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REVIEW

Health Literacy in Ethiopia: Evidence Synthesis and Implications

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Background: Health literacy plays a pivotal role in healthcare utilization and health-related lifestyle choices. This makes health literacy a pressing concern, particularly in low-income countries like Ethiopia, where there are intricate health challenges. Despite its significance, there is a dearth of studies on the issue in Ethiopia. This study aimed to provide a comprehensive synthesis of the available evidence on health literacy in Ethiopia, and to discuss the implications for healthcare practice, health promotion, and research endeavors.

Methods: A systematic scoping review was conducted to achieve the purpose of this study. A comprehensive search of databases such as PubMed, CINAHL, AJOL, and PLOS Global Public Health was conducted for eligible evidence. Searches were conducted from May 12 to September 9, 2022. The PRISMA flow diagram guideline was utilized to ensure transparent reporting of the reviews process. The data extraction tool used was based on the JBI methodology guidance for reviews.

Results: The search in total yielded 543 records. However, only 16 studies met the eligibility criteria after a thorough screening process. All eligible studies were conducted in health facilities and schools with limited scopes. The main findings of the eligible studies focused on health literacy levels, health information sources, and health literacy determinants among the studies participants. Many of the studies reported low health literacy levels and multiple predicting factors ranging from personal to socioeconomic conditions among the respondents.

Conclusion: This review has provided critical insights into the state of health literacy in Ethiopia. There is a need for comprehensive research and the development of context-appropriate health literacy measurements tailored to the Ethiopian context, as well as evidence-based health literacy interventions. Prioritizing health literacy as a key research and intervention area is essential for improving the health of individuals and populations and achieving health-related Sustainable Development Goals in Ethiopia.

Plain Language Summary: Health literacy is a vital factor in achieving health-related Sustainable Development Goals, as it influences individuals' healthcare utilization and health-related lifestyle decisions in their daily lives. Therefore, it is a pressing matter for low-income countries like Ethiopia, where health problems stemming from unhealthy lifestyle choices and poor healthcare utilization are on the rise and adding burden to the existing health problems. This review indicates that health literacy in Ethiopia is problematic, and it underscores the need for comprehensive health literacy research or a deeper understanding of the issue, and effective interventions.

Keywords: health literacy, healthcare practice, health promotion, low-income country, review

Background

Good health is a cornerstone of development,[1] and health literacy (HL) plays a pivotal role in achieving it, as recognized by the World Health Organization at the Ninth Global Conference on Health Promotion.[2] HL is crucial for attaining health-related Sustainable Development Goals, particularly Goal 3 which is concerned with ensuring healthy lives and promoting well-being.[3,4]

There are numerous definitions of HL. The most widely used and broader definitions include those provided by Nutbeam[5] and Sørensen et al.[6] As defined by Nutbeam,[5] HL encompasses the personal, cognitive, and social skills that enable individuals to

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access, understand, and use health information to promote and maintain good health. He delineated two HL perspectives: HL in clinical contexts and HL in health promotion contexts.[7] In the clinical context, HL indicates a set of capacities that facilitate patients' compliance with healthcare, while in the health promotion context, HL represents people's knowledge about the conditions that determine health and how to change them, and their ability to make sound health-related decisions for the improvement and protection of health in daily life.[7,8] Sørensen et al[6] summarized literature on HL and presented HL as a broad array of knowledge, competencies, and motivation that enable individuals to effectively access, comprehend, evaluate, and apply health-related information to make informed decisions in daily life concerning healthcare, disease prevention, and health promotion.

HL influences patient-provider interactions, healthcare services utilization, and health outcomes.[9,10] HL can effectively mitigate health problems associated with poor healthcare utilization and unnecessary expenditures by promoting treatment adherence and encouraging preventive care.[11–14] HL also plays a key role in healthy lifestyle choices.[15,16] Thus, it is a critical issue, as human health/wellbeing is primarily affected by the lifestyle chosen by a person itself.[17] For instance, although a number of conditions are responsible for non-communicable diseases (NCDs) – the leading causes of death globally – many of them, specifically cardiovascular disease, chronic respiratory disease, cancers, and diabetes, share four key preventable or modifiable unhealthy lifestyles, namely, tobacco use, harmful use of alcohol, physical inactivity, and an unhealthy diet.[18,19] Currently, there is an alarming increase in morbidity and mortality due to NCDs, even at young age, especially in low- and middle- income countries,[18,20] including Ethiopia.[21,22]

Hence, HL is a key in preventing and mitigating the growing health challenges stemming from inappropriate healthcare utilization and unhealthy lifestyles, and may be the sole viable option, as medicine is often ineffective in addressing these issues.[12,17,19,23] Therefore, HL is a critical issue, particularly in developing countries like Ethiopia, where such problems could further exacerbate the already intricate healthcare challenges.

Despite the rapid growth in HL literature,[6,24] most studies are from developed countries.[6,25] Consequently, little is known regarding HL in Ethiopia. The identification and synthesis of the available evidences on HL are essential for understanding what has been done so far and to identify and inform the gaps. A preliminary search of Open Science Frameworks and the JBI Database of Systematic Reviews register revealed no or ongoing scoping (systematic) reviews on this issue. Therefore, this systematic scoping review aimed to provide a comprehensive synthesis of available HL studies in Ethiopia, and to discuss the implications for healthcare practice, health promotion, and future research endeavors.

Methods

A systematic scoping review was conducted to achieve the aim of this study. Scoping reviews aim to produce and disseminate a comprehensive and integrated summary of existing evidence on a topic or issue, identifying gaps for future primary and secondary research and guiding decision-making,[26,27] which is the primary goal of this study.

Eligibility Criteria

Eligible studies for this review included studies conducted in Ethiopia on Ethiopian populations, studies concerned with HL, studies with full manuscripts, and studies written in English. Accordingly, studies that failed to fulfil any of the above inclusion criteria were ineligible for this study, and based on the goal of this study, to be as inclusive as possible, an eligible study could be from primary research of any design/approach, regardless of its quality.

