Determinant Factors Impact of E-Health Literacy on the Quality of Life of Students During the Covid-19

ABSTRACT

Background and Objectives: University students' quality of life (QoL) impacts on their quality of learning, academic achievement and knowledge. An increased risk of deterioration in QoL was happened during the COVID-19 pandemic for university students. The focus of this study is on the impact of university students' electronic health literacy on their QoL and its determinants during the Covid-19 pandemic.

Materials and Methods: This cross- sectional study was conducted by two valid and reliable questionnaires on 260 health students at Semnan University of Medical Sciences in Iran in 2021. E-Health Literacy Scale and World Health Organization QoL questionnaire were used. The link of the online questionnaire was sent to the students. A reminder message was sent to the users, if the online questionnaire was not completed and answered within a specified time. Multiple logistic model regression analysis was used.

Results: About 84.2% of students had sufficient e-Health literacy and 76.4% had a good QoL. The students' e-Health literacy had a significant relationship with English language skills (P=0.30, OR=1.929), Internet skills (P=0.008, OR=1.740), start searching for health information on the Internet (P <0.001, OR=4.840) and information search method in Internet (P=0.007, OR=1.650). There was a significant relationship between students' e-Health literacy and their QoL (P <0.001, OR = 3.466).

Conclusion: Present study shows indicators that encourage university students to involve in electronic health tools and to improve their QoL during the COVID-19 pandemic. These indicators are worth and should be considered when developing medical education, self-management programs and formulating interventions.

Paper Type: Research Article

Keywords: Covid-19, Health Literacy, Impact, Student, Quality of Life.

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Introduction

The Internet is a prominent health information source and a valuable tool in dealing with any health problems (1). The World Wide Web and other technology-based applications have become an integral part of public health and medical facilities, and people increasingly rely on these tools as their primary source of information. seek information and get medical advice, instead of consulting medical professionals (2).

Since the outbreak of the coronavirus pandemic 2019 (COVID-19), people's demand for online medical services has steadily increased. As of June 2020, the number of medical Internet users has reached 276 million, accounting for 29.4% of all Internet users (3). Research has shown that the use of health information on the Internet is effective in changing people's eating and exercise habits (4). Electronic health literacy (e-health literacy) is a level of individual skills and competencies used to provide, create, communicate, process, and understand essential services and health information needed to make the right health decisions (5).

The studies showed that e-learning impact on increasing of e-health literacy. König and et al developed an e-learning course and evaluated the its impact on increasing of digital health literacy in school-age children. They found that the evaluated course was especially attractive because it was designed to improve (digital) health literacy and at the same time to teach skills specified in the mandatory framework for digital education and digital literacy in schools (6). Birks evaluated the impact of e-learning on increasing adolescent health literacy. He designed an e-learning nutrition course for students and examined the mean difference scores between experimental and comparison students on a nutrition questionnaire's pre-test and post-test. He found that there were significant differences between the means of the pre-test and post-test scores for the experimental group on knowledge questions and theory of planned behavior questions (7).

E-health literacy comprises the following six main skills: traditional literacy, health literacy, information literacy, scientific literacy, media literacy, and computer literacy, and are also affected by several factors, such as: age, gender, educational level, and individual income (8, 9). Therefore, people who are familiar with e-health use internet-based search strategies and can find high-quality health information (4). So it appears that e-Health literacy is necessary for people to improve their quality of life (QoL) (10, 11).

Research by Mitsutake et al. proposed that following healthy behaviors, including exercise and a balanced diet, were independently associated with understanding of electronic health among Japanese (12).The WHO defines QoL as "a people's perception of their status in life within the context of the culture and value systems in which they live and in relation to their goals, expectations, norms and worries"(13).

The WHO classifies QoL to several domains such as physical, psychological, social relations, and environment (14). Scientific evidence suggests that the COVID-19 pandemic has influenced various aspects of QoL for some populations more significantly than for others. For example, international studies have identified an increased risk of deterioration in QoL during the COVID-19 pandemic for some groups including women, job seekers, and young people such as students (15-19).

