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Electronic health literacy and its associated factors among university students using social network sites (SNSs) in a resource-limited setting, 2022: cross-sectional study

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Abstract

Background E-health literacy is defined as an individual's ability to look for and appraise health information from online electronic sources. In this digital age, e-health literacy is one of the most important determinants of health and health behaviors, particularly among adolescents who often influenced by information from various social network sites (SNSs) in developed countries. However, there is limited evidence regarding eHealth literacy level and its associated factors among jimma university undergraduate students using SNSs in less developed settings.

Objective The aim of this study is to examine eHealth literacy level and its associated factors among Jimma university students using Social Network Sites, Ethiopia.

Methods A cross-sectional study was conducted at Jimma University from June 2022 to July 2022. A multistage stratified sampling method was applied to select 794 study participants. Multivariate linear regression modeling was performed to examine the associations between the dependent and independent variables. A *P* value < 5% was considered statistically significant.

Result A total of 794 respondents (response rate 93.8%) participated in the study. The majority of the respondents (485, 61.1%) were male, with a mean age of 22.6 years. The mean e-health literacy score was (M = 26.68 (SD ± 4.90) range = 31).Year [β = 0.086; 95% CI (0.082–0.676)], urban residents [β = 0.202; 95% CI (1.341– 2.634)], SNSs for health information [β = 0.165; 95% CI (-0.998–3.190)], Membership in SNSs [β = 0.569; 95% CI (0.324-0.814)], you tube usage [β = 1.545; 95% CI (1.177–1.913)], Google usage (β = 0.898; 95% CI (0.512-1.284)], and medical application users [β = 0.194; 95% CI (-1.227- -2.595)] were significantly related to eHealth literacy.

Conclusion This study indicated that the participants had a low level of eHealth literacy. In addition, year of study, previous residency, SNSs for health information, medical application user, Membership in SNSs, youtube usage and Google usages were among the factors significantly associated with e-health literacy. Expanding internet access and infrastructure across higher educational institutions are key ways to improve e-health literacy.

Keywords E-health literacy, Social network sites, University students

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Introduction

Scholars define eHealth literacy in various ways. Norman and Skinner define eHealth literacy as the ability to appraise health information from electronic sources and apply the knowledge gained to address a health problem [1]. E-health refers to the efficient and secure application of technology to enhance health and related areas, such as healthcare services, public health monitoring, medical literature, health education, knowledge sharing, and research [2]. The World Health Organization (WHO) emphasized that achieving universal health coverage depends on the integration of e-Health. Consequently, proficiency in using e-Health platforms plays a vital role in realizing this goal [3].

Engaging with e-Health requires a specific skill set; individuals need fundamental skills to benefits from e-Health. In addition to basic computer and internet literacy skills, e-health literacy is a composite of several core skills, including traditional skills, health skills, information skills, media skills, scientific literacy, and computer skills [1]. A study from various countries on information technology use and literacy revealed that as literacy skill levels rise, the diversity and intensity of internet use, the perceived usefulness of computers, and the use of computers for task-oriented purposes increase [4].

The rapid growth of electronic devices and global internet access, along with the rising use of social media in public health education, has made it easier to overcome geographical barriers that impede access to healthcare support and resources [5]. Nowadays, many people rely on electronic devices to access health information through social media, with university students being more exposed to diverse technologies than ever before. they often use interactive and computing devices for social activities, such as social networking, text messaging, blogging, online learning, and content sharing [6].

Social networking sites(SNSs) are online service platforms that facilitates the building of social networks or social relationships among individuals who wish to share interests, activities, backgrounds, or real-life connections [7]. while Facebook is the most widely known SNS with the greatest number of users worldwide, platforms like Twitter and LinkedIn, are also popular [8]. By their nature Social networking sites, can educate, inform, entertain, and engage audience. They have become a widespread tool for communication and exchange of ideas, allowing individuals and organizations with important causes to reach a vast audience [9]. Social networking sites have become an integral part of undergraduate students' daily lives [10]. Students use SNSs to communicate with peers, share subject-related information and to discuss coursework that is beneficial for learning [11]. Social network sites have significant potential to enhance e-health, particularly for young people, as 60% of internet users access health related content on social media [12]. These platforms provide tremendous opportunities for engaging quickly and deeply with diverse stakeholders, enabling global communication [13].