Sources, Search Strategy, and Study Selection

To retrieve relevant studies for this review, PubMed, CINAHL, African Journals Online (AJOL), Africa Index Medicus (AIM), Joanna Briggs Institute EBP database (JBI EBP), the Directory of Open Access Journals (DOAJ), and PLOS Global Public Health were searched. Google Scholar search was also performed for additional relevant studies. A three-step search strategy was conducted based on the JBI methodology for reviews.[27] First, a search of PubMed and CINAHL and an analysis of the text words contained in the title, abstract, and index terms of the identified studies were conducted based on the purpose of the review. Second, a full search using all identified keywords and index terms was performed across all the included databases adapting and using the search strategy and terms for each database. After the searches of all the identified databases were completed, the resulting citations were deduplicated using EndNote X9. Following deduplication, the study screening

and selection process was initiated by screening the titles and abstracts of the retrieved studies, and articles that were found to be irrelevant for the review were removed. The full texts of the remaining studies were assessed in detail against the eligibility criteria for this review, and studies that failed to meet the inclusion criteria were excluded with reasons. Studies that met the inclusion criteria were included in the final review. Finally, the reference lists of all the studies that met the inclusion criteria were screened to identify additional relevant studies. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram guideline[28] was used to ensure the transparent reporting of the review process, as shown in Figure 1. Searches were conducted from May 12 to September 9, 2022. The full search strategies and dates for the included databases are detailed in Supplementary Table 1.

Data Extraction, Presentation, and Synthesis

Data extraction was performed by carefully reading the eligible studies. The standardized data extraction tool of JBI's methodology guidance for reviews[27] was adapted and used in this study, as shown in Supplementary Table 2. The data extracted from all the eligible studies are summarized in a table format (Table 1). The main headings of the table include author and publication year, region of the study, study objective, study design/methods, study setting, study population, sample size, sampling technique, aspect of HL assessed, tool used, and summary of findings. The table is followed by a narrative synthesis of the findings, with a focus on the area/type of HL assessed, tools used to measure HL, and major HL-related findings.

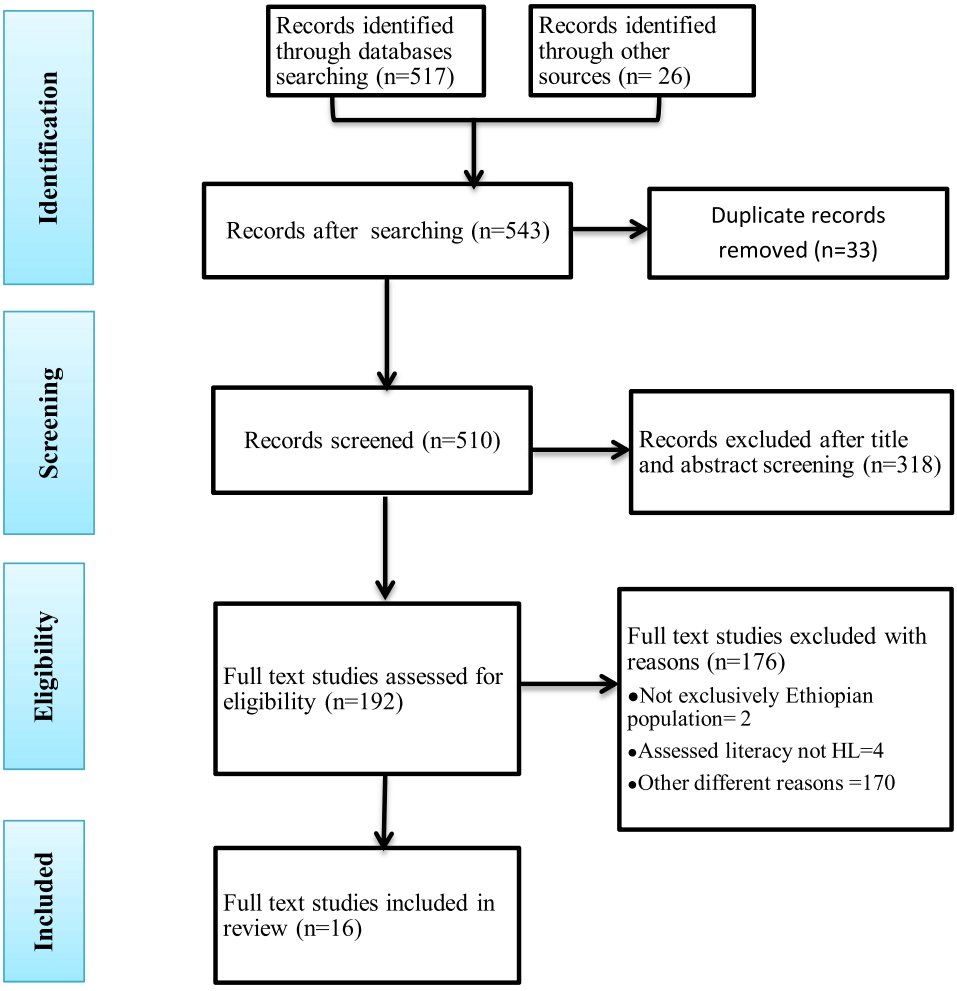

Figure 1 Flow diagram of eligible studies selection process and results.
Notes: PRISMA figure adapted from Moher D, Liberati A, Tetzlaff J, Altman DG. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *BMJ*. 2009;338(7716):332.[28]