As a finding in Eicher and et al.'s scientific work, during the COVID-19 pandemic in China, people have apparently endured more mental pressure at a higher level of education (14).

Ishikawa et al.'s study revealed that the physical and mental dimensions of health related quality of life was decreased significantly from just before the COVID-19 outbreak to 1 year later as well as overall e-Health literacy (20). In Japanese women the decline in health related QOL, particularly the mental dimension was more significant (20, 21).

Panahi and et al. performed a cross-sectional descriptive study to investigate the relationship between different levels of health literacy and smoking prevention on 347 dormitory students of Shahid Beheshti University of Medical Sciences in Iran. They found that the mean (SD) of the score health literacy among participants was 70.52 (14.12) from 100. The percentages of students with inadequate, problematic, adequate, and excellent health literacy levels were 9.2% (31), 28% (94), 43% (145), and 19.8% (67), respectively (22). Roberts and et al. used a web-based survey and a cross-sectional design to investigate the health literacy levels of 160 collegiate student-athletes. The found that all participants (n = 160) displayed adequate health literacy (mean = 34 ± 2; range = 27–36; adequate = 160/160, 100%) (23).

The students' QoL is dependent on their living status (24). Using Maslow's Basic daily needs, the students' QoL is measured (25). The needs containing food, clothing, health and medicine, home, income, and social relationships (25-27). QoL impacts the quality of learning, academic achievement, knowledge, and socialization improving the quality of higher education (28, 29). The low quality of their academic life interferes with learning. Shakiba and et al.'s found in their study that the academic QoL of dental and medical students was average during the Corona pandemic (30).

Some evidences also show some possible factors that have improved QoL during the COVID-19 pandemic (14). However, to identify the relationship between e-health literacy and its impact on the students' QoL during the COVID-19 pandemic further research is needed (31). A better understanding of the relationship between e-health literacy and students' QoL will help promote QoL through population-based health education programs and e-health literacy interventions. Likewise, people with high levels of e-health literacy are more likely to engage in healthy eating, exercise, and sleep behaviors (4).

Considering that the QoL of people has decreased during the Covid-19 pandemic and no study has been conducted on the effect of effective factors, especially e-health literacy, on increasing the QoL during the Covid-19 pandemic in Iran. Therefore, this study answers the questions that during the corona pandemic and social isolation and restrictions, have students with sufficient e-health literacy been made favorable medical and health decisions and their lifestyle behaviors been improved? Therefore, this study focused on discussing the impact of e-health literacy on the students' QoL and its determinants during the Covid-19 pandemic.

Materials and Method

This study was a cross-sectional study. The statistical population consists of all students of Semnan University of Medical Sciences (students in medicine, nursing and allied health professions). The inclusion criteria were students who were studying at the university, and students who had graduated were excluded from the study. The minimum sample size required to estimate the proportion in the community according to Ran et al. (32) is the following:

$$n = \frac{p(1-p)\, N\, z^2_{1-\alpha}}{e^2(N-1) + p(1-p)\; z^2_{1-\alpha}}$$

N=2241, P=0.745, criterion error = 0.05, Test power = 0.8, Test accuracy = 5% that the required number of samples was estimated at 260 people.

The study conducted over a period of 6 months (from February 2021 to July 2021) and surveyed medical, nursing, and allied health students at Semnan University of Medical Sciences in Iran. To 260 medical, nursing, and allied health students, the link of the online questionnaire (http://survey.porsline.ir/s/CyBBNsL) was sent.

Ethics approval was obtained from the Ethics Committee of Semnan University of Medical Sciences (IR.SEMUMS.REC.1399.014). A cover letter was submitted along with the online questionnaire, which described the objectives of the study and the participants' consent to participate in the research. The confidentiality of participants' responses was also assured.