However, individuals may also encounter harmful information online, which can promote risky health behaviors and lead to significant information misuse [14, 15]. Studies indicate that those with greater eHealth literacy are more likely to use the internet and social media for health information [16]. In a study of university students in Bangladesh, 73.9% reported using popular Web 2.0 platforms, such as Facebook and Twitter, to seek and share health information [17].

Another qualitative study conducted in the USA in 2016 among young adults revealed that social media channels were brought up by the participants regarded social media as relatively new tools for seeking, understanding, and sharing of health information [18]. Effectively using social network sites as a health literacy strategy has the potential to address health disparities and may have important public health implications due to its low cost and wide reach [19].

This study aimed to assess the electronic health literacy of university students in Jimma and explore the relationship between their use of social networking sites (SNSs) and their ability to effectively search for, comprehend, and apply health information. SNS usage offers new opportunities to enhance students' e-health literacy by improving information-sharing abilities and fostering greater connectivity. Although some studies have been conducted in Ethiopia regarding ehealth literacy and its associated factors, to the best of our knowledge, no research has investigated the association between e-health literacy and its associated factors among jimma university undergraduate students using SNSs. This phenomenon has rarely been addressed in previous studies conducted in Ethiopia. (Fig. 1**Conceptual Framework).**

Methods and materials

Study area and period

The study was conducted among undergraduate students at Jimma University. Jimma University is located in the city of Jimma and is situated approximately 352 km southwest of Addis Ababa. JU currently has four colleges (college of natural science, college of social science, college of business and economics, and college of agriculture and veterinary) as well as two institutes (institute of health and institute of technology); the university educates a total of 8692 regular undergraduate students. Providing a diverse educational environment for research on eHealth literacy.