Table 1 A Map of the Studies Included in the Review

Author, year	Region	Objective of the Study	Design/ Method	Study Setting	Study population (Sample Size, Sex and Age in Analysis)	Sampling Technique	Aspect of Health Literacy	Measure of Health Literacy	Main Findings
Mengiste, Ahmed, Bogale, Yilma;[29] 2021	Amhara	To assess the information-seeking behavior about diabetes and associated factors among diabetes patients	Cross-sectional (Mixed methods)	Hospital	Patients with diabetes attending healthcare at hospital (423; Sex: M= 51.8%, F= 48.2%; age ranges 18 to > 60 years)	Systematic random sampling and purposive sampling	Disease- specific health literacy	Questionnaire adapted from the Newest Vital Sign and In- depth interview	About 53% of the participants had limited HL, and only 41.6% were diabetes information seekers. Their sources of information were health professionals, mass media, internet, brochures, family, friends, and magazines/newspapers. Educational status, place of residence, comorbidity, and HL were associated with diabetes information seeking.
Gedefaw, Yilma, Endehabtu;[30] 2020	Amhara	To assess information seeking behavior about cancer and associated factors among students	Cross-sectional/ Quantitative	University	University students (844; Sex: M=52. 4% and F=47. 6%; age range 18 to 38 years)	Stratified multi-stage sampling	Disease-specific health literacy	European health literacy survey questionnaire	Of the total study participants, only 37.2% had adequate HL level. Their most preferred cancer information sources were health-care providers (48%) and internet (27.6%). The factors associated with information seeking were year of study, internet access, HL level, self-reported health condition, perceived susceptibility and severity.
Tefera, Gebresillassie, Emiru, Yilma, Hafiz, Akalu, Ayele;[31] 2020	Amhara	To assess the diabetic health literacy and the association with glycemic control in type 2 diabetes mellitus adult patients	Cross-sectional/ Quantitative	Hospital	Adult outpatients with type 2 diabetes mellitus (400; Sex: M=47.3%; F=52.8%; age range < 40 to > 60 years)	Simple random sampling technique	Disease-specific health literacy	The comprehensive 15-items diabetic health literacy questions with a 5-point Likert scale	Of the total participants, 17.3%, 26.3%, and 56.5% had low, medium and high diabetic-related HL, respectively. Younger age, high diabetic HL and good adherence were associated with achieving the targeted glycemic control, and adequate diabetic HL and better glycemic control were highly correlated. Patients who had high diabetes literacy were 1.85 times more likely to achieve target glycemic control than those who had lower diabetic literacy with 95% CI AOR. 1.85(1.09–3.40).

Tilahun, Gezahegn, Tegenu, Fenta;[32] 2021	Oromiya	To assess functional health literacy (FHL) and associated factors in cardiovascular diseases (CVDs) patients	Cross-sectional/ Quantitative	Hospital	Adult patients with CVDs (410; Sex: M=51.7%; F=48.3% age range 18 to 88 years)	Simple random sampling technique	Functional health literacy	A functional health literacy questionnaire	Of the total participants, 53.9% and 50.5% had low FHL in finding health information and for having sufficient information to manage their health respectively, but 55.4% of the participants had adequate FHL in understanding health information. Education, income, gender, access to information, and the disease situation were associated with FHL.
Tilahun, Abera, Nemera;[33] 2021	Oromia	To assess communicative health literacy (CHLL) and associated factors among patients with NCDs	Cross-sectional/ Quantitative	Hospital	Patients with NCDs (408; Sex: not clearly specified; age range18 to over 65)	Simple random sampling	Communicative health literacy	Health Literacy Questionnaire	More than half of the respondents had high CHLL levels in four of the six HL domains (healthcare provider support (56.1%), social support for health (53.7%), active engagement with healthcare providers (56.1%), and navigating the healthcare system (53.4%)). However, they had low CHL levels in the remaining two domains (actively managing health (49.5%) and ability to find good health information (45.8%)). HL levels vary based on socio-demographic and disease characteristics of the patients.
Gurmu Dugasa;[34] 2022	Oromia	To assess health literacy levels and associated factors among admitted adult patients	Cross-sectional/ Quantitative	Hospital	Patients (403; Sex: M=58.3%; F=41.7; age range 20 to over 60)	Stratified sampling	General health literacy	Health Literacy Questionnaire (HLQ)	About 40% of the participants had low HL. Patients who had tertiary education level were 2.45 times more likely to have high HL (AOR = 2.45, 95% CI: 1.21, 4.98) compared to those who were unable to read and write, and patients who had age greater or equal to 60 were 65% less likely to have high HL (AOR: 0.35, 95% CI: 0.18, 0.70).

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Table 1 (Continued).

Author, year	Region	Objective of the Study	Design/ Method	Study Setting	Study population (Sample Size, Sex and Age in Analysis)	Sampling Technique	Aspect of Health Literacy	Measure of Health Literacy	Main Findings
Shiferaw, Tilahun, Endehabtu, Gullslett, Mengiste;[35] 2020	Amhara	To assess eHealth literacy status and associated factors in chronic patients using internet	Cross-sectional/ Quantitative	Hospital	Chronic patients (423; Sex: M= 66.3%; mean age was 35.58 ± 14.8 years)	Stratified sampling technique	Domain-specific health literacy	The eHealth literacy scale (eHEALS)	Only 46.5% of the patients had high eHealth literacy level. Their major sources of information were health professionals (83.4%) and television broadcasts (30.0%). Educational status, occupation type, residence, self-reported health status, monthly salary, internet use frequency, knowledge about the importance and availability of online resources, attitude toward using online it, and computer literacy status were associated with eHealth literacy status.
Shiferaw, Mehari, Eshete;[36] 2020	Amhara	To assess Internet use and eHealth literacy status among nursing students	Cross-sectional/ Quantitative	University	Undergraduate nursing students (229; Sex: M= 48.5; F= 51.5; mean age 20.66 ± 1.45 years)	Stratified random sampling	Domain-specific health literacy	eHealth literacy scale (eHEALS)	About 89.1% of the students reported that they had access to the Internet, and 60.7% of them reported using it daily. Majority of them (52.8%) reported using Internet for social media and chats, and only 22.7% of them reported using it for educational purposes. Their mean eHealth literacy status was 25.23 with a 7.29 SD. Factors associated with eHealth literacy were gender, enrolment year, and residence place ($p < 0.01$).

