E-health literacy in nursing

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Abstract

Recent years have seen a steadily increasing interest in using digital sources to obtain health-related information. Furthermore, information and communication technologies (ICT) are important in supporting professional activities performed by health care workers worldwide. The term e-health literacy (eHL) refers to the ability of people using the Internet to search for, find, understand, and evaluate health-related information from electronic sources. The level of eHL shows whether the public can access and process basic health information or use health services provided through electronic means. This article is focused on presenting the importance of eHL in tasks performed by nursing students and nurses. We present the concept of eHL, describe methods of measuring it, and discuss factors determining its level. The study is based on a purposeful literature review.

Key words: digital health literacy, information and communication technologies (ICT), e-health literacy, ehealth literacy scale, nurses, nursing students

Słowa kluczowe: cyfrowe kompetencje zdrowotne, kompetencje e-zdrowotne, skala kompetencji ezdrowotnych, pielęgniarki, studenci pielęgniarstwa, technologie informacyjno-komunikacyjne

Introduction

The digital revolution has had a profound impact on modern societies. It was also associated with a wide use of information and communication technologies (ICT) in health care, especially in the context of various sources of health-related information on the Internet [1]. However, the Internet is not just a tool for accessing information but also for conducting many other tasks [2]. In recent years, there has been a steady increase in the world's population using the Internet to search for health-related information [3]. The increased use of the Internet and mobile technologies has made it possible to search for health information anywhere and anytime. Finally, the use of ICT in health care has emerged as e-health [4]. Initially, the concept of ehealth was associated with searching for health information on the Internet [1]. The definition of ehealth was quickly extended to versatile uses of ICT in health and health services. Modern understanding of ehealth is associated with providing support and services in the health care domain to patients and society as a whole [5, 6]. Due to the aging of the population and the emergence of new diseases, the demand for health care services is increasing. Therefore, it is necessary to invest in new modalities of delivery of services to improve access to health care [1].

Furthermore, the progress observed in ehealth parallels the recommendations for empowering patients, their involvement in care, and participation in health-related decisions [6]. Broad perception of ehealth environment means that it is an inclusive concept encompassing electronic health records, electronic systems used in health facilities, and applications enhancing the communication between patients and providers, including telemedicine, telemonitoring, and online resources of health-related information, e.g., portals dedicated to various groups of stakeholders. Mhealth is an area of ehealth that has made significant progress during the last decade and explores the use of mobile technologies and wireless sensors. Developing and implementing ehealth strategies was considered a priority in "The Digital Agenda for Europe" [7]. According to this document, electronic health strategies are designed to enable medical personnel and patients to use information technology to maintain and improve their health [7].

It is also obvious that health care systems can benefit from applying technical innovations to support nursing

activities. The development of ICT is increasingly impacting the work of nursing staff worldwide. Digitization was one of the main areas addressed in the "Nursing and Midwifery Development Strategy" [2].

The Internet contains many health-related resources; however, their use depends on the individual's ability to find needed information and apply it in relevant contexts [3]. Electronic resources remain an effective way of distributing health information, and on the global Web, many tools support users in accessing such information. The information obtained from electronic resources may be a basis for developing knowledge, allowing one to solve health problems if the person accessing such resources has the required skills [8].

Therefore, using the Internet to search for health information can be seen as an opportunity and a challenge. Reliability is one of the most important challenges in the case of such information [1]. The full potential of e-health to improve the health of Internet users may be limited by their capacity to find reliable information [9].

Today's public health faces the serious challenge of developing competencies that will influence the ability to evaluate information acquired on the Internet critically. Too much trust and uncritical use of health information found over the Internet, using unverified sources of uncertain quality, can bring unpredictable consequences that threaten health and life [10].

Defining ehealth literacy (eHL)

eHL means the ability to search, find, understand, and evaluate health-related information originating from electronic sources [1]. The level of ehealth literacy also indicates whether people have the ability to use the ehealth services [8]. EHL, besides health literacy, is a relatively new concept in health promotion. However, maintaining appropriate levels of such literacy quickly became one of the critical goals of modern public health [8].