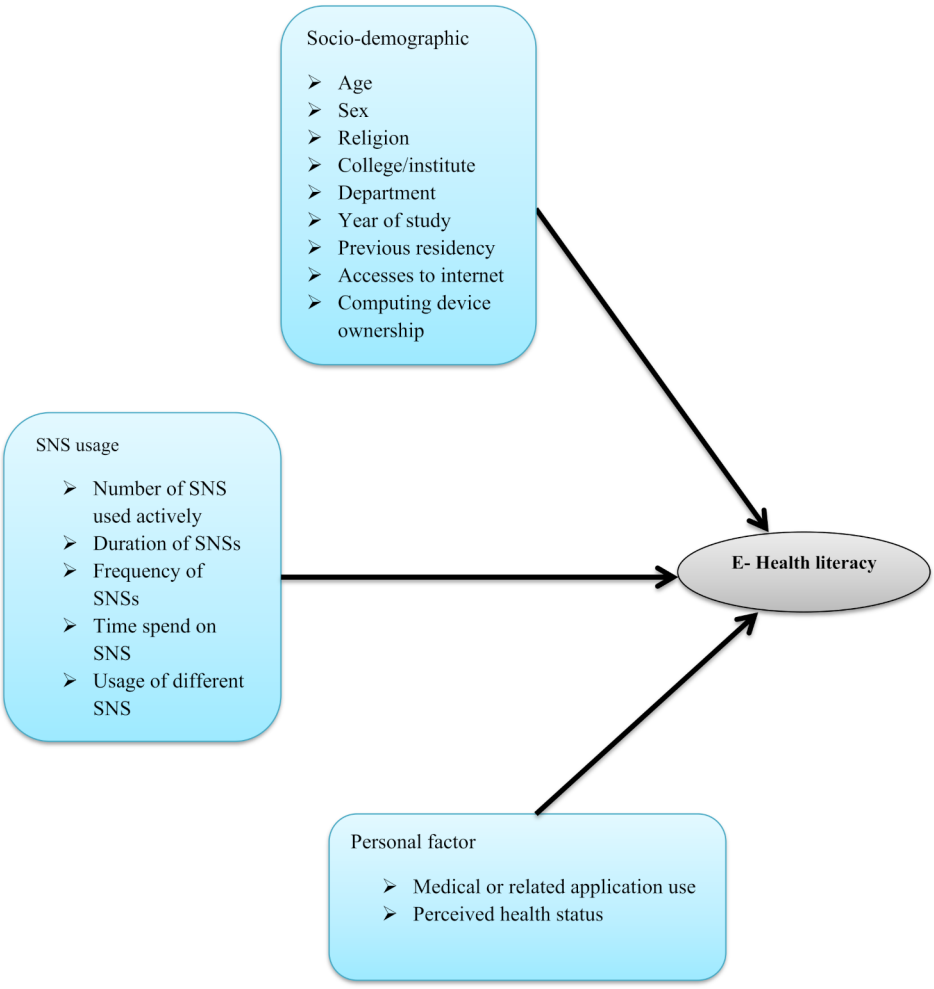

Fig. 1 Conceptual framework for e-health literacy and its associated factors among jimma university undergraduate students using SNSs Southwest, Ethiopia, 2022

Study design

A quantitative cross-sectional study was carried out from June 2022 to July 2022 to assess eHealth literacy and associated factors among Jimma University students using social network sites.

Source and study population

Study population All the participants were randomly selected undergraduate students from JU who were admitted to regular programs and who were available during the data collection period.

Inclusion and exclusion criteria

The inclusion criteria All regular undergraduate students who attended JU and who were in the selected department.

The exclusion criterion First-year students were excluded from the sample because they were enrolled in common courses and had not yet chosen a department.

Sample size & sampling procedures

The sample size was calculated via the single population proportion formula [20, 21]:

$$\text{Sample size (n)} = \frac{(z\alpha/2)^2 \times p(1-P)}{d^2},$$
$$(n) = \frac{(1.96)^2 \times 0.5(1-0.5)}{(0.05)^2} = 385$$

Where

- n = Estimated sample size.
- P = single population proportion (50%)→ because there was no study done previously in Ethiopia.
- $Z_{\alpha/}2$ is the value of the standard normal distribution (Z statistic) at the 95% confidence level (α = 0.05), which is 1.96:
- d = the margin of error 5% (0.05),
- design effect 2 385*2 = 770 because multistage sampling procedure was applied.

- A 10% nonresponse rate was added, and the final sample size was 847.

Sampling procedure

A multistage stratified sampling technique was implemented to select the representative sample. Initially, the students were stratified into six homogeneous categories on the basis of the college and institute of the university. The students were categorized into 6 categories: college of natural science, college of social science, college of business and economics, college of agriculture and veterinary, institute of technology, and institute of health. The total sample size was distributed proportionally across this strata using fixed sample size allocation. From the stratified groups, which consisted of homogenous departments, simple random sampling was subsequently used to identify the departments to be included in the study. The departments were selected randomly according to the number of departments that exist within the college and institute. Two departments from the College of Natural Science, three departments from the College of Social Science, four departments from the Institute of Technology, four departments from the Institute of Health, two departments from the College of Business and Economics, and two departments from the College of Agriculture and Veterinary were selected.

The sampling method used to select the study participants was the quota sampling method. The students were selected until the required total sample in each stratum was obtained.

Data collection procedure

The data were collected through structured self-administered questionnaires. The questionnaires were distributed by four trained data collectors, each with a minimum BSc degree in health-related programs. Training for the data collectors was given before data collection. Data collectors were supervised by their respective supervisors during data collection. Moreover, the respective department heads, chairpersons, and deans of faculties were first approached through a formal letter written from the Department of Health Behavior and Society. The questionnaires were then distributed to all the selected study participants with the support of the data collectors, who guided and assisted the respondents. The questionnaires were distributed to them on their campus, but they were initially notified about the purpose of the study before they started to complete the questionnaires.

Variables of the study

The dependent variable

eHealth literacy, was assessed by the 8-item Health Literacy Scale on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) A five-point Likert scale ranging from 'strongly agree' to 'strongly disagree' was employed as it has been most recommended by the researchers that it would reduce the frustration level of respondents and increase response rate and response quality.

Independent variables

Socio-demographic and economic factors Age, sex, college or institute, department, religion, residence, year, access to the internet, and computing device ownership.

Personal factors Perceived health status and medical or academic related application use.

SNS usage and access to the internet SNS use, number of SNSs used actively, time spent on SNSs, duration of SNS use, purpose of SNS use.