Mengestie, Yilma, Beshir, Paulos;[37] 2021	Amhara	To assess eHealth literacy level and associated factors among students	Cross-sectional/ Quantitative	University	Medical and health science students (801; Sex: M= 60%; age range ≤ 21 to > 21)	Stratified multistage sampling	Domain-specific health literacy	eHealth literacy scale	About 60% of the respondents had high eHealth literacy. Using health-specific web sites, having higher Internet efficacy, Internet perceived usefulness, using medical app, female sex, and being student of health informatics were the factors associated with a high eHealth literacy level.
Chereka, Demsash, Ngusie, Kassie;[38] 2022	Amhara	To assess digital health literacy (DHL) to share COVID-19 related information and associated factors among healthcare providers	Cross-sectional/ Quantitative	Health facility centres	Healthcare providers (456; Sex: M= 74.1%; age range 21–50 years)	Availability sampling	Domain-specific health literacy	A pretested questionnaire; The tool was adapted and modified from different literature	About half of the respondents (50.4%) had digital HL to share COVID-19 related information, and that was inadequate. Educational status [AOR = 4.37, 95% CI 2.08–9.17], training [AOR = 3.00, 95% CI 1.80–5.00], attitude [AOR = 1.99, 95% CI 1.18–3.36], perceived usefulness [AOR = 2.01, 95% CI 1.22–3.32], perceived ease of use [AOR = 2.00, 95% CI 1.25–3.21] and smartphone access [AOR = 5.21, 95% CI 2.34–9.62] as predicting it at P-value less than 0.05.

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Table 1 (Continued).

Author, year	Region	Objective of the Study	Design/ Method	Study Setting	Study population (Sample Size, Sex and Age in Analysis)	Sampling Technique	Aspect of Health Literacy	Measure of Health Literacy	Main Findings
Bejiga;[39] 2021	Oromia	To assess reproductive health literacy status (RHL) and associated factors among high schools adolescents	Cross-sectional/ Quantitative	School	Adolescents (391; Sex: M= 62.9% F= 37.1%; age range 15 to 19 years)	Systematic random sampling	Domain-specific health literacy	Health Literacy Measure for Adolescents (HELMA)	Most (81.6%) of the adolescents had limited RHL levels. Females were about 52% times (AOR = 0.48, 95% CI: 0.257, 0.881) less likely to have adequate RHL status. School adolescents never attending RH topic in class were about 56% times (AOR = 0.44, 95% CI: 0.233, 0.843) less likely to have adequate RHL status. School adolescents never used of *RH* service ever was also about 60% times (AOR = 0.40, 95% CI: 0.231, 0.704) less likely to have adequate *RHL* status.
Hassen;[40] 2022	Oromia/ Eastern Ethiopia	To assess mental health literacy (MHL) level and effects among adolescent students	Cross-sectional/ Quantitative	Public and private schools	Adolescent students (751; Sex: M= 50.1%; F= 49.9%; age range 11 to19 years)	Multistage random sampling	Domain-specific health literacy	Mental health literacy questionnaire (MHLq)	The MHL score was normally distributed with mean of 135.98 ± 15.50. MHL was higher among females (138.12) than males (133.84) with $p<0.01$. Ethnicity/culture, school class/grade, and parental education level accounted for 10.7% of the variability in MHL of female and 8.9% of the variability in MHL of male participants.

Negesa Bulto;[41] 2021	Eastern Ethiopia/ Oromia	To assess risk behaviours for CVD and related health literacy in patients with CVD conditions	Cross-sectional (Mixed methods)	Hospital	Patients with a confirmed diagnosis of CVD (287; Sex: F=56.4%; age range 18 to 64 years)	Convenience sampling	Disease-specific health knowledge	A heart disease fact questionnaire and in-depth interview	About half of CVD patients had suboptimal knowledge about CVD risk factors, and majority (70%) had multiple risky behaviours although they attended chronic follow up care clinics. Lower educational level, rural residence and single marital status were associated with lower CVD knowledge risk factors. However, there was no significant relationship between knowledge of cardiovascular risk factors and actual cumulative risk behaviour ($p > 0.05$).
Paul;[42] 2014	Southern province	To explore the knowledge and attitudes of HIV/ AIDS among students	Cross-sectional/ Quantitative	College and university	College and university students (227; Sex: M=101, F=126; age range 18 to 30 years)	Non-probabilistic sampling	Disease-specific health knowledge and attitude	The HIV Knowledge Questionnaire and AIDS Attitude Scale (HIV-KQ-18 and AAS scales)	The mean HIV-KQ-18 score among the male group was 12.4 (SD=2.3), and among females it was slightly lower 12.3 (SD=2.5). However, the *t*-test demonstrated no difference between males and females HIV knowledge scores ($t=0.6$, $df=225$, $p=0.4$). In addition, the mean total AAS scores among male students was 1.6 (SD= 1.1), while females scored slightly lower with a mean score of 1.5 (SD=1.3) on the AAS, but there was no significant difference among males and females mean scores ($p=0.1$). The mean AAS avoidant scores demonstrated a higher mean score among the females (mean=3.4, SD=0.7) in contrast to the males (mean=3.2, SD=0.8). The Pearson's test demonstrate a significant negative association between AAS avoidant scores and HIV knowledge scores ($r=-0.2$ $p<0.01$).

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Table 1 (Continued).