Demographic characteristics and information seeking behavior

Demographic questions assessed gender, English proficiency, and field of study. Information-seeking behavior questions included internet use skills (very low, low, moderate, high, very high), Daily internet use (less than 1 hour, 1 to 2 hours, 2-3 hours, more than 3 hours), the start of health information search (Yahoo or Google, specific website), how to search for health information on the Internet (Simple research, Advance research, Phrase research) and use of online social network sites, E-journals and E-books (Never, Very low, Low, Moderate, High).

E-Health Literacy Questionnaire

E-Health literacy was evaluated by e-Health Literacy Scale (eHEALS). The e- health literacy questionnaire involves an eight-item self-reported measure of perceived e- health literacy such as " I know what health resources are available on the internet"; " I know where to find helpful health resources on the internet"; " I know how to find helpful information about health resources on the internet"; " I know how to use the health information I find on the internet to help me"; " I know how to use the internet to answer my health questions"; " I have the skills I need to evaluate the health resources I find on the internet"; " I can tell high quality from low-quality health resources on the internet"; " I feel confident in using information from the internet to make health decisions". The score of every item is based on a 5-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = neither disagree nor agree, 4 = agree and 5 = strongly agree. The range of total scores of the questionnaire was from 8 to 40. In this study, the level of e-health literacy, such as health literacy, was classified into three levels: insufficient, border, and sufficient. Insufficient e-health literacy (score <24) based on the two lower scores of the 5-point Likert scale ('strongly disagree' and 'disagree'), border e-health literacy (score ≥24 and <32) based on the scale score of 'Somewhat', and sufficient e-health literacy (score ≥32) based on the two higher scores of the 5-point Likert scale ('Agree' and 'Strongly agree') (9). This brief scale assesses the individual's ability to find, realize and evaluate health information from web sources and to apply this knowledge to solve health problems. eHEALS is a reliable computer-based measure of patients' knowledge and self-efficacy for getting and evaluating web-based health resources (33). Questionnaire questions include sources of health information available online, websites with useful eHealth resources, access to these resources, the use of the internet to treat health problems, and online health information. It emphasizes the ability to evaluate and distinguish from high quality sources to inferior sources. Eventually, as the mean score of the questionnaire increases, the e-Health literacy is higher (34).

In the 2006 baseline survey, Norman and Skinner systematically investigated the characteristics that lead to e-health literacy. They conducted a

survey of 664 participants aged 13 to 21 years to assess the level of eHEALS psychometric trait measurements. Participant responses were collected from 14 schools in major Canadian cities. Cronbach›s alpha was given as 0.88. This shows that the questionnaire is reliable (9).

The content and face validity of the eHEALS in a study by Bazm et al. was approved by the professors, and its predictive validity compared to other computer literacy tools ,was also reported appropriate (9, 34). In their study, they reported the factor consisting of items from 0.723 up to 0.862, which was acceptable. Its reliability was confirmed By test-retest and Cronbach's alpha coefficient was 0.88. The study results indicated that the items in the translated version were similar to the original measure and had good validity and reliability with Iranian e-Health literacy (34).

