literacy modules or components are largely non-existent. The review identified some very specific areas of training related to health but, for the most part, the resources were either not holistic, complete, or relevant. In addition, existing OER and massive open online courses (MOOCs) focusing on health topics tend to be set in Western contexts and may be irrelevant for the health situations and contexts in sub-Saharan Africa. Some activity in the wider area of health education and health promotion targets higher education (Ken, 2011). For example, the OER Africa (OER Africa, 2022) has been developing OER resources for health education in partnership with, and for higher education institutions in Africa. Away from Africa, MOOCs have been developed for Digital Health Literacy (DHL) which is a specific area that addresses individuals ability to search, understand and evaluate online health information and apply the knowledge gained to address health issues (Perestelo-Lopez et al., 2020). Another example is the use of MOOCs by John Hopkins University to increase scientific literacy and to build awareness of public health (Johns Hopkins, 2014).

COVID-19 highlighted the need to have a health literate population hence the need to use education as a pathway to this end. COVID-19 disrupted education globally; the effect was felt more in Africa and in other under-resourced countries because of limited resources. In-school learning ground to a stop, and distance learning took over albeit in a limited scale due to lack of resources. In such cases, OER and MOOCs could provide a quick, accessible and affordable source of content for learners. There is a clear need for increased OER and MOOCs specifically for health literacy education designed for the sub-Saharan Africa context. Such resources need to be appropriate to context in terms of culture.

### **Discussion**

So how can OERs on health literacy support individual and community resilience? If there is one lesson that was learned from COVID-19, it is that health care systems, from global bodies to governments, to communities, are not prepared for adverse health events. Preparation needs to include all stakeholders. Most importantly, the community and individuals need to be the centre of the preparations since they are the consumers of healthcare services. The

goal of health literacy is a much more informed and involved population; a population that can actively participate in improving its own health outcomes. What has been witnessed globally during the COVID-19 pandemic is a passive uninformed population that is open to misinformation and disinformation. The nexus of health and education creates the opportunity to build a critical mass of health literate individuals in communities, thus building individual and community resiliency in the face of adverse health events. This starts with competent teachers; teachers who are trained and equipped with health literacy skills and knowledge that they can pass on to their learners. Therefore, teacher training and development in health literacy needs to be mainstreamed. Health literacy curriculum needs to be developed. Importantly, resources that need to be developed and made accessible, should be relevant, appropriate and free content.

OER and MOOCs provide content that can be used in resource constrained contexts such as SSA. The challenge is that currently these resources are not readily available. Effort and resources are needed to develop and to make them available in appropriate formats, and to be accessed in class or online or in a blended or hybrid way. We argue here that governments and broad partnerships are needed to support OER development that will foster health literacy and build individual and community resilience.

### **The Role of Governments**

Global education systems recognize OER as a tool to improve learning outcomes, and are increasingly advocating for investment in OER. National governments and local education systems need to support OER for teacher education and development in general, and for teacher education and development in health literacy in particular. Governments can encourage the development of OER that support national or jurisdictional priorities by developing and implementing the relevant policies, and investing in curriculum development and design of OER in priority areas. OER are a relatively inexpensive tool to rapidly scale pre-service and in-service teacher education. They also provide government ministries with real-time metrics including completion rates and the types of competencies gained. They are an ideal form of professional learning in contexts in which traditional methods of teacher professional development are difficult to sustain.

### **The Role of Partnerships**

In the National Launch of the Zambia Health Literacy Programme report, multiple leaders within the health care field described the positive impact of participatory processes for building relationships between communities and increasing overall health literacy (Ministry of Health Zambia, 2012). Partnerships between governments, teacher training institutes, schools, and civil society organizations are key determinants in influencing overall student learning outcomes. Partnerships for OER development are critical to ensure contextually and culturally relevant materials (Mangham-Jefferies et al., 2015). In addition, partnerships would bring diverse expertise in the development, review and in the implementation of OER in health literacy. For example, the development can involve educators, experts in various fields in health, ICT experts and so on. Other expertise, such as in culture and language, social and economic status, that are known to impact health and education, would play a role. All this would lead to a rich offering of OER that would appeal to learners in terms of appropriateness, scope and relevance.

## **Conclusion**

Health literacy is an important contributor to both individual and community well-being and resilience. However, health literacy does not just happen. It is fostered through education, both formal in schools and informal in families and through community organizations. Sub-Saharan Africa provides an important geo-political area in which extended efforts for health literacy education must be carried out. The most cost-effective and scalable ways to do so is through OER. By developing OER which can support pre-service and in-service teacher education, health literacy in SSA can be fostered in a meaningful and transformative way.

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