Author, year	Region	Objective of the Study	Design/ Method	Study Setting	Study population (Sample Size, Sex and Age in Analysis)	Sampling Technique	Aspect of Health Literacy	Measure of Health Literacy	Main Findings
Hassen, Behera, Jena, Satpathy;[43] 2020	Dire Dawa,/ Oromia	To test the validity and reliability of the Amharic version of the HLS-EU-Q47 among students	Cross-sectional/ Quantitative	Public schools and University	School adolescents and university students (677; Sex: M=54.36%; F= 45.64%; age range 10 to 25 years)	Multistage random sampling	General health literacy	Amharic version of HLS-EU-Q47 (HLS-Amh)	For most domains, the RMSEA index was < 0.10, and other goodness-of-fit indices (GFI, AGFI, CFI and IFI) were within range of 0.90 to 0.80. The NFI score for all were < 0.80. The item-total correlations were ranged from 0.287 to 0.542. However, it showed high levels of internal consistency of reliability with Cronbach's alpha coefficient, α=0.910. The Amharic version of HLS- EU-Q47 was reliable but weak for its validity to measure health literacy among the students.

Shiferaw;[44] 2020	Amhara	To assess the validity and reliability of the Amharic version of eHEALS among patients with chronic disease	Cross-sectional/ Quantitative	Hospital	Patients with chronic disease (187; Sex: M= 63.1%; F= 36.9%; age range < 18 to > 35)	Convenient sampling	Domain-specific health literacy	eHEALS	The Cronbach's alpha coefficient for the translated eHEALS total score was 0.94, and the test–retest reliability of eHEALS total score was acceptable with interclass correlation coefficient of 0.92. The KMO ratio of sampling appropriateness was satisfactory (0.91), and Bartlett's test of sphericity was significant with p < 0.001. The EFA extracted two factors, and the extracted factor explained 80.2% of the common variance with 51.8% for factor 1 and 28.4% for factor 2. Except for item 8, item fit for both infit and outfit mean squares were within the adequate range (0.5–1.5). The translated eHEALS is a consistent and valid instrument to evaluate Amharic-speaking chronic patients' eHealth literacy level.

Results

The search yielded a total of 543 records. After removing 33 duplicates, 510 records were retained. The titles and abstracts of 510 records were screened for relevance, and 318 were failed and not considered for further assessment. The full texts of the remaining 192 studies were assessed for eligibility against the inclusion criteria, and 176 studies were excluded for various reasons, as detailed in Supplementary 3. Thus, only 16 studies fulfilled the eligibility criteria and were included in the analysis.

Characteristics of the Included Studies

All eligible studies were conducted in two regions of the country, namely, Amhara and Oromia, except for one study[42] which was conducted in the Southern region. Except for one study[42] which was published in 2014, all the included studies were published in the last three years (2020–2022). Eight of the 16 studies[29,31–35,41,44] were conducted in hospital settings on patients; one study[38] was conducted at healthcare facilities on healthcare providers, while the remaining seven studies[30,36,37,39,40,42,43] were conducted in school/college/university settings on students. All of the studies were cross-sectional, 14 of which were quantitative, and two studies[29,41] employed both quantitative and qualitative methods. Four of the eligible studies[38,41,42,44] used non-probability sampling designs, whereas the remaining 12 studies used different types of probability sampling designs. Except for one study,[33] the sex composition of studies participants was clearly indicated (both males and females had participated in the studies) in all the eligible studies. The age of the studies participants ranged from 10 to 88 years.

Aspects of Health Literacy Assessed and Tools Utilized

From the total of 16 eligible studies, seven studies[35–40,44] assessed domain-specific HL. Of these seven studies, five[35–38,44] focused on eHealth literacy. Shiferaw, Tilahun, Endehabtu, Gullslett, Mengiste,[35] Shiferaw, Mehari, Eshete,[36] and Mengestie, Yilma, Beshir, Paulos[37] assessed eHealth literacy among internet user chronic patients, nursing students, and undergraduate medical and health science students respectively using a validated eHealth literacy scale (eHEALS).[45] The eHealth literacy scale is an eight-item scale that is often measured in 5-point Likert scale ranging from strongly disagree (1) to strongly agree (5); scores < mean value are labeled as low eHealth literacy level, and scores ≥ the mean value are labeled as high eHealth literacy level. Whereas Shiferaw[44] assessed the reliability and validity of the Amharic version of eHEALS in patients with chronic diseases. The internal consistency of the tool was measured using Cronbach's alpha coefficient, test–retest reliability performed by re-administering the tool two weeks after the first test, construct validity evaluated using exploratory factor analysis (EFA), and the Kaiser–Meyer–Olkin (KMO) statistic and Bartlett's test of sphericity used to check the suitability of performing the factor analysis. While Chereka, Demsash, Ngusie, Kassie[38] assessed digital HL in sharing COVID-19 related information among healthcare providers using a pretested questionnaire, which was adapted from different related literature and consisted of nine closed-ended Likert scale questions rated on a five-point scale (strongly disagree=1, disagree=2, neutral=3, agree=4, and strongly agree=5). Respondents who scored ≥ the median score were considered to have a good digital literacy status, and those who scored < the median score were considered to have poor digital literacy status.[46,47]

Of the seven studies concerned with domain-specific HL, the remaining two studies[39] and,[40] measured reproductive health literacy (RHL) and mental health literacy (MHL) respectively. Bejiga[39] assessed RHL status among high schools adolescents, and for this purpose, he stated using Health Literacy Measure for Adolescents (HELMA), a validated tool for the measurement of HL of adolescents aged 15–19.[48] Hassen[40] assessed MHL levels among adolescent students using a validated mental health literacy questionnaire (MHLq) comprising 33 items[49,50] which was measured using a five-point Likert scale (strongly disagree =1, slightly disagree=2, neither agree nor disagree=3, slightly agree=4, strongly agree=5), and the respondents' MHLq status was determined based on the mean of the scores.