Data collection instrument

Structured questionnaires were used for the data collection [1, 22]. The questionnaire contains different sections. Section one was used to collect the socio-demographic information of the students. The second section focused on the social network site usage of the respondent. This scale is adopted from social networking site usage and need scales. According to the results of the measurement model for SNS usage, composite reliability (CR) is between 0.810 and 0.882, which indicates adequate reliability [23]. The third section of this study is composed of questions about personal factors and contains 2 items. Medical application user's tool has a good validity (0.84–0.98) and a reliability of 0.78 and the reliability of the perceived health status were 0.75, indicating strong reliability [24, 25].

The last section contains 8 items with an eHealth literacy scale scored on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The tool does not provide guidelines for the interpretation of scores other than the higher score of the summation of responses, which indicates a higher level of eHealth literacy. The EHEALS was introduced in 2006 following a recommendation by Norman, who is one of the two authors of the original eHealth literacy scale [1]. The EHEALS tool has been tested in both intervention trials and population health surveys with multicultural samples. It has excellent internal consistency (scale alpha = 0.89–0.97) and good test–retest reliability. The scale has been translated into multiple languages and is currently in use in 10 countries.

Operational definition

E-Health literacy is the ability to appraise health information from electronic sources and apply the knowledge

gained to addressing or solving a health problem. E-Health literacy has eight items. The respondents specified their agreement with the EHEALS statements on a five-point Likert-type scale ranging from strongly disagree [1] to strongly agree [5].

E-Health literacy scale is an 8-item self-report tool designed to assess individuals' perceived ability to find, evaluate, and apply health-related information from electronic sources. It evaluates a person's skills in interacting with eHealth technologies, such as the internet and mobile applications, to make informed health decisions.

Social network sites (SNSs) is an online place where a user can create a profile and build a personal network that connects him/her to other users.

Internet access is the ability of individuals and organizations to connect to the Internet using computers and other devices. Perceived access to the internet was measured as adequate, fair or inadequate.

The computing device refers to computers/tablet/laptops, smartphones and any touch-friendly device that can allow a user access to the internet. Computing device ownership was measured via smartphones, computers, and tablets.

Social networking sites usage A number of active SNSs were measured in a specific number, such as (one, two, three, four, or five). Time spent on SNSs was measured in minutes and hours, (half an hour, 1–2 h, 3–4 h, 5–6 h, or 7–8 h), and the number of SNSs checked per day was measured as (1–2 per day, 3–4 per day, 5–6 per day, or 7–8 per day); membership of SNSs was indicated by years (less than one year ago, 1–2 years ago, 3–4 years ago, 5–6 years ago, 7–8 years ago, or 9–10 years ago); and the purpose of SNS use was measured by (educational, health information, entertainment and social interaction purposes). 1=Never 2=rarely 3=occasionally 4=everyday.

Perceived health status was measured with the question "In general, how would you describe your current health?" with "excellent," "very good," "good," "fair," and "poor" responses.

Medical application Software developed for medical purposes, including home medical monitoring systems, medical databases for healthcare professionals, etc. Students who use medical applications are labeled "users of medical applications", and those students who do not use medical applications are labeled "nonusers of medical applications".

Data quality control

To ensure the quality of the data before starting the actual data collection, a pretest was conducted in one of the randomly selected departments of JU. After the pretest, analysis of the eHealth literacy scale data revealed the instrument's reliability, with an internal consistency Cronbach's alpha score of 0.79.

During the data collection, data collectors were supervised at each site, and regular meetings were conducted between the data collectors and the principal investigator together, in which problematic issues arising during the data collection and mistakes found during editing were discussed and decisions were made. Incomplete and invalid data were discarded, and 10% of the data were double entered to check for errors during data entry. The questionnaire was reviewed and checked for completeness, accuracy, and consistency by the principal investigator.

Data analysis procedure

After the data were collected, they were coded and entered into Epi-data version 7. The data were subsequently exported to SPSS version 25 for further analysis. To check consistency in data entry, a frequency run was carried out for all variables that may have been entered faultily and inconsistently. Descriptive statistics (frequencies, percentages, means, and SDs) were calculated for important variables. A multivariable linear regression model was fitted to predict and measure the relationship between the dependent variable and the independent variables. A p value of less than 0.05 and 95% CI were used.

