Relationship between eHealth literacy and health promoting behaviors among nursing students

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Abstract

Background: Utilizing health literacy is important in establishing knowledgeable health advancements and practices, which can become deterrents to promoting a healthy lifestyle. Technological advancements improve health information availability and accessibility, potentially affecting the users' proficiency and their capability in applying the accessed health information. However, obtaining health information through information technology for health promotion requires e-health literacy.
Purpose: This study aimed to determine the relationship between eHealth literacy and health-promoting lifestyle behaviors among nursing students.
Methods: A descriptive-correlational study was applied to 131 nursing students recruited through a purposive sampling method from a nursing school in the Philippine. The researchers adopted the original English version of the e-Health Literacy Scale and Health-Promoting Lifestyle Profile II (HPLP) to collect the data. The gathered data were analyzed using descriptive analysis, frequency, percentage, mean, and standard deviation, and the correlation using Pearson's r correlation.
Results: A total of 131 nursing students were employed in the study, with a mean age of 20.14 (±1.22). Participants were female (71.8%) and were Level 1 students (44.3%). The mean of the total sum score for eHealth literacy was 31.24 (±4.30), while the overall item mean was 3.92 (±0.54). On the other hand, the health-promoting behavior has a mean score of 2.43 (±0.43), while its subscales have a mean score of 2.46 (±0.45) for nutrition, 2.45 (±0.62) for physical activity, and 2.39 (±0.47) for health responsibility. EHealth literacy was found to have a significant relationship with the students' health-promoting behavior (r=0.245, p=0.005). Hence, students with a high level of eHealth literacy are more inclined to perform healthy behaviors.
Conclusion: The results of this study showed that developing strategies to improve the e-health literacy of nursing students may contribute to maintaining their health-promoting behaviors. Identified intervention strategies based on eHealth literacy are needed to encourage healthy practices, which may reduce the risks of illnesses due to unhealthy lifestyle behaviors among nursing students.

Keywords: eHealth literacy; health-promoting behaviors; nursing students

Introduction

Health is one of the utmost concerns among Filipinos, as they greatly value health and well-being. Individuals are becoming more aware that aspects of this modern lifestyle may damage health. It is becoming more challenging, especially for them, to make healthy choices because of their field of work, living, and socio-economic environment (Vergeiri & Delos Santos, 2012). Thus, desiring good public health and having a healthy lifestyle are core requirements for maintaining a person's behavior. According to Wei et al.

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(2011), the main determinant of health status is a health-promoting lifestyle. A health-promoting lifestyle can be identified as positive activities or views to maintain or improve health and well-being, such as self-actualization, health responsibility, exercise, nutrition, interpersonal support, and stress management (Chiang et al., 2017). With the continuous growth of digital media, it can help people attain effective outcomes especially in accessing important health information and with that adopting lifestyle changes (Levin & Bertschi, 2018).

In this age of technological advancements, rapid growth in the use of electronic resources transpired in all kinds of fields. While e-health literacy has only been recent, its impact on society has been positive and beneficial. With the use of electrical resources, especially nowadays, e-health literacy comes in vast forms and has progressed throughout the years. As it progresses, more and more individuals adopt and learn the capabilities of the resources available to them. The use of e-health literature resources is common, especially during this generation. Since university students are in a dynamic period of growth and development, they may encounter challenging life conditions and different lifestyles in their university environment. They will all go through a routine like changes in study style, unhealthy eating, inadequate rest, and exercise. Hence, the use of e-health literacy and its parts over the internet per se aids individuals achieve their goals by living a healthy lifestyle.

For many people, having access to health services and handling health information in an applicable way is a complicated task (Norgaard et al., 2015). Access to health information is now more readily available than ever thanks to the internet, yet there are issues with the inconsistent quality of this information. It has become diverse and are now replete with inaccurate and misleading information, particularly since the COVID-19 outbreak (Abdulai et al., 2021). Thus, people need to be informed and understand their health by providing a better tool for their health. This is where e-health literacy comes in. It is defined as seeking, finding, comprehending, and evaluating health-related information from electronic sources as a result of technological advancements and using that information to treat and resolve any health issues (Çetin & Gümüs, 2023).