The concept of eHL, based on six literacies, including traditional, health, information, science, media, and information technology literacy, was introduced in 2006 by Norman and Skinner [11]. Their definition is derived from the definition of health literacy proposed by the Institute of Medicine [12]. Taking into account earlier variants of eHL definitions, Kritsotakic et al. proposed that it should be used to describe the ability to locate, understand, use, and evaluate electronic, online, or mobile resources to make informed decisions about health promotion, disease prevention, and management eHL is not static and can change over time [3, 13].

The lily model proposed by Norman and Skinner is still probably the most widely cited model of eHL. However, in 2011, Norman commented that the original concept of eHL was developed to address the first generation of e-health resources and services and may not be adequate considering the further progress of this domain, e.g., the appearance of social networks. According to Norman, the model from 2006 may not be sufficient to describe all contexts five years later, and it probably does not fully fit interactive Web 2.0. Furthermore, skills such as confidence in expressing yourself clearly in online social interactions should be part of the instrument to measure eHL [13, 14].

In the last decade, the concept of eHL was further extended. In 2014, Gilstard proposed that it should be enriched with factors such as cultural and institutional context and type of e-health technology [15]. In 2018, Paige et al. described the Transactional Model of e-Health Literacy (TMeHL) as theoretically originating from the Transactional Model of Communication (TMC) [16, 17]. In this approach, the communication between actors is dynamic, process-oriented, and adapted to the transactional context. TMC applies to the use of remote technologies for communication. Therefore, eHL can be seen as a set of dynamic interpersonal skills dependent on diverse contexts. When building TMeHL, Paige et al. assumed that 1) the transaction process is accompanied by various types of noise resulting from interacting tasks-oriented and user-oriented factors; 2) eHL is a set of multidimensional and hierarchical skills that counteract the effects of such noise; and 3) patient engagement impacts interactions between factors related to e-health and their effect on eHL. TMeHL anticipates four types of eHL: functional, communicative, critical, and transactional [16]. Functional eHL can be perceived as basic abilities in reading and writing about health to operate on the Internet. The communicative category denotes the ability to collaborate, adapt, and control communication about health with users in online environments. Critical eHL is, in turn, the capacity to evaluate the credibility, relevance, and risk of sharing and receiving health information on the Internet. Finally, translational eHL is associated with applying health knowledge from the Internet in various contexts [16].

Measurement of eHL

The e-Health Literacy Scale (eHEALS) was introduced by Norman and Skinner as a continuation of their work on the concept of eHL [18]. The eHEALS scale assesses a range of skills in using health information available online. It also considers a wide range of literacy skills. It can be used as a tool to assess the general skills of users of ehealth [11]. These skills include basic operational, navigational, and higher-level skills, including selecting and critically evaluating available information. Each level contributes to the ability to search and evaluate the information available on the Internet for health. Deficiencies in any area of these skills can prevent access to quality ehealth resources and lead to an inadequate understanding of health issues [13].

eHEALS is a self-report tool based on an individual's perception of their skills and knowledge in the areas under study. The instrument consists of 8 questions assessing the perception of one's skills related to finding, searching, evaluating, and using health information on the Internet (table I). The total score calculated for eHEALS ranges from 8 to 40 points. Norman and Skinner validated eHEALS in a group of 664 students with an average age of 15.0 years [11]. The resulting score can be divided into three categories describing the level of knowledge and skills:

insufficient (8–20 points), problematic (20–26 points), and sufficient (27–40 points) [10]. Respondents can respond to items included in eHEALS based on the 5-point Likert scale, ranging from strongly disagree to strongly agree, with a neutral option in the middle [18]. The Likert scale was developed to measure "attitude" in 1932. The original Likert scale is a set of statements offered for a hypothetical or real situation. Respondents are asked to indicate the level of agreement (from strongly disagree to strongly agree) with a given statement (items). All statements in combination reveal a particular attitude toward a given issue [19]. It consists of a number of items with around 4 to 7 points or categories each. Analysis can be based on individual items or by summing the items that make up the scale. The Likert scale is one of the most widely used instruments for measuring opinions, preferences, and attitudes [20].