Ethical consideration

Ethical clearance and approval to conduct this research were obtained from the research and ethical review board of the Jimma University Institute of Health with the reference ID after 43/5/2021. The study participants were informed about the objective and expected outcomes of the study, and written consent was provided to guarantee their choice of participation or refusal. All the information was recorded anonymously, and confidentiality was assured throughout the study.

Results

Socio-demographic characteristics of the study participants

A total of 794 respondents participated, for a 93.8% response rate. The majority of the respondents (61.1%) were male, and the mean age was 22.6 years, with maximum and minimum ages of 19 and 30 years, respectively. Among the total respondents, 19% (151) had their own computers, whereas 75.6% (600) and 5.4% [43] had smartphones and tablets, respectively. Half of the

Table 1 Socio-demographic characteristics of Jimma university undergraduate students in Jimma town, southwestern Ethiopia, 2022

variable	Responses	Frequency	Percentage
Age	19–24	651	82.0%
	25–29	132	16.6%
	=>30	11	1.4%
Sex	Male	485	61.1%
	Female	309	38.9%
Religion	Orthodox	374	47.1%
	Muslim	240	30.2%
	Protestant	154	19.4%
	Catholic	19	2.4%
	Others	7	0.9%
Collage	College Natural	46	5.8%
	College Social	107	13.5%
	College Agriculture	60	7.6%
	Institute Technology	328	41.3%
	Institute Health	207	26.1%
	College Business	46	5.8%
Year	Second year	203	25.6%
	Third year	348	43.8%
	Fourth year	124	15.5%
	Fifth year	72	9.1%
	Sixth year	48	6%
Previous residency	Rural	374	47.1%
	Urban	420	52.9%
Owning computing device	Computer	151	19.0%
	Smartphone	600	75.6%
	Tablet	43	5.4%
Accesses to the internet	Adequate	212	26.7%
	Fair	410	51.6%
	Inadequate	172	21.7

respondents (410) reported that they had fair access to the internet. The details of their demographic distributions are depicted in (Table 1).

Social network site usage

All of the respondents use some form of social network site. More than one-fourth (77.3%) of the respondents used four to five SNSs. The respondents mainly use SNSs for educational and for entertainment purposes, accounting for 41.3% and 25.1%, respectively, of all respondents. Telegram, YouTube and Facebook were the most commonly used SNSs sites used every day (83.8%, 63.5% and 60%, respectively), whereas Twitter and Instagram were among the least commonly used SNSs (7.6% and 15%, respectively) (Tables 2 and 3).

Personal factors

More than one-third of the respondents had excellent perceived health conditions, and 53.8% of the participants used medical applications (Table 4).

Table 2 SNS usage by Jimma university undergraduate students in Jimma town, southwestern Ethiopia, 2022

Category	Value	frequency	Percentage
SNs use	yes	794	100%
	No	0	0%
Number of SNSs used actively	One	10	1.3%
	Two	46	5.8%
	Three	124	15.6%
	Four	328	41.3%
	Five	286	36. 0%
Checking SNSs account per day	1– 2times	346	43.6%
	3– 4times	283	35.6%
	5– 6times	118	14.9%
	7– 8times	47	5.9%
Time spend on SNSs per day	half an hour	242	30.5%
	1–2 h	316	39.8%
	3–4 h	182	22.9%
	5–8 h	54	6.8%
Membership of SNSs	less than one year	75	9.4%
	1– 2years ago	146	18.4%
	3– 4years ago	259	32.6%
	5–6 years ago	172	21.7%
	7–10 years ago	142	17.9%
purpose of using SNSs	Educational	328	41.3%
	Health information	145	18.3%
	Entertainment	199	25.1%
	Social interaction	122	15.4%

Table 3 Usage of different SNSs by Jimma university undergraduate students in Jimma town, southwestern Ethiopia, 2022