E-health literacy is still in its progressive form, and the world ought to witness its gradual developments throughout the years. The technology that enables the profession to access essential information for the practice demands acquiring the ability to find and assert viable information in the electronic environment in such a way that the sourced-out information can be applied to solving health conditions (Norman & Skinner, 2006, as cited in Levein-Zamir & Bertschi, 2018), thereby increasing access to e-Health information. However, access to e-health information not only requires people to have an Internet connection but also challenges the person's mindfulness in identifying verified health information against the unproven claims scattered throughout the Internet (Stellefson et al., 2011). E-health Literacy can obtain accurate health information when it is used wisely by people who use the internet as their source of significant data. Online health information can be difficult, which is why those with advanced e-health Literacy skills may efficiently use more effective and feasible online plans and other high-quality health information methods (Quinn et al., 2017). Moreover, e-health literacy is a relatively new concept that is characterized as the capacity of individuals to utilize developing data and communication advances to make strides or empower health and healthcare (Neter, n.d.).

Health promotion is one of the components of many facets of health development. eHealth literacy can assist people in obtaining more accurate health information when they use the internet responsibly as a source of pertinent data (Ossebaard & van Gemert-Pijnen, 2016). This will demonstrate behaviors that promote health. Further, it is also one of the determinants in social, political, and economic aspects of health development on individuals in which they interact in their respective communities that include social services, government, health services, and education. (Whitehead, 2004, as cited in Hosseini Shokouh et al., 2017).

Nurses play an important role in influencing individuals to maintain good health by practicing healthy lifestyles. They must be on the front line in providing and promoting health promotion initiatives (Geok et al., 2015). Also, good educational outcomes are linked to students' health state and knowledge, which is why educational settings are essential (Ahlstrand et al., 2022).

Even though different studies were made globally regarding the relationship of these variables with each other, in the Philippines, there is a dearth of research in the context of the relationship between e-health literacy and health-promoting lifestyle behaviors and how it affects the views and perspectives of nursing students about health-promoting lifestyle. As e-health literacy requires competency in information technology, however, the study of Fajardo (2023) found that Filipino students only have 'beginning' competency levels in author-checking, fact-checking, and bias-checking. This is important to note that the Philippines is considered as the "social media capital of the world" due to their remarkably high daily usage of roughly three hours. Facebook, Instagram, and TikTok have become the most popular platforms among Filipino internet users on a monthly basis (Statista Research Department, 2023). Thus, this study aims to determine the relationship between eHealth literacy and health-promoting lifestyle behaviors among the participants.

Materials and Methods

Research Design

This study was conducted using a descriptive cross-sectional research design to determine the eHealth literacy and health-promoting behaviors among nursing students and the relationship between these variables. An online questionnaire was used to determine the participants' behavior, personal routines, and current lifestyle. The study employed three measures to capture the demographic profile of the participants as well as the instrument to assess the participants' knowledge of eHealth and health-promoting behaviors.

Setting and Participants

In the study, a total of 154 nursing students answered the survey. However, only 131 completed the questionnaire (completed response rate=85.06%). The participants were from a College of Nursing and were selected through a purposive sampling method. It included participants who were either male or female, ranging in age from 18 to 22 years old, and those who agreed to participate in the study. Students who are not regularly enrolled were excluded in the study.

A priori power analysis was conducted using G*Power 3.1 to test the relationship between two variables using a two-tailed test. A medium effect size of d= .30 (Cohen, 1988), and an alpha of 0.05 was used. The result showed that a total sample of 128 participants was required to achieve a power of 0.95.

The researchers conducted an online survey using Google Forms documents. The researchers also provided informed consent and instructions regarding the content of the survey.

Measurement and Instrumentation

The study utilized three instruments in collecting the data to understand the relationship between eHealth literacy and health-promoting lifestyle behaviors among the participants. No translation was done, and the English version of the instrument was used, as English is the medium of instruction in the Philippines. The e-Health Literacy Scale and Health-Promoting Lifestyle Profile II (HPLP) were used to collect the data.