Three of the included studies[29–31] assessed disease-specific HL using different HL tools. Specifically,[30] assessed cancer related HL using European HL survey questionnaire (HLS-EU-Q) which contains 47 items,[51] each of which are measured using a 4-point scale (very difficult=1, difficult=2, easy=3, and very easy=4), and using the formula, Index = (mean – 1)*(50/3), a score between 1 and 13.75 was noted as inadequate HL, between 13.76 and 25.5 as problematic HL, between 25.6 and 37.5 as sufficient HL, and >37.5 as excellent HL.[52] Whereas,[29] assessed diabetic HL using an HL questionnaire adapted from the Newest

Vital Sign.[53] As well,[31] assessed diabetic HL but used another tool, the comprehensive 15-item diabetic HL scale[54] which was measured using a 5-point Likert scale, and the mean score was calculated and switched to the percentage (5 points as 100%) to determine the level of diabetic HL among the participants.

Two studies,[32] and,[33] assessed functional HL (FHL) and communicative HL (CHL) respectively. Tilahun, Gezahegn, Tegenu, Fenta[32] measured FHL among adult patients with cardiovascular diseases using FHL scale adopted from the comprehensive HL Questionnaire (HLQ).[55] The FHL scale consists of 14 items covering three conceptually distinct domains of the comprehensive HLQ: having sufficient information (four items), finding good health information (five items), and understanding health information (five items).[55] The first domain was measured using a four-point ordinal response (1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree), and the remaining two domains were measured using a five-point ordinal response options (1 = cannot do, 2 = very difficult, 3 = quite difficult, 4 = quite easy, and 5 = very easy),[56] and the calculated low scores for each domain reflected low HL levels within the domain and vice versa.[55] Tilahun, Abera, Nemera[33] measured CHL among patients with NCDs using CHL Questionnaire encompassing six of the nine comprehensive HLQ domains.[55] The CHL consists of 30 questions covering six multidimensional aspects of CHL domains: feeling understood and supported by healthcare providers (four items), actively managing my health (five items), social support for health (five items), active engagement with healthcare providers (five items), navigating the healthcare system (six items), and ability to find good health information (five items). The first three domains were measured using a four-point ordinal responses (1= strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree), and the remaining ones were measured using a five-point scale (1 = cannot do, 2 = very difficult, 3 = quite difficult, 4 = quite easy, and 5 = very easy), and the patients who scored ≥ mean from each domain of HLQ items correctly were regarded as having high CHLL, and those who scored < mean were as with low CHLL.

Two other studies[34,43] were concerned on generic HL. Gurmu Dugasa[34] assessed HL levels among adult patients admitted to public hospitals using a pretested and contextualized comprehensive HLQ.[55] The HLQ used in this study comprises five domains: Having sufficient information to manage my health; understanding health information well enough to know what to do; ability to find good health information; ability to actively engage with health care providers, and appraisal of health information, which were measured using a four point scale: strongly disagree=1, disagree=2, agree=3, and strongly agree=4 (the first two domains) and a five point scale: cannot do= 1, very difficult=2, quite difficult=3, quite easy=4, and very easy=5 (the last three domains). Respondents who scored ≥ mean were regarded as having high HL and those who scored < mean as having low LH. Hassen, Behera, Jena, Satpathy[43] tested the validity and reliability of Amharic version of the HLS-EU-Q47[57] among students. To do so, the authors conducted confirmatory factor analysis (CFA), measured goodness-of-fit indices, namely, root mean square error of approximation (RMSEA), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), comparative fit index (CFI), incremental fit index (IFI), and normal fit index (NFI), and the parsimonious fit or the chi-square goodness-of-fit test (ie, the chi-square/degrees of freedom ratio [x2/df ratio]),[58] computed the Pearson correlation coefficient,[58] measured Cronbach's alpha coefficient,[59] and examined split-half reliability.[60]

The remaining two studies[41,42] did not directly measure HL using validated HL tools, although their titles contained the term "HL". They measured disease-specific health knowledge and attitudes using validated knowledge and attitude test scales. Specifically,[41] used the Heart Disease Fact Questionnaire to assess CVDs patients knowledge of CVD risk factors.[61] While[42] used the AIDS Attitude Scale (AAS)[62] and HIV knowledge questionnaire (HIV-KQ-18)[63] to explore the knowledge of and attitudes towards HIV/AIDS among students.

Findings of the Included Studies

The reviewed studies predominantly focused on HL levels, sources of health information and knowledge, and predictors of HL among the studies participants.

Health Literacy Levels Among the Participants

Of the total eligible studies, 14 studies measured HL status among the studies participants. Seven of these studies[29,31–35,41] measured HL related status among patient populations, six of the studies[30,36,37,39,40,42] measured HL related status among high school and university students, and the remaining[38] assessed digital HL status among healthcare providers. Of the seven

studies[29,31–35,41] that measured HL status among patients, many reported inadequate HL levels among the respondents. For instance, in a study conducted on Internet users chronic patients,[35] found low eHealth literacy levels among 53.5% of the study participants. As well, among patients with diabetes,[29] found that 53% of the patients had limited HL, and only 41.6% of the patients were reported being diabetes information seekers. Likewise, in a study on cardiovascular chronic diseases patients,[32] found inadequate (low) FHL in 53.9% and 50.5% of the participants regarding finding health information and having sufficient information to manage health respectively, while it found adequate FHL in 55.4% of the patients regarding understanding health information.

Similarly, of the six studies[30,36,37,39,40,42] that measured HL status among high school and university students, several studies found inadequate HL status among the respondents. For example, Bejiga,[39] a study on high school adolescents, found low reproductive health literacy levels among the majority (81.6%) of the respondents. Similarly, a study on university students[30] reported that about 62% of study participants had inadequate HL. As well, in a study on nursing students, Shiferaw, Mehari, Eshete[36] stated that the eHealth literacy status of the participants was limited. Likewise, a study on digital health literacy among healthcare providers to share COVID-19 related information[38] reported that the digital health literacy status among the respondents to share COVID-19 related information was inadequate.