	Never	Rarely	Occasionally	Everyday
Facebook	44(5.5%)	143(18%)	131(16.5%)	476(60%)
Twitter	566(71.3%)	105(13.2%)	62(7.8%)	61(7.6%)
Telegram	22(2.8%)	29(3.7%)	77(9.7%)	666(83.8%)
Instagram	475(59.8)	114(14.4%)	86(10.8%)	119(15%)
You tube	60(7.6%)	79(9.9%)	151(19.0%)	504(63.5%)
Google	40(5.0%)	120(15.1%)	195(24.6%)	261(32.9%)

Table 4 Personal characteristics of Jimma University undergraduate students in Jimma town, southwestern Ethiopia, 2022

Variable	category	Frequency	percentage
Perceived Health status	Excellent	277	34.9%
	Very good	242	30.5%
	Good	190	23.9%
	Fair	70	8.8%
	poor	15	1.9%
Medical application use	Yes	427	53.8%
	No	367	46.2%

Level of eHealth literacy

E-health literacy was measured via the EHEALS measurement scale. The mean e-health literacy score of the respondents was **26.68 (SD ± 4.90)** (Table 5).

Table 5 EHEALS scale means and standard deviations for Jimma University undergraduate students in Jimma town, southwestern Ethiopia, 2022

Items	Mean	Std. Deviation
I know what health resources are available on the internet	3.52	0.929
I know where to find helpful health resources on the Interne	3.43	0.969
I know how to use the internet to answer my health questions	3.43	0.929
I have the skills I need to evaluate the health resources I find on the internet	3.28	0.960
I can tell high-quality from low-quality health resources on the internet	3.14	0.958
I know how to find helpful health recourses on the internet	3.39	0.991
I know how to use the health information I find on the internet to help me	3.37	0.927
I feel confident using information from the internet to make successful health decision	3.14	1.022
Total EHEALS score	26.68	4.90

Factors affecting e-health literacy

The multivariable linear regression results indicated that several factor were significantly associated with participants eHealth literacy, including enrollment year, the college of the student, previous residence, Membership in social network sites (SNSs), and usage of platforms such as YouTube and Google as well as usage of medical applications.

In this study, a year increase in student enrollment increased the eHealth literacy level by [β=0.086; 95% CI (0.082–0.676)]. The eHealth literacy of students from the College of Natural Science [β=0.088; 95% CI (0.353–3.323)] was greater than that of those from the Institute of Health, with other variables remaining constant. Students from the College of Agriculture and Veterinary, [(β=-0.162; 95% CI (-4.408, -1.583)], had lower e-health literacy than health students, with other variables remaining constant.

The eHealth literacy skills of students from urban residents were [β=0.202; 95% CI (1.341– 2.634)] greater than those of those from rural residences, with other variables remaining constant. Compared with students who use SNSs for entertainment while keeping other variables constant, those who use SNSs for health information [β=0.165; 95% CI (-0.998–3.190)] have greater e-health literacy skills.

A year increase in membership in SNSs increases the e-health literacy level by [β=0.569; 95% CI (0.324-0.814)]. Additionally, a one-unit increase in YouTube and Google usage increases the e-health literacy level by [β=1.545; 95% CI (1.177–1.913)] and (β=0.898; 95% CI (0.512–1.284)], respectively. The eHealth literacy level of medical application users was [β=0.194; 95% CI (-1.227–2.595)] greater than that of nonusers, with other variables remaining constant (Table 6). The multivariable linear regression results indicated that several factor were significantly associated with participants eHealth literacy, including enrollment year, the college of the student, previous residence, Membership in social network sites (SNSs), and usage of platforms such as YouTube and Google as well as usage of medical applications.

Table 6 Ehealth and its associated factors for Jimma university undergraduate students in Jimma town, southwestern Ethiopia, 2022

