

Digital Literacy as a Social Determinant of Health among African Adolescents

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Abstract

Digital literacy functions as a critical but unrecognized social determinant of health for Africa's 400 million adolescents. Synthesizing evidence from public health, education, and technology studies, this commentary argues that the African digital context, characterized by collective device use, oral-digital intersections, linguistic diversity, and mobile-first access, makes digital literacy distinct from traditional determinants. Digital literacy operates through unique pathways including information access, peer support, service navigation, and health agency, while its uneven distribution across gender, geography, and socioeconomic status gives rise to an inverse digital literacy law: those with the greatest health needs consistently have the least digital literacy. Adolescence represents a sensitive developmental window for acquiring these skills, yet digital literacy remains absent from most health frameworks. Strengthening digital literacy is therefore essential for achieving health equity, requiring coordinated action from researchers, policymakers, health workers, educators, and technology platforms. Without deliberate intervention, Africa's digital transformation will widen existing health inequities.

Keywords: Digital literacy, Social determinants of health, Adolescent health, Health equity, Africa

Africa hosts nearly 400 million adolescents, the largest generation in history, navigating the continent's rapid digital transformation [1]. While adolescent health has gained global attention and digital health interventions have expanded, these conversations remain siloed [2]. Digital literacy, the ability to access, understand, evaluate, and apply health information from digital sources [3], has emerged as a critical social determinant for African adolescents, yet remains absent from most health frameworks. Evidence suggests digitally literate adolescents demonstrate better sexual and reproductive health knowledge, greater capacity to navigate mental health resources, and higher COVID-19 vaccine uptake. However, digital literacy is unevenly distributed: gender gaps of 15-25% in mobile internet use persist [4], alongside stark urban-rural and socioeconomic divides [5]. Those with the greatest health needs often have the least digital literacy to address them.

Without explicit recognition, Africa's digital transformation may deepen adolescent health inequities.

What digital literacy means in the African context is distinctive from global frameworks [5,6]. Digital practices are frequently collective, with shared devices and mediated access through family members [5]. Oral-digital intersections mean voice notes and videos often prove more accessible than text [6]. Adolescents navigate multilingual environments where indigenous language content remains scarce. Infrastructure constraints like low bandwidth shape how digital literacy is enacted daily [3]. Africa's technological leapfrogging means most adolescents encounter the internet first through mobile devices [7]. Importing frameworks from high-income settings risks missing what is distinctive.

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COMMENTARY

Evidence linking digital literacy to health outcomes reveals consistent patterns. In sexual and reproductive health, digitally literate adolescents demonstrate better knowledge across Nigeria, Kenya, Senegal, and South Africa, with digital platforms enabling anonymous questioning and peer information sharing [8]. However, the knowledge-behavior gap persists; knowing more does not reliably translate to safer practices. In mental health, digital literacy enables access to coping resources and peer support while also exposing adolescents to social comparison and harmful content [9]. During COVID-19, digital literacy predicted accurate knowledge and vaccine uptake, while those lacking critical skills proved vulnerable to misinformation. Yet post-pandemic evidence shows that some skepticism was justified, as many vaccines received emergency authorization while still in trial stages, and concerns about novel platforms were later addressed as safety data matured.

Digital literacy is not evenly distributed. Gender gaps of 15-25% in mobile internet use persist across most African countries, reflecting restrictive norms [3]. Urban-rural divides mean internet penetration remains 3-5 times higher in cities, while socioeconomic gradients ensure digital literacy correlates with household wealth and school attendance [5]. This uneven distribution gives rise to an inverse digital literacy law: those with the greatest health needs consistently have the least digital literacy [10]. This is the amplification hypothesis in action: a well-resourced urban adolescent with high digital literacy uses apps to find mental health support, while a marginalized rural peer with low digital literacy encounters the same platforms but is left vulnerable to harmful misinformation, thereby widening the pre-existing health gap [10].

Digital literacy merits recognition as a distinct social determinant [11]. First, it is not reducible to traditional determinants; two adolescents with identical backgrounds can have vastly different levels of digital literacy depending on their peer networks and exposure. Second, digital literacy operates through unique pathways: information access, peer support, service navigation, and health agency [12]. Third, unlike intractable determinants, digital literacy is highly amenable to intervention through targeted programs [11].

The developmental sensitivity of adolescence amplifies this opportunity, as skills acquired during this period track into adult life [2]. A conceptual framework helps illustrate how digital literacy interacts with traditional social determinants. Structural determinants, including digital infrastructure and governance, shape access to digital resources and literacy development [13]. Traditional determinants such as education, income, gender, and location influence an adolescent's opportunity to acquire digital literacy and interact with digital literacy to shape health outcomes in ways that can either reinforce or disrupt existing patterns of disadvantage [14]. Digital literacy then functions as a mediating factor, operating through information access, peer support, service navigation, and health agency pathways to influence health outcomes [12]. This framework suggests that interventions targeting digital literacy can disrupt the reproduction of health inequities across generations [11].

Adolescence represents a sensitive period for developing digital literacy [2]. Neurocognitive development enhances capacity for critical evaluation while heightening sensitivity to peer influence. Health behaviors crystallize during adolescence, tracking into adult life [2]. Today's African adolescents are the first generation to navigate developmental tasks in a pervasively digital environment, forming health beliefs through platforms designed without their interests in mind [9]. Building digital literacy during adolescence yields dividends across the life course.

Africa's technological leapfrogging offers apparent lessons for digital health [7], but leapfrogging requires literacy [6]. Mobile money succeeded because it built on existing practices, yet benefits were stratified by literacy. Digital health interventions face similar dynamics: platforms designed without attention to user literacy reach the already advantaged while excluding those most in need. The risk is that digital health investments will inadvertently widen inequities, creating a digital health divide. Intentional investment in digital literacy offers transformative potential.

Despite mounting evidence, digital literacy remains absent from policy frameworks. Global strategies acknowledge the expansion of digital health but rarely address the competencies required to use it effectively [15]. National adolescent health strategies overlook digital literacy as a determinant.

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Digital health strategies prioritize infrastructure, platforms, and connectivity rather than citizens' ability to critically access, interpret, and apply digital health information. Education curricula rarely frame digital as a core health competency, and health worker training provides little systematic attention to supporting adolescent digital literacy. This policy blind spot carries tangible costs: adolescents remain vulnerable to misinformation and exploitative online content, telemedicine and digital platforms fail to achieve equitable uptake, and public investments in digital innovation risk reinforcing, rather than reducing, existing inequalities.

Recognizing digital literacy as a social determinant demands action across sectors. Researchers must prioritize contextually validated measures, longitudinal studies, and health outcomes as primary endpoints. Policymakers should embed digital literacy in national adolescent health strategies [15], adopt disaggregated indicators by gender and location [3], and ensure infrastructure investments include literacy development. Health workers and educators require training to serve as digital navigators [12], while curricula must integrate critical digital health literacy from primary school onward. Donors should fund rigorous evaluation, and technology platforms bear responsibility for the health literacy they foster through credibility signals, linguistic diversity, and co-design with adolescents. Without deliberate intervention, Africa's digital transformation will reinforce the inverse law: those with the greatest health needs will have the least digital literacy to address them [10]. The convergence of Africa's demographic trajectory with digital transformation creates a defining moment where intentional action can shape health outcomes for the largest adolescent generation in history [2]. The time to act is now.

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Author Contributions

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