eHEALS has been translated and validated in various languages, including Polish. The Polish version of the eHEALS was developed according to the guidelines for transcultural adaptation [21]. The tool showed good reliability and relevance in three surveys based on different techniques conducted on large and various samples of the population. The first survey was conducted among 1,000 adults aged at least 50, and the second among 1030 women aged 18–35. The average eHL score in these two sample was 25.26 and 29.46, respectively [22]. Another survey assessing eHL in the Polish population was conducted by Burzynska et al. on 1,527 social media users [23]. In this study, respondents reached an average score of 30.69. The introduction of the Polish version of eHEALS has expanded the scope of ehealth research activities in Poland. In addition, using a standardized tool made it possible to compare the results of e-health evaluation in Poland with those obtained in other countries [22].

eHEALS was developed to provide a tool for assessing eHL in various populations and contexts. Health care workers can use the tool to gain a general understanding of a patient's ability to use electronic health resources to facilitate clinical decision-making and planning of health promotion. Despite voices questioning the feasibility of the model of eHL providing the theoretical framework for eHEALS in the rapidly changing e-health environment, the scale is widely used. The internal consistency of this tool has been shown to be good; moreover, its conciseness favors widespread use [13].

Many other tools were created to measure eHL. In 2014, a new instrument measuring eHL was proposed – Patient Readiness to Engage in Health Internet Technology (PRE-HIT). The tool consists of 28 items divided into eight subscales. The authors tested it on a sample of 200 patients with chronic diseases. This instrument could be an important tool to help measure the use of information technology among people with chronic diseases to seek information and communicate with the health care team [24].

Petri et al. developed an extended version of eHEALS (eHEALS-E), which includes 20 items rated on a Likert scale [25]. Another proposed tool is the eHealth Literacy Scale (e-HLS) developed by Seçkin et al. for use in an online population. The tool was tested on a group of 710 Internet users. The authors based the e-HLS scale on the construct of health literacy [25]. A multidimensional eHL questionnaire (eHLQ) developed by Kayser et al. [26] can also be highlighted. It contains 35 items rated on a 4-point Likert scale [26]. Another tool is the digital health literacy instrument (DEHLI) developed by van der Vaart and Drossaert. It consists of 21 items rated on a 4-point Likert scale. The questionnaire was created for the general population. The tool is distinguished by the fact that three questions are not mandatory to answer. Questions can be left blank if respondents have no experience in publishing news on social media [27].

Paige et al. proposed a multidimensional eHL tool, the Transactional eHL instrument (TeHLI), based on the earlier-mentioned model of TMeHL. The tool measures patients' perceived skills. These skills relate to the respondent's ability to understand, evaluate, exchange, and apply health information from various online sources. The tool consists of 4 scales, with 4 to 5 items in each scale. The scale consists of 18 items in total. The team that developed the tool reported that it adequately measures the skills declared by the respondents. According to them, the tool enables us to determine whether the patients' skills or lack thereof are related to computer use, information exchange, assessing the reliability of content or applying information on the Internet in practice. It should also help identify patients who would like to use resources on the Internet for health purposes but lack the ability to participate in information exchange with other users, even if they can browse the Internet [28].

Q1	I know how to find helpful health resources on the Internet
Q2	I know how to use the Internet to answer my health questions
Q3	I know what health resources are available on the Internet
Q4	I know where to find helpful health resources on the Internet
Q5	I know how to use the health information I find on the Internet to help me
Q6	I have the skills I need to evaluate the health resources I find on the Internet
Q7	I can tell high quality from low quality health resources on the Internet
Q8	I feel confident in using information from the Internet to make health decisions

Table 1. eHEALS scale
Source: [12].

eHealth literacy assessment toolkit (eHLA) questionnaire is the next tool measuring eHL. It is the longest of the available tools. It was developed in Danish and English by Karnoe et al. eHLA consists of 42 items rated using a 4-point Likert scale [29].

Determinants of e-health literacy

The development of ehealth resources intended for public use often relies on the assumption that users have the skills required to make optimal use of them. To make an informed decision, people must be able to properly access, understand, and process health information to meet their needs. The ability to extract the meaning of the text is of key importance. An increase in basic reading and writing skills results in an increase in the ability of users to effectively use computers to solve problems, regardless of age, income, or level of education [18]. The use of health information on the Internet depends not only on personal skills but also on the availability of technical means and the quality of the connection. Access in the age of the Internet also requires skills in extracting the meaning of text.