Variable	B	β	*P*-value	95%CI	
				lower	upper
Year	0.379	0.086	0.013	0.082	0.676
College and institute					
College Natural	1.838	0.088	0.015	0.353	3.323
College Social	-0.678	-0.047	0.243	-1.817	0.461
College Agriculture	-2.995	-0.162	0.000	-4.408	-1.583
institute Technology	-0.632	-0.064	0.155	-1.503	0.239
College Business	-1.028	-0.049	0.167	-2.487	0.431
institute Health					
Previous residency					
Rural	1.987	0.202	0.001	1.341	2.634
Urban					
Number of SNSs used	-0.241	-0.350	0.086	-0.750	0.050
Time spend on SNSs	-0.026	-0.013	0.943	-0.378	0.352
Membership of SNS	0.462	0.569	0.000	0.324	0.814
Facebook	-0.026	-0.013	0.939	-0.353	0.327
Twitter	-0.309	-0.254	0.202	-0.643	0.136
Telegram	0.272	0.375	0.154	-0.141	0.892
You tube	1.328	1.545	0.000	1.177	1.913
Google	0.721	0.898	0.000	0.512	1.284
Purpose of SNSs usage					
Educational	1.751	0.176	0.000	-0.817	2.685
Health information	2.094	0.165	0.000	-0.998	3.190
Social interaction	0.969	0.086	0.055	-0.022	1.960
Entertainment					
Medical app. Use					
No					
Yes	1.911	0.194	0.000	-1.227	2.595

Reference categories = * health students, *No, *entertainment, * rural,

Discussion

The findings of this study indicate that the mean e-health literacy level among students, as measured by the EHEALS score, is 26.46 with a standard deviation of 4.46. Several factors were significantly associated with participants' eHealth literacy, including the year of study, college of the student, previous residence, membership in social network sites (SNSs), and usage of platforms like YouTube and Google. Additionally, the purpose of SNS usage, and the use of medical application were significantly associated with participants' eHealth literacy.

EHealth literacy

The results of this study revealed that Jimma University students have a mean EHEALS score of 26.46 (SD=4.46). This finding aligns closely with prior studies conducted among medical students in Vietnam (mean score of 27.3) and across four universities in Bangladesh (mean score of 27.46) [17, 26]. However, the mean e-health literacy level of this study is notably lower than that observed in studies from Iran, where medical and health sciences students in Mashhad, reported scores of 28, and from the U.S.A. and South Korea, where medical and health science students, had mean score of 31.9 [27, 28]. The observed discrepancy in eHealth literacy scores maybe attributed to the characteristics of the study population. Students in Iran, the USA, and South Korea are often enrolled in health related programs, which likely exposes them to a greater volume of health information and digital resources throughout their education. Previous studies indicated that being a health major significantly enhances students eHealth literacy level [29, 30]. this suggests that educational context and curriculum might play a crucial role in shaping eHealth literacy. Additionally, a study conducted in Canada among pharmacy students reported a mean e-Health literacy of 31.07 [31]. and a Sri Lankan study in nursing students revealed a mean score of 31 [32]. these scores substantially higher than those found in the current study suggesting that several factors may contribute to the variation in health literacy score including Access to health service, socio-demographic variables, socio-economic status, and socio-cultural factors [28].

Factors affecting e health literacy

The findings of this study indicate that each additional year of student enrollment is associated with a significant increase in eHealth literacy, with coefficient of [β=0.0867; 95% CI (0.082–0.676)]. This result aligns with previous research conducted at Gondar University, which found that nursing students eHealth literacy improves as they progress through their year of study [33]. As students advance through their academic journey, they are more likely to gain exposure to digital resources, health information, and academic content that promote the development of eHealth-related skills. Additionally, students typically encounter more complex and diverse health-related topics as they progress, which encourages them to engage more deeply with eHealth tools and resources, thus enhancing their eHealth literacy incrementally with each year.

Additionally Previous residence was also a notable factor, possibly indicating that students from urban or semi urban backgrounds have had more exposure to digital tools or reliable internet access, fostering earlier development of eHealth literacy skills. This finding highlights the importance of equitable access to digital resources in promoting eHealth literacy [34]. Conversely, our study found no significant association between age, gender and eHealth literacy this is consistent with findings from as study in Jordan, which reported similar result [35]. additionally research from japan also indicated that there is no notable differences in eHealth literacy between male and female students [36].