Sources of Health Information and Knowledge Among the Participants

Some of the eligible studies[29,30,35] assessed and identified different sources of health information and knowledge among studies participants. In a study on chronic patients,[35] reported that health workers (83.4%) and television broadcasts (30.0%) were widely used sources of health information among the respondents. Similarly, a study on patients with diabetes[29] found that most (88.6%) of the respondents used health professionals as their primary diabetes-related information source, and it also reported that the patients used mass media, the internet, family, friends, and magazines or newspapers as their health information sources. In addition, in a study on university students,[30] reported that the preferred sources of health information among the students were healthcare providers (48%) and the Internet (27.6%); family members, friends, television, and radio were also identified as other sources of health information.

Factors Influencing Health Literacy Among the Participants

Of the eligible studies, 14 studies[29–42] investigated and identified multiple predictors of HL among the studies participants. Studies that were concerned with patients[29,31–35,41] identified factors such as educational status, place of residence (rural/urban), income level, sex, access to health information, age, employment status, disease situation, comorbidity, and marital status as predictors of HL among the patients. For instance, a study on NCDs patients[33] found that respondents with household monthly income > 21.45 USD were 4.2 times and those with 10.72 USD –21.45 USD were 1.5 times more likely to have high CHL status for actively managing their health, and female patients were 50% less likely to have high CHL levels to actively manage their health. Moreover, it stated that patients from urban areas were 3.9 times more likely to navigate the healthcare system, and patients who had a history of complication/s from NCDs were 0.31 times less likely to find good health information. In addition, a study on type 2 diabetes patients[31] reported that the mean diabetic HL was higher in male, urban residents, and patients with a family history of DM (P-value ≤0.001). Similarly, a study on admitted adult patients[34] found that patients who had more than grade 12 education were 2.45 times more likely to have high HL (AOR = 2.45, 95% CI: 1.21, 4.98) compared to those who could not read and write. In addition, patients aged ≥ 60 years were 65% less likely to have high HL status (AOR: 0.35, 95% CI: 0.18, 0.70).

Similarly, studies on students[30,36,37,39,40,42] identified multiple factors predicting HL among the respondents, including exposure to health topics in class, reproductive health (RH) service utilization experience, sex, health status, perceived severity/susceptibility, place of residence, ethnicity/culture, school class/grade, parental education, access to the Internet and its perceived usefulness, years/fields of study, and use of smartphones. For example, a study on high school adolescents[39] reported that females, respondents who never attended RH topics, and those who never used RH service were about 52% times (AOR = 0.48, 95% CI: 0.257, 0.881), 56% times (AOR = 0.44, 95% CI: 0.233, 0.843), and 60% times (AOR = 0.40, 95% CI: 0.231, 0.704) less likely to have adequate RHL respectively. Likewise, a study on university students[30] reported that seeking cancer information were four times (AOR=3.92, 95% CI= 1.82, 8.45) higher among fourth year students when compared to first-year ones; three times (AOR=3.05, 95% CI=2.10, 4.43) higher among

physically active ones, and six times (AOR=6.07, 95% CI=4.05, 9.10) higher among those who had internet access. Moreover, it stated that it was two times (AOR=1.85, 95% CI=1.25, 2.73) higher among those who feel healthy; 2.5 times (AOR= 2.48, 95% CI=1.47, 4.20) higher among those who were very concerned about getting cancer, and three times (AOR=3.33, 95% CI=1.85, 6.00) higher among those who perceived cancer as severe. Similarly, a study on healthcare providers[38] reported that respondents' digital HL regarding sharing COVID-19 related information was affected by various factors. It stated that education [AOR = 4.37, 95% CI 2.08–9.17], training [AOR = 3.00, 95% CI 1.80–5.00], attitude [AOR = 1.99, 95% CI 1.18–3.36], perceived usefulness [AOR = 2.01, 95% CI 1.22–3.32], perceived ease of use [AOR = 2.00, 95% CI 1.25–3.21] and smartphone access [AOR = 5.21, 95% CI 2.34–9.62] predict digital HL among the respondents at P-value < 0.05.

However, of the total eligible studies, two studies, specifically studies[43] and,[44] were concerned with evaluating the validity and reliability of the Amharic version of the HLS-EU-Q47 among school and university students and the eHEALS among patients with chronic disease, respectively. In the former,[43] the RMSEA index was reported as < 0.10 in the construct validity test, but the GFI, AGFI, CFI, and IFI were reported to be within the range from 0.90 to 0.80 for most domains of HL for all participants, and the NFI score was < 0.80 for all domains, indicating a fit that was not tolerable for its validity. In addition, in the item-scale convergent validity test, most of the items were found to have a very weak correlation, ranging from −0.022 to 0.450. However, the assessment showed high levels of internal consistency of reliability with a relatively high Cronbach's alpha coefficient (α=0.910), and the split-half Spearman-Brown coefficients ranged from 0.621 to 0.88, which were mostly satisfactory. Thus, the Amharic version of the HLS-EU -Q47 was reported to be reliable but weak in validity, necessitating further adaptation and validation in Ethiopian local contexts. Whereas in,[44] the Cronbach's alpha coefficient for the translated eHEALS total score was 0.94, and the total score of the test–retest reliability was acceptable, with an interclass correlation coefficient of 0.92. Also, the KMO ratio of sampling appropriateness was satisfactory (0.91) and Bartlett's test of sphericity was significant (p < 0.001). The EFA extracted two factors, and the extracted factor explained 80.2% of the common variance, with 51.8% for Factor 1 and 28.4% for Factor 2, and item fit for both infit and outfit mean squares were reported as within the adequate range (0.5–1.5). Thus, the authors reported that the translated tool was consistent and valid, and the findings indicate important directions for further improvement in eHEALS.