It is assumed that there is a relationship between eHL and the overall use of new technologies. The ability to use technology increases with the frequency with which a person tries to use it [30]. However, this is not the rule. According to Gray et al., adolescents experience difficulties using electronic health resources and understanding the information available online, even though they often use information technology for other purposes [31].

In several studies, the authors analyzed determinants of eHL. Several authors have reported that gender can determine the level of eHL [32, 33, 34]. However, the relationship is not clear-cut. For example, according to Shiferaw et al., women showed lower levels of eHL than men, even if they did not differ in Internet access frequency [35]. Other authors have shown that men have lower levels of eHL than women [34, 36]. In the study conducted by Zibrik et al. among immigrants in British Columbia, different results were observed depending on the immigrants' backgrounds. Women in the Chinese group had lower eHL, while among immigrants from Punjab, men showed lower eHL [34]. No significant relationship between gender and eHL was reported by Neter and Brainin [37]. Other researchers did not confirm such association [38, 39].

In a study conducted by Tennant et al. among baby boomers and older adults, education level and age were found to impact eHL [40]. The higher age of the respondents, the lower the level of eHL. Other sociodemographic variables, including gender, ethnicity, income, employment, or marital status, were not significant predictors of eHL [40]. These results agreed with the findings reported by Neter and Brainin [37].

The effect of education on the level of eHL was examined frequently. Some researchers have shown that education is associated with a higher frequency of Internet use for health information, but it is not necessarily a predictor of higher eHL. In general, various studies yielded inconsistent results in this regard. In a van der Vaart et al. study, there were no statistically significant differences in eHL between people with different educational backgrounds in two adult populations [41]. In the study by Neter, those with higher education had higher skills defined as eHL [37].

Neter et al. also analyzed whether the level of eHL was related to self-assessed health status and the presence of chronic disease. They found no significant relationship between eHL and self-perceived health status. In turn, a chronic disease was associated with lower levels of eHL [37]. In a study by Bundorf, respondents with chronic diseases were more likely to use the Internet than those without such conditions [42]. Finally, Wangberg et al. found that Internet use directly and positively correlated with one's health status perceptions. However, it was rather difficult to determine the effect of health status and Internet use on eHL levels [43].

Income is another factor that was assessed as a potential determinant of eHL. Shiferaw et al. reported that in the group of patients with chronic diseases, higher levels of eHL were observed among persons with higher incomes [35, 42, 44].

Also, the number and the intensity of use of electronic devices to search for information impacted eHL. Tennant et al. noted that higher eHL were found among those respondents who used popular sites available on the Internet and groups related to health online [38, 40, 40, 42]. Neter and Brainin observed similar relationships. Among the respondents they surveyed, those who had greater access to technology and used multiple sources of information more often also had higher levels of eHL [37].

Other studies indicate that higher levels of eHL are influenced by the intensity of Internet use [41], computer literacy [45] or computer and technology skills [46].

Impact of e-health literacy

High levels of eHL have been found to promote the development of health-seeking behaviors and influence health-related decision-making. Furthermore, people with higher eHL achieved better results searching for health information and using health apps than those with lower eHL [40, 47].

Some authors have reported a relationship between eHL and health behaviors. Mitsutake et al. observed that in a sample of 2115 adult Internet users from Japan, eHL was significantly positively associated with favorable health behaviors such as exercise and more balanced nutrition. However, no significant relationship was found between eHL and smoking and alcohol consumption or sleeping hours [48]. In turn, Britt et al. confirmed a significant association between eHL and overall health, sleep quality, preventive behaviors related to sexual health and immunizations, exercise, and balanced nutrition in college students in the USA [49]. Another study performed among university students, this time in Taiwan, found a connection between eHL levels and health-seeking behaviors. Higher levels of eHL supported the adoption of favorable health behaviors in this group [33]. The relationship between the

level of eHL and health-seeking behaviors has also been observed in different populations by other authors [50, 51].

Britt et al. found that among undergraduate students, high levels of eHL were associated with positive social relationships, maintaining a balanced diet, and practicing safe sex [49]. Their study also revealed a significant relationship between eHL and general health, exercise, sleep, avoidance of harmful substances, and undergoing immunizations [48].