World Health Organization Quality of Life Questionnaire

The World Health Organization Quality of Life Questionnaire (WHOQOL-BREF) validity and reliability have previously been confirmed and has been translated into several languages (35-37). The validity and reliability of the Persian version was also confirmed in another study (38). WHOQOL-BREF has 26 items. Individual items are rated on a 5-point Likert scale (1= Very poor, 2= Poor, 3= Medium, 4= Good and 5= Very good) in which 1 indicates lowest negative perceptions and 5 indicates highest positive perceptions. The score range of the questionnaire is from 26 to 130 (39). The first question assesses QOL in general ('How would you rate your quality of life?), and the second question evaluates health status satisfaction. The other 24 questions are categorized into 4 domains including: psychological (6 items) e.g. «Do you consider your life meaningful?» social (3 items) e.g. «How satisfied are you with your social support?» environmental (8 items) e.g. 'How satisfied are you with your living conditions?' and physical domain (7 items) e.g. «How satisfied are you with your physical activity?». The reliabilities of the individual subscales range between α=0.74 for the social quality of life domain and α=0.91 for the physical quality of life domain (40). Usefy and et al evaluated discriminant validity, reliability, internal consistency, and dimensional structure of the World Health Organization Quality of Life-BREF (WHOQOL-BREF) in a heterogeneous Iranian population. A clustered randomized sample of 2,956 healthy with 2,936 unhealthy rural and urban inhabitants aged 30 and above from two dissimilar Iranian provinces during 2006 completed the Persian version of the WHOQOL-BREF. Usefy and et al›s study showed that the internal consistency of the domains was satisfactory to good, yielding Cronbach's Alpha 0.78 for psychological health, 0.81 for physical, 0.80 for environmental and 0.82 for social relationships domains. The Cronbach's alpha for the entire sample, the clinical, and the non-clinical were 0.82, 0.82, and 0.84, respectively. The inter-correlation coefficients for the four health domains of the WHOQOL-BREF also were within the range of acceptable values (physical health = 0.78; psychological health = 0.79; social relationships = 0.74). Usefy and et al found that the Iranian version of the WHOQOL-BREF domain scores demonstrated good internal consistency, criterion validity, and discriminant validity; and the WHOQOL-BREF has adequate psychometric properties and is, therefore, an adequate measure for assessing quality of life at the domain level in an adult Iranian population (41).

Data analysis

The mean ± SD or frequency (percent) were used for data expression. To analyze the data and illustrate the relationship between the

scores of the questionnaires, multiple logistic model regression analysis was used. Then, the examined features and regression coefficients were reported to indicate the strength and the direction of the possible associations. SPSS-19 software was used to describe and analyze the data at the significance level of 0.05.

Results

In this study, 260 students participated in the survey and completed questionnaires, including medical students (N = 122)f , nursing students (N = 36), and students from other majors (N = 102), 50.4% (N = 131) of the participants were women, while 67.3% (N = 175) had moderate of English language skill. All the study subjects answered the online questionnaire (100% response rate); because a reminder message was sent to the users via SMS, if the online questionnaire was not completed and answered within a specified time. There was a significant difference between e-health literacy and QoL mean scores and the English language skills ($p < 0.05$). The results showed that 40.8% (N=106) of students had high internet skills, and 36.9% (N=96) used the Internet for 2 to 3 hours a day. 71.2% (N=185) of students used to search for health information on the Internet first in search engines such as Yahoo or Google, and 39.6% (N=103) of students used simple research to search for health information. There were significant differences ($p < 0.05$) between the mean scores of e-Health literacy and quality of life in the participants› information seeking behaviors. (Table 1)

Table 1: The relationship of participants' characteristics and information seeking behaviors with mean scores their e-Health literacy and quality of life.

Variable			N	%	e-Health literacy		quality of life	
					Mean (S.D)	Sig.	Mean (S.D)	Sig.
characteristics	Gender	Male	129	49.6	29.16 (5.65)	.938	86.91 (13.59)	.657
		Female	131	50.4	29.18 (4.30)		86.07 (13.49)	
	English language skills	Low	39	15.0	26.03 (4.15)	<0.001	82.84 (11.81)	<0.001
		Moderate	175	67.3	29.28 (4.70)		85.90 (12.54)	
		High	46	17.7	31.42 (5.57)		91.80 (16.93)	
Information seeking behaviors	Internet Skills	Never	1	.4	- (-)	<0.001	- (-)	<0.001
		very low	11	4.2	26.73 (3.90)		84.00 (15.57)	
		Low	104	40.0	27.49 (4.42)		83.14 (12.94)	
		Moderate	106	40.8	30.33 (4.99)		87.67 (10.91)	
		High	38	14.6	31.31 (5.17)		93.05 (17.93)	
	Internet Usage Rate	>1	21	8.1	29.67 (8.66)	.030	88.43 (9.44)	.034
		1-2 hours	66	25.4	28.59 (4.74)		87.27 (13.09)	
		2-3 hour	96	36.9	29.26 (4.40)		88.07 (11.92)	
		3<	77	29.7	29.24 (4.59)		81.80 (14.84)	
	Start Searching for Health Information	yahoo or google	185	71.2	28.23 (5.14)	<0.001	84.71 (13.42)	.004
		specific site	75	28.8	31.51 (3.76)		90.68 (12.85)	
	How to search for health information on the Internet	simple research	103	39.6	27.12 (4.83)	<0.001	81.09 (12.73)	<0.001
		advance research	79	30.4	30.89 (5.28)		90.14 (13.81)	
		phrase research	78	30.0	30.15 (3.90)		89.80 (11.91)	