Another important finding of this study is the significant relationship between SNSs usage and E-health literacy. This aligns with A qualitative study conducted in the USA in 2016, where young adults identified Social media channels as valuable new tool for seeking, understanding, and sharing of health information [18]. Our study specifically highlighted that you tube usage is associated with eHealth literacy with a coefficient of [β=1.545; 95% CI (1.177–1.913)] supporting this finding, research from Kuwait found that approximately 50% of participant reported using YouTube to seek health information [37]. Similarly, YouTube has emerged as a highly popular resource for health information, particularly through video content that can make complex health topics more understandable and engaging While this is advantageous in terms of easy dissemination of information, on the downside, the unrestrained nature of YouTube content is a challenge; thus, the more eHealth literate the students, the better they will be at filtering which of these sources are credible and build on misinformation. This skill is acutely needed today, when online health information is abundant and variable in quality [38]. Google usage also showed [β=0.898; 95% CI (0.512-1.284)] significant association with eHealth literacy. Google, as widely accessible search engine, provides quick access to diverse health-related information, allowing users to search vast array of health topics independently [39]. This ease of access supports the development of digital literacy skills, especially as users gain experience discerning credible sources from potentially inaccurate information. Enhanced digital navigation skills, as developed through regular use of platform like Google, are critical components of eHealth literacy, enabling students to better evaluate and apply health information found online [1].

This study also revealed a significant association between the purpose of SNS usage and e-health. Compared with students who use SNSs for entertainment, those who use SNSs for health information have [β=0.165; 95% CI (-0.998−3.190)] greater eHealth literacy skills. This result is similar to that of the Vietnam study in that most of the participants accessed the internet for health information purposes [40]. Additionally, the importance of social media as a tool for health education is echoed in the work of who found that users who follow health-related accounts are more likely to engage in health-promoting behaviours [41]. This suggests that

the more students interact with health content on SNSs, the more they may be motivated to make informed health decisions and seek further information. The results of the present study revealed that medical application users had a [β=0.194; 95% CI (-1.227–2.595)] greater eHealth literacy level than nonusers did. In recent years, medical applications have proven to be more effective because they enable access and communication with health information, which contributes to eHealth literacy [42–45].

Conclusion and recommendations

The study revealed that the eHealth literacy level of the study participants was low. In addition, year of study, previous residency, membership in SNSs, usage of YouTube and Google, purpose of SNS usage, and medical application use were among the factors significantly associated with e-health literacy. Expanding internet access and infrastructure across higher educational institutions are key ways to improve e-health literacy. In addition, more efforts should be shifted from traditional media to online health information, with a focus on the social media outlets that students in universities find more useful for seeking health information.

Implications of the study

Public health organizations will use this knowledge in the development of focused campaigns that resonate with university students. Through the use of popular SNSs, health messages could be appropriately framed in an efficient way to engage students in the promotion of healthy behavior and the dissemination of accurate health information. These results could also be of importance to the policymakers to highlight their role in developing regulations or at least guidelines concerning the type of health information available on SNSs. By using the proper communication technique on SNSs, appealing to students' preferences and use habits in the digital world, the potential has been created for healthcare professional-communicators to engage university students more effectively.

Future research scope

This survey may provide data on how the level of eHealth literacy and usage of SNSs change over time, especially with respect to changing digital landscapes and health information availability. So, Future studies may compare the level of eHealth literacy across different universities or demographic groups in Ethiopia or other countries. Such a study may indicate regional differences and contextual factors that contribute to eHealth literacy levels.

Limitations of the study

Self-reported measures with respect to the level of eHealth literacy and engagement with SNSs are prone to bias because of the overestimation by the participants with regard to their capabilities or grade of engagements. And since it is a cross-sectional study design, it can depict only snapshots of students' eHealth literacy and usage of SNSs at one point in time and thus has limitations in the inference of causality or changes over time.

Abbreviations

BSc	Bachelor of Science
E-Health	Electronic Health
EHEALS	Electronic Health Literacy Scale
JU	Jimma University
USA	United States of America

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Author contributions

Proposal preparation, acquisition of data, analysis and Interpretation of data was done by SA (principal investigator). Drafting the article, revising it critically for intellectual content, and final approval of the version to be published was done by SA, FA, DA, DT and ZR. All authors read and approved the final manuscript.

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Data availability

The datasets used during and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Declarations

Ethical considerations

Ethical clearance was obtained from the Jimma University Institute of Public Health, Research Ethical Review Board, with reference IDs ranging from 43–5--2021. The confidentiality of the data was maintained by using the data only for the purpose of the study and keeping the data from a third party.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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