The study conducted by Chang among 1,601 adolescents in Taiwan revealed low eHL is accompanied by low intensity of health promotion behaviors [52]. Jung and Son found that older adults with higher eHL showed increased interest in their health and greater familiarity with maintaining health and preventing disease through information from the Internet [53]. Other authors reported that higher eHL positively affects health outcomes, including quality of life in diabetic patients [53, 54].

It was emphasized that eHL should be treated as a key factor supporting the implementation of COVID-19 prevention activities. It was assumed that higher eHL enables efficient access to reliable information about the pandemic. Furthermore, it can protect against the flood of misinformation on the Internet [55]. According to a systematic review performed by Ameri et al., an increase in eHL was associated with an increase in acceptance/awareness of preventive behaviors recommended during the COVID-19 pandemic. This systematic review assessed the role of eHL in the context of COVID-19-related health behaviors based on the results of six articles [56]. Furthermore, Li and Liu found that adherence to preventive behaviors was associated with higher levels of eHL in a group of Internet users in China [57]. Also, a survey conducted at the beginning of the second wave of the COVID-19 pandemic in Poland among 2410 respondents assessed eHL as a positive predictor of adherence [58]. Additionally, eHL was more important in predicting preventive behaviors than high knowledge about the disease [57].

Higher eHL was a predictor of engaging in more favorable health behaviors in Korean Internet users [30]. Also, the study performed among Taiwanese students showed that a higher level of eHL predicted adopting favorable behaviors [33]. The association between the level of eHL and health-promoting behaviors was also reported by other authors [50].

eHealth services have become an integral part of modern health care systems. It is perceived as a solution to many challenges that decision-makers and providers face, e.g., preventing medical errors or developing more efficient services [59]. Alsahafi et al. examined the effect of eHL on the acceptance of the integrated electronic personal health record system. They found that eHL significantly impacted the acceptance and use of such a system [58, 60].

In Poland, it was observed that higher levels of eHL influenced greater acceptance of the Internet as a major source of health-related information. In addition, women aged 18–35 with higher levels of eHL were characterized by their willingness to undertake health-related activities using the Internet, and people over 50 with higher levels of eHL were more likely to use the Internet [22].

E-health literacy of nursing staff

Among health care providers, nurses have the most frequent and close contact with patients. Frequently, patients feel comfortable talking to nurses about their health problems. Considering the current role of electronic technologies in disseminating health information, all health providers, including nurses, must be aware of the types of resources patients use. Today, the use of electronic technologies in nursing (e-nursing) is necessary. This became evident during the COVID-19 pandemic, which triggered extensive use of remote care [2].

Furthermore, the pandemic exacerbated staff shortages and further accelerated the digitization of health care worldwide [2]. In many countries, limited access to medical doctors resulted in the increased role of nurses in primary care [7]. Furthermore, nurses may play an important role in developing eHL of patients. They can teach patients to access e-health resources and evaluate their reliability [61]. Therefore, nurses themselves should have developed skills defined as eHL [7]. Unfortunately, it seems that many nurses lack adequate skills to use electronic resources, and their eHL is not high [50, 62]. Many reports also show limited eHL of nursing students and related faculties [63, 64]. A systematic review by Stellefson et al. showed a need to build e-health competencies among future health care workers [54, 62, 63].

The International Council of Nurses (ICN) emphasized that health care workers should understand the meaning of eHL and its impact on health behaviors [59]. Nurses should be role models for patients, especially regarding health-seeking behavior. Nurses' practices of caring for their health are easily transferred to patients. Nurses' health behaviors are important for their health and patients who frequently follow the example of health care providers. Kim and Xie showed that there is a relationship between the health-promoting behaviors of primary care physicians and nurses and the effectiveness of education and advice interventions offered to their patients. Those who focus on their health and habits can give patients more realistic and convincing advice.

Studies focusing on the eHL of health care workers are not common. Mainly because the most popular instruments were designed to measure eHL in patients and the general population. Only a few studies addressed the level of eHL among nurses [3, 50]. A limited number of studies are also available to examine eHL among nursing students [4, 65–69].

In Poland, Bartosiewicz et al. studied nurses' attitudes toward e-health solutions and self-assessment of their digital competence. In their study, a proprietary questionnaire was used. Respondents most often described their skills in using electronic devices or IT solutions at work as sufficient (29%), good (35.3%), or very good (27.8%) [70]. Other studies on measuring eHL levels among medical personnel in Poland are not yet available.