Findings showed that 30.8% (N=80) used social networks very low and 42.7% (N=111) used e-journals and 50.8% (N=132) of students never used e-books. There were significant differences ($p < 0.05$) between the mean scores of e-Health literacy and quality of life in the students' use of information resources. (Table 2).

Table 2: The relationship of Information resources used by the participants with mean scores their e-Health literacy and quality of life.

Variable		N	%	e-Health literacy		quality of life	
				Mean (S.D)	Sig.	Mean (S.D	Sig.
Online social networks (such as Telegram, etc.)	Never	37	14.2	29.14 (5.97)	.590	83.81 (15.93)	<0.001
	very low	80	30.8	28.62 (4.30)		83.99 (11.87)	
	Low	72	27.7	28.53 (3.71)		86.07 (12.66)	
	Moderate	55	21.2	30.67 (6.69)		89.44 (14.01)	
	High	16	6.2	30.06 (3.29)		95.94 (12.44)	
E-journals	Never	111	42.7	28.69 (4.64)	.024	86.28 (11.25)	.517
	very low	49	18.8	29.44 (3.98)		86.31 (12.26)	
	Low	59	22.7	28.74 (6.56)		81.81 (14.36)	
	Moderate	31	11.9	31.10 (3.67)		91.68 (16.02)	
	High	10	3.8	30.00 (5.56)		99.80 (16.68)	
E-books	Never	132	50.8	29.33 (5.61)	.657	88.85 (13.71)	0.001
	very low	52	20.0	29.55 (3.74)		86.23 (11.83)	
	Low	39	15.0	27.67 (4.35)		79.15 (13.28)	
	Moderate	22	8.5	29.73 (4.25)		85.18 (08.92)	
	High	15	5.8	29.73 (5.40)		86.80 (17.51)	

The results showed that 27.7% of students weekly searched for physical health and 13.5% of them daily searched for sports on the Internet. (Figure 1)