Demographic Profile Form: The personal characteristics of the participants will be collected, which include age, gender, and year level.

eHealth Literacy Scale: Norman and Skinner developed this tool (van der Vaart, 2011). The initial eHealth Literacy Scale had eight questions to assert the participant's understanding of eHealth further, and two supplementary items were added afterward. This test measures a person's comprehension and ability to optimize his or her literacy when using the internet. The degree of recurrence of a variable in a question is categorized and organized in ascending or descending order using the ordinal scale. The questionnaire has two sets of qualifiers, the first of which is scored as follows: 1=not important, 2=not useful, 3=unsure, 4=useful, and 5=very useful. As to the highest, the second set comprises 1=strongly disagree, 2=disagree, 3=undecided, 4=agree, and 5=strongly agree. This tool's Cronbach's Alpha resulted in an internal consistency of α = 0.93.

Health-Promoting Behaviors: Lim et al. (2016) updated the HPLP-II questionnaire, which currently has 26 items, from the previous HPLP-II questionnaire, which contained 52 items. The questionnaire analyzes an individual's behavior, personal routines, and current lifestyle using a 4-point Likert scale ranging from 1 (never) to 4 (routinely). It has three subscales, each having an internal consistency of 0.79 to 0.87, that were utilized to determine its factor structure: nutrition (N) (9 items), physical activity (PA) (8 items), and health responsibility (HR) (9 items). As a behavioral endpoint of cardiovascular disease (CVD) prevention, the N, PA, and HR scales were used in the current study. Cronbach's Alpha is 0.89 for this tool overall.

Data Collection Procedure

The study involves primary data collection using a self-administered questionnaire. In gathering the data needed, a letter of request to conduct the study was forwarded to the College Dean. After authorization and ethical clearance had been approved, the researchers proceeded to collect the students' data. The data were collected using Google forms and no face-to-face interaction occurred during the data collection. Overall, the instrument was administered for a period of two weeks and the participants took 10-15 minutes to complete the questionnaire.

Research Ethics Approach

The study conformed to the ethical standards of conducting research involving human participants. The ethical clearance was granted by the San Beda University- Research Ethics Board (SBU-REB) with Protocol No. 2020-021.

Data Analysis

The gathered data were analyzed using frequency, percentage, mean, standard deviation, and Pearson's R correlation. A Kolmogorov-Smirnov test was conducted and was revealed to be not significant (>0.05).

Results

Table 2 shows the health-promoting behavior and eHealth literacy among the participants. The mean of the total sum score for eHealth literacy was 31.24 (±4.30), while the overall item mean was 3.92 (±0.54). The highest item mean score was 4.10 (±0.60) for item "I know how to use the Internet to answer my questions about health," while the item "I feel confident in using information from the Internet to make health decisions" had the lowest mean

Table 1. Demographic Profile of participants (n = 131)

Profile	Frequency (f)	Percentage (%)	Mean (SD)
Age (Years)			20.14 (±1.22)
Sex			
Male	37	28.2%	
Female	94	71.8%	
Year Level			
Level 1	58	44.3%	
Level 2	47	35.9%	
Level 3	18	13.7%	
Level 4	8	6.1%	

Table 2. Health Promoting Behaviors and eHealth literacy among the participants (n=131)

	Mean	Standard Deviation
E-health Literacy		
Mean of total sum score (range, 8-40)	31.34	4.30
Item mean	3.92	0.54
1. I know what health resources are available on the Internet	3.96	0.76
2. I know where to find helpful health resources on the Internet	3.92	0.75
3. I know how to find helpful health resources on the Internet	3.99	0.67
4. I know how to use the Internet to answer my questions about health	4.10	0.60
5. I know how to use the health information I find on the Internet to help me	4.06	0.62
6. I have the skills I need to evaluate the health resources I find on the Internet	3.87	0.68
7. I can tell high -quality health resources from low- quality health resources on the Internet	3.82	0.75
8. I feel confident in using information from the Internet to make health decisions	3.61	0.86
Health promoting behaviors		
Mean of total sum score (range, 1-4)	2.43	0.43
Nutrition	2.46	0.45
Physical Activity	2.45	0.62
Health Responsibility	2.39	0.47