The issue of eHL was addressed in Greece by Kritsotakis et al. The study involved 200 staff nurses and nursing assistants. The eHEALS tool was used to assess the level of eHL. The score in the study group was 30.7 points. The

lowest individual scores were obtained by the respondents for confidence in using the Internet (3.24), while the highest for the ability to search for health resources (4.08) [3]. Cho et al. reported similar values of eHL level among hospital nurses in South Korea [50].

A study performed by Cho et al. showed that nurses had higher eHL cores than nursing students and the young population in South Korea. Researchers believed such differences resulted from constant access to health information during professional activities [50]. It was observed that nurses were proficient in finding and using the information they found. However, they were less skilled in evaluating resources available on the Internet and applying the knowledge they gained, similar to the research of Park and Lee [71]. The authors also reported higher eHL predicted more favorable health behaviors among nurses in some areas. Nurses with a higher eHL scored better on stress management measures, interpersonal relationships, and health responsibility. No statistically significant association was found between eHL and nutrition or physical activity in this group. These findings may be a consequence of the shift work of nurses, the long hours they spend at work, and their inability to eat regularly. The analysis also showed a significant relationship between eHL and intensity of physical activity in the subgroup of nurses not working night shifts. Apparently, the night shift makes it more difficult for nurses to implement knowledge resulting from using e-health resources [51].

Several studies examined eHL in nursing students [4, 65–69]. Ahmed and Atia assessed eHL in two groups of students: 410 students of nursing and 410 students from other faculties (non-nursing) in one University in Egypt. The study participants were recruited from the first (400 students) and fourth (420 students) year of relevant faculties. The study showed that most nursing students (73%) had sufficient levels of eHL measured with the eHEALS instrument; however, their eHL was significantly lower than that of other students. The authors tried to explain this difference by the fact that nursing students do not need to search for health-related knowledge on the Internet, as they acquire it during their courses [10].

The results reported by Ahmed and Atia seem to oppose the findings of Cho et al. In their study nurses using continuously health-related information on the Internet had better results than the general population [50]. Another study on 128 Egyptian nursing students showed that this group demonstrated moderate to high eHL [72]. However, this study used a different tool to measure eHL [73]. Researchers from Denmark also used their own questionnaire to measure eHL in nursing students. The researchers rated the level of EHL as satisfactory and tended to be higher among master's students than among first-year students [68]. Satisfactory or high levels of eHL were found in nursing students from the Philippines [67]. In studies that evaluated the eHL as the average of individual eHEALS values, nursing students obtained values in the range of 3.52 to 4.0 [66, 69, 71]. Other studies have focused on the average score of the entire eHEALS questionnaire and obtained scores ranging from 25.2 to 30.8 [4, 32, 58, 65].

Tarihoran et al. concluded that nursing students have basic eHL, but additional skills and developmental experience in health information and health care communication technologies are needed in this group [62]. In a study of eHL in Sri Lanka, 49.4% of the respondents felt that their eHL was insufficient. Respondents scored poorly on their ability to distinguish the quality of health resources they find on the Internet. Their skills in making health decisions using information learned online were also poor [4].

Part of the study evaluated the influence of selected socio-demographic factors on the level of eHL among nurses and nursing students. Lower scores of eHL among female nursing students than among males were reported by Ahmed and Atia and by Shiferaw et al. [10, 30]. Other authors did not observe a significant relationship between eHL and gender in nursing students [66, 67, 72].

Age was not a significant predictor of eHealth in Taiwanese [73] and Turkish [74] nursing students, but higher eHL was found in older respondents by Ahmed and Atia [10].

Nursing students from rural areas had lower levels of eHL than students from urban areas [10, 32]. In the study of Shiferaw et al., the eHL score achieved by urban students was higher by 4.2% than the score of students living outside the city [32].

In some studies, the association between education level and eHL was examined. Shiferaw et al. showed that each year of study increased eHL by 2.25% [32]. Master's students scored higher than bachelor's students on eHL scales in studies conducted in Denmark [69], Korea [71], and Jordan [66]. The survey conducted by Rathnayake and Senevirathna in Sri Lanka did not show a significant relationship between eHL and years of education [4]. In a study conducted in Turkey, higher levels of eHL were found in respondents whose parents are university graduates [74].