Discussion and Implications

This study aimed to provide a comprehensive synthesis of existing evidence on HL in Ethiopia and discuss the implications for healthcare practice, health promotion, and future research. The review indicated that research on health literacy in Ethiopia is limited, and all of the eligible studies were from the very recent research endeavors. The eligible studies assessed various aspects of HL, including domain-specific HL,[35–40,44] disease-specific HL,[29–31] functional and communicative HL,[32,33] and general HL.[34,43] The majority of the reviewed studies employed validated HL assessment tools, including the eHealth literacy scale,[45] HL Measure for Adolescents,[48] Mental Health Literacy Questionnaire,[49,50] HL Questionnaire,[55] European HL Survey Questionnaire,[51] and Newest Vital Sign.[53] However, some of these studies did not provide a clear description of the application of the tools they utilized, and there were also studies that did not measure HL among respondents using validated HL tools.

The majority of eligible studies[29–42] measured HL status among the studies participants, and many of these studies reported low or inadequate HL levels among the participants. However, a number of these studies reported that the participants used various sources of health information and knowledge, including healthcare workers (reported as widely used information source among both patients and student respondents), television, radio, Internet (reported as the second most widely used source of information among student respondents), family, friends, and newspapers.[29,30,35] Low health literacy among the studies participants, both patients and students, is a critical issue. Evidence indicates that patients with low HL often exhibit poor healthcare services utilizations and poor health outcomes,[9–11] and young people with low HL are more susceptible to health-compromising behaviors.[15,16,64–66]

The eligible studies reported multiple factors affecting HL among participants. Studies concerning patients[29,31–35,41] identified education, place of residence, income, access to health information, sex, age, employment status, disease characteristics, comorbidity, and marital status as predictors of HL among the studies participants. Studies on

students[30,36,37,39,40,42] reported exposure to health topics in class, health service utilization experience, gender, health status, perceived severity, perceived susceptibility, place of residence, ethnicity/culture, class/grade, parental education, Internet access and its perceived usefulness, year of study, field of study, and smartphone use as predictors of HL among the participants. Literature also indicates that HL is affected by a wide range of factors, including personal and structural levels conditions.[6,7,66,67]

Almost all of the eligible studies were conducted in clinical and school/university contexts in adult patients and students respectively, with limited scopes. The associations between HL and healthcare seeking behavior, medication adherence, health outcomes, and HL from health promotion perspectives are almost unexplored research areas. In addition, there is a lack of health literacy measurement tools adapted to the Ethiopian context. The dearth of research on HL is a problem for the country, especially, with regard to designing and making effective health policy decisions and interventions. It could also be a problem for regional and global stakeholders to make comparisons and make related decisions and interventions, as HL is influenced by a wide range of factors, including social and cultural factors that may make it difficult to transfer the results of research conducted in one culture to the other's context.[6,7,68] Therefore, to have local and context-based understanding of the issue and to make effective interventions, HL needs to be a top research priority in Ethiopia.

The review noted low HL among patients and HL levels varied according to the socio-demographic and disease characteristics of the patients. Research has indicated that HL determines interactions within and utilization of the healthcare system and health outcomes among patients.[9–11] Understanding HL levels among patients is the basis for ensuring compliance with treatment, improved use of healthcare services, and good health outcome among patients.[69,70] Hence, health practitioners must understand the HL status and situation of patients and provide tailored health information and services accordingly.

Poor HL has a negative impact not only on health outcomes of individuals but also on those of communities and societies, as it is strongly linked to poor health, broader inequalities in health, and higher health system costs.[71,72] HL can help achieve universal health coverage, promote equal opportunities in health, increase knowledge of preventive measures, minimize the costs associated with healthcare, and improve the health of the general population.[6,16,73,74] Therefore, improving HL is a critical issue especially, in developing countries such as Ethiopia, which is experiencing a double burden of health problems (communicable and non-communicable diseases).[21,22] HL in young people is especially a pressing matter for Ethiopia, as it is a country with a predominantly young population[75] which determines both the current and future well-being of the nation in all aspects. Therefore, it is essential to target HL as a major public health concern in Ethiopia.

Strengths and Limitations

This work has provided a comprehensive synthesis of existing evidence on HL, including the tools utilized in Ethiopia, and indicated the implications for healthcare practice, health promotion, and future research. However, it may have limitations due to the following reasons. 1) Quality assessment of the included studies was not conducted with the purpose of including more studies. 2) The included studies were conducted in hospital and school settings and were from limited areas or parts of the country; hence, the results may not be generalizable to the wider society. 3) There was a wide range in the age of study participants in almost all of the included studies; for instance, in one of the studies,[32] it ranged from 18 to 88, and this is a problem as age and life experiences are some of the factors that influence HL status and health outcomes. 4) The reviewed studies used HL tools that were designed and developed in high-income countries; hence, these instruments may not be suitable in low-income countries such as Ethiopia. 5) The eligible studies used different HL tools and categorized studies participants in different ways based on their HL levels, which may create difficulty in making a conclusion on the HL status among the studies participants across the eligible studies. 6) Evidence for this study was search and obtained from PubMed, CINAHL, AJO, AIM, JBI RBP, DOAJ, PLOS Global Public Health, and Google Scholar; thus, additional relevant studies from other databases may have been missed.

Conclusion

This review has provided critical insights into the state of health literacy in Ethiopia. There is a need for comprehensive research and the development of context-appropriate health literacy measurements tailored to the Ethiopian context, as well as evidence-based health literacy interventions. Prioritizing health literacy as a key research and intervention area is essential for improving the health of individuals and populations and achieving health-related Sustainable Development Goals in Ethiopia.

Disclosure

The authors declare no conflicts of interest in this work.

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