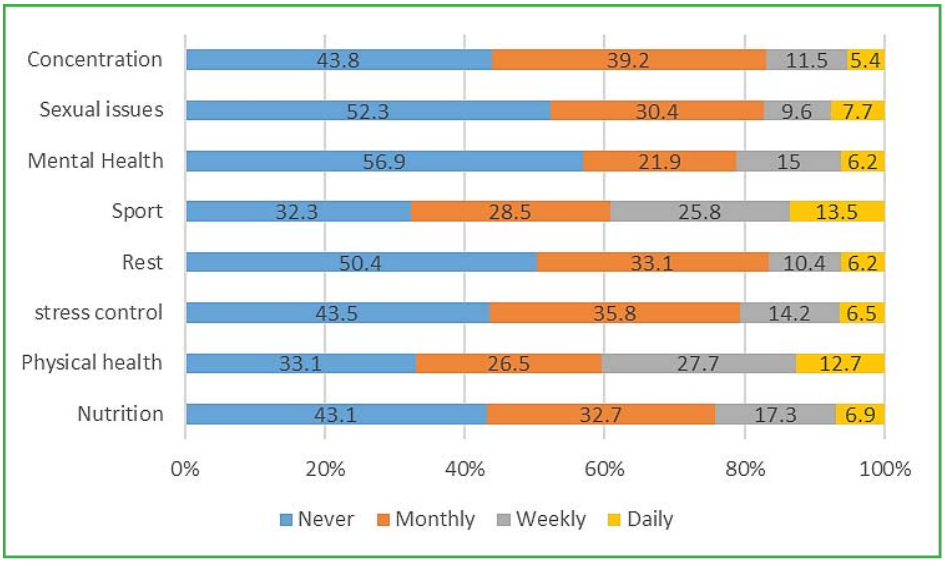

Figure 1: Percentage of searches for topics required by students on the Internet

The results showed that 84.2% (N=218) of the participants had sufficient e-Health literacy and 76.4% (N=198) had a good QoL. In this study, a logistic regression analysis was used to identify the determining factors. The input of variables was done simultaneously so that the variables of e-Health literacy and quality of life as dependent variables and demographic variables such as gender, English language skills, variables of information seeking behavior such as Internet skills and Internet use, etc., and variables online information sources such as online social networks, e-journals, and e-books as independent variables were included in the model and the final model was reported in Table 4. The results showed that the students' e-Health literacy had a significant relationship with English language skills (P = 0.30, OR = 1.929), Internet skills (P = 0.008, OR = 1.740), start searching for health information on the Internet (P <0.001, OR = 4.840) and information search method in Internet (P = 0.007, OR = 1.650). Also, Internet usage skills (P = 0.006, OR = 1.751), daily use of the Internet (P = 0.014, OR = 0.658), information search method on the Internet (P = 0.001, OR = 1.870), use of networks, online social networks (P = 0.004, OR = 1.485) and e-books (P = 0.002, OR = 0.595) had significant relationships with students› QoL. (Table 3)

Table 3: The relationship of individual characteristics and information seeking behaviors in the students with their e-Health literacy and quality of life.

Variable		e-Health literacy		quality of life	
		Odds ratio (OR)	Sig.	Odds ratio (OR)	Sig.
Demographic characteristics	Gender	.838	.555	1.057	.844
	Language level	1.929	.030	1.379	.245
Information seeking behavior	How proficient are you in using the Internet?	1.740	.008	1.751	.006
	How much do you on average use the Internet in 24 hours?	1.124	.493	.658	.014
	Start searching for health information on the Internet	4.840	<0 .001	1.367	.357
	Level of search for health information on the Internet	1.650	.007	1.870	.001
Which information source do you refer to on the Internet as soon as you need health information?	Online social networks (such as Telegram, etc.)	1.045	.750	1.485	.004
	E-journals	1.340	.117	1.322	.120
	E-books	.820	.260	.595	.002
Constant		0.000319	<0.001	.016	.001

The results showed that there is a significant relationship between students' e-Health literacy and their quality of life (P = <0.001, OR = 3.466). (Table 4)

Table 4: The relationship of students' e-Health literacy with their quality of life.

Variable	Odds ratio (OR)	95% Confidence Interval for OR		Sig.
		Upper	Lower	
E-Health Literacy	3.466	5.777	2.080	<0.001
Constant	0.512	-	-	<0.001

Discussion

Based on findings, most participants (84.2%) had sufficient e-Health literacy. This result of the present study is contrary to the results of Dashti et al's study. They found that the level of e-Health literacy was low among 192 Iranian medical and health students (42). In that study, the researchers felt that further research was needed to assess contributors to eHealth literacy. This inconsistent result could be due to the low sample of Dashti et al's study. A reason for the difference in the level of e-Health literacy between Dashti et al's study and present study might be due to the students› English language skill. This skill enabled the students to identify useful websites and differ high quality from low quality information sources.

The results indicated that the majority of the study subjects (76.4%) had good QoL. This result of the present study is contrary to the results of Szczepańska et al's study. They assessed the impact of the COVID-19 epidemic of Polish university students on the quality of life through a quantitative and qualitative study on 132 university students. They found that the restrictions enforced during the COVID-19 pandemic contributed to a significant decline in university students› mood, psychological well-being, and quality of life (43). A reason for the difference in the level of QoL between the results of Szczepańska et al's study and present study might be because Szczepańska et al performed the survey during the first national lockdown when the students found themselves in a completely new reality and their high computer and Internet skills could not promote their OoL.