The study performed by Sharma et al. in Nepal revealed that eHL is significantly associated with participants' perceptions of Internet literacy, the importance and usefulness of the Internet, and the frequency of Internet use for health purposes [9].

The level of eHL of nursing students from Sri Lanka was, in turn, significantly associated with self-assessment of the skills related to Internet use, the use of the Internet to find sources of health information. The opinion on the use of the Internet in making health decisions generally, one can assume that eHL is significantly influenced by positive attitudes toward Internet use [4]. Perceived usefulness and extensive use of health-related information on the Internet are significantly associated with eHL level in nursing students [73]. A study conducted in Turkey observed that as the level of eHL increases, the level of health-promoting and protective behaviors increases. In the study group, years of computer use or frequency of Internet use did not affect non-eHL [74].

It should be noted that nurses are the largest group of health care workers who remain with patients for the longest time. Their role in promoting health among patients cannot be overestimated [6].

Although students are mostly literate, their ability to conduct advanced searches or evaluate the reliability and quality of health-related information online is insufficient.

This group should develop the appropriate skills to use online health information as a future health care sector workforce. The ability to search and evaluate online resources is extremely important for health care workers and students of medical faculties due to the dynamic nature of the development of medicine and health sciences [8].

Summary

The Internet has recently become one of the main sources of information in many fields for most of society. Its use enables users to access more information more easily. As many Internet users use it to search for health information, among other topics, finding and using information from the Internet is an important skill for users. The growing use of the Internet as a preferred tool for finding health information is attributed to the low cost of using this source, the high speed of searching, and the possibility of anonymous access to the issues sought. The vast amount of e-health resources available on the Internet and the constantly emerging new information serve to help those who access it. It strives to make today's health systems patient-centred rather than provider-centered, and the Internet can deliver health services to patients. The growing demand for digital health care programs creates the need for awareness and a focus on e-health. As a result, digital health care programs have been developed in many countries. However, using online health services requires a different, more expanded set of skills, such as searching and evaluating retrieved information quality. E-health literacy is essential to improving health care delivery and quality of care. Increasing the level of eHL among the public is necessary to promote health in all public health contexts in the future. People with low eHL will have limitations in using available online resources.

The COVID-19 pandemic has triggered the need for institutions and medical personnel to use and provide remote care to patients. The development of e-nursing is becoming necessary due to staff shortages and expanding the digitization process in health care worldwide. The ability to search and evaluate online resources is extremely important for health care workers due to the dynamic nature of the field's development. The data presented here indicate that eHL among nurses and nursing students is relatively low. Students should develop adequate skills in using online health information as the future health care workforce. Therefore, they need to increase their eHL. Efforts by hospitals to increase the eHL of medical staff are necessary, and this is important for both patients and hospital organizations. Additional training for nursing staff may also be required. Increasing eHL is also important among nurses to raise their low levels of health-seeking behavior. Although there is little research on the relationship between certain factors and eHL, it is likely that among nurses, a higher ability to search for, understand, and evaluate health information available on the Internet increases the amount of health-promoting behaviors, such as managing stress effectively, maintaining meaningful interpersonal relationships, paying attention to one's health, and having a strong sense of purpose and hope for the future, finding a path to self-development and finding quality health-related educational content. Increasing the level of eHL among nurses enhances knowledge and positive attitudes toward one's health, which, at the same time, can positively impact the ability to support patients in their health.

Finding, understanding, evaluating, distinguishing, and interpreting quality information on health-related topics is important for health care workers and patients. Strengthening the eHL of staff allows them to educate patients better, and nurses, as health care workers, can be a key element in improving the eHL in their patients. Patients with chronic diseases are frequent users of eHealth. People with chronic diseases can self-manage their ailments at home or with the help of family. When it comes to self-management of their illnesses, it is very important to get reliable and up-to-date information from sources. Health care workers, given the issues of access to information and literacy, need to know what skills their patients have before recommending them to use eHealth resources. Understanding the impact of eHL on health behavior can significantly improve how we promote health. Determining the impact of eHealth levels on health behaviors should become the basis for health promotion interventions.

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