This study showed that the average e-health literacy score of students with higher English languge skill was significantly ($p < 0.05$) higher than that of other students. This finding indicates becuase information on the Internet is mainly in English. It creates an opportunity for students to better search for health-related information on the Internet (42). The results also showed that students with higher English languge skill could achieve significantly ($p = 0.03$) 1.929 times higher eHealth proficiency than other students. The findings suggest that the high English language skill make greater use of the Internet, which may also be used for health information. It seems that correct health information can increase the student's self-efficacy in using this information to change their lifestyles to adopt healthy behaviors. The results also showed that significantly ($p < 0.05$) the average score on the quality of life of students which had high English proficiency was higher than that of other students. Perhaps among the students who do have not sufficient e-Health literacy, the language barrier challenges their e-Health literacy and prevents their realization of health information on the internet.

The findings showed that students searched for many topics related to quality of life on the Internet. The results indicate that during the Covid-19 pandemic e-Health literacy helped university students to use the Internet weekly or daily to search for health-related topics such as physical health, nutrition, mental health, and

stress control to meet their information needs and to access self-management information about behavior changes to improve their QoL.

The results showed that the mean score of the students' e-Health literacy whose internet skills were at a high level was significantly ($p < 0.05$) higher than others. The findings also showed that significantly students› online information search behavior such as «start searching for health information on the Internet» increases the chances of students having sufficient e-Health literacy ($p = 0.03$) by 4.840 times. The results also showed that significantly ($p < 0.05$) the mean score of the students' OoL was higher in who used the Internet for more than 2 hours a day than others. In Sharma et al.'s study the results confirm the findings of the present study. Sharma et al evaluated 152 nursing students' e-Health literacy. They found that the nursing students had a moderate self-perceived level of eHealth literacy. Related factors included student skills in the Internet, frequency of use of the Internet for health-related purposes, and the usefulness and importance of self-reporting the Internet (44).

The results showed that there was a significant relationship between students› e-Health literacy and their quality of life ($P = <0.001$, OR = 3.466). The relationship between the e-Health literacy and QoL can be based on the Knowledge, Attitude and Practices theory (KAP model), one of the widely used theories regarding recognition and behavior change (45). Therefore, from the perspective of KAP theory, students with sufficient e-health literacy will reasonably have more health-related knowledge, have healthier beliefs, and as a result adopt more favorable skills and behaviors. It maintains overall health and is better aware of QoL than its peers who are inadequately capable of e-Health. Conversely, this was also supported by the findings of our stud; students with insufficient e-Health literacy may tend to engage in the risky lifestyle and behaviors and thus consequently perceived poorer QoL.

Strengths and limitation: The strength of this study is that it is the first study that evaluates the impact of e-health literacy on the quality of life of students during the Covid-19 pandemic in Iran. The weakness of the present stuyd is the nature of the cross-sectional study design, it failed to justify the causal relationship between eHealth literacy and quality of life.

Conclusion

It is concluded that among the indicators, online information search behaviors more than individual characteristics strengthen the university students› e-Health literacy and help their QoL. The results of this study show indicators that encourage university students readiness involved in electronic health tools and improve their quality of life during the COVID-19 pandemic.These indicators when developing medical education, self-management programs and formulating interventions to improve young adults' QoL during epidemics of diseases, restrictions and social distances in the community are worth to be considered.

The results of this study in designing and implementing health-related interventions can be used as a basis for policymakers.

Policymakers can improve the quality of life of young people by implementing e-health infrastructure in developing countries. Especially by emphasizing indicators that can be enhanced at the community level.

In the future, well-designed longitudinal observational studies are needed to better understand the relationship between eHealth literacy and QOL for large numbers of university students.

There is also a need for a health education

program to assess the effectiveness of eHealth literacy interventions in promoting QOL for the students' assessment.

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