Table 3. Relationship of eHealth literacy on health-promoting behavior

	r coefficient	p value	Interpretation
Health Promoting Behaviors	**0.245	0.005	Significant
Nutrition	*0.216	0.013	Significant
Health Responsibility	**0.324	0.000	Significant
Physical Activity	0.112	0.203	Not Significant

*correlation is significant at 0.05 level
**correlation is significant at 0.01 level

score (M=3.61; SD=±0.86). On the other hand, the health-promoting behavior has a mean score of 2.43 (±0.43) while its subscales have a mean score of 2.46 (±0.45) for nutrition, 2.45 (±0.62) for physical activity, and 2.39 (±0.47) for health responsibility.

The relationship between eHealth literacy and health-promoting behavior among the participants was determined using Pearson's r correlation as shown in Table 3. Results revealed that eHealth literacy has a significant positive relationship with health-promoting behaviors (r=0.245, p=0.005) and its subscales, namely nutrition (r=0.216, p=0.013) and health responsibility (r=0.324, p=0.000). On the other hand, no significant relationship was noted between eHealth literacy and physical activity (r=0.112, p=0.203).

Discussion

This study was conducted to determine the relationship between e-health literacy and health-promoting behaviors among nursing students. One of the findings of this study was that nursing students are adept at utilizing technology in seeking vital information that could help their concerns as the participants were shown to have a high level of e-health literacy. The use of the internet has become normal for the participants' age group since this is where questions about health concerns, nutrition, and physical activity arise (Tanaka et al., 2020). The participants felt confident in the information obtained on the internet. Obtaining data and information, according to Kim and Oh (2021) is the most prevalent purpose for utilizing the internet, accounting for 89.1 percent of all usage. As a result, it is assumed that college students make use of the internet to acquire information, from basic to advanced. As Park et al. (2017) elucidated how students have high levels of internet literacy as they can access health information and utilize it properly, including their demands for what health resources are available, and where to find them as they already knew where to go for in online health information.

The findings also indicated a substantial association between e-Health literacy and actions that promote health and the fields of nutrition and health responsibility. With that said, it does convey that the internet aids the "consumer" of health information to utilize its tools to learn more about nutrition and to attain more knowledge about health responsibility (Sharma et al., 2019). According to Hsu et al. (2014), college students who reported a high level of e-health literacy were shown to engage more in increased exercise, a low-fat, low-sugar diet, the consumption of fruits and vegetables, and sound sleep. Partially corroborated by other research, eHealth literacy among college students has been found to be significantly correlated with health behaviors, including safe sex, physical activity, nutrition, and positive social relationships, with the highest correlation with maintaining positive social relationships (Britt et al., 2017). When combined, these findings imply that eHealth literacy among college students can be crucial for managing mental and emotional health, including stress management and maintaining healthy interpersonal relationships, in addition to managing physical health, which includes physical activity and diet. This finding has also been supported by other national and international studies, which demonstrate that people with higher eHealth literacy levels have greater health concerns, seek out health information more frequently, and have more positive attitudes toward Internet health information (Park et al., 2013).

Despite this, our study was not able to show the relationship between e-health literacy and physical activity. This was similar the study of Cho et al. (2018). This difference may be due to the personal characteristics of a person. Among the subscales of health-promoting behaviors, physical activity is a practical factor that is influenced by personal situations.

Since e-health information is interactive and engaging, its ability to deliver facts to mass audiences can improve the quality of healthcare and health promotion (Oducado & Moralista, 2020). A personal digital healthcare system provides people with knowledge and comprehension of their health due to technological improvements. The point of the study was also to look for possible executable programs and secondary channels of connection among eHealth literacy and health-promoting behaviors among nursing students by social media usage for health information, as well as online health information behaviors. Individuals may gain control over their health and promote a healthy lifestyle through eHealth literacy.

One of the factors in several elements of health development is health promotion. When individuals utilize the internet wisely as a source of relevant data, then e-health literacy can help them get more accurate health information (Ossebaard & van Gemert-Pijnen, 2016), which would exhibit health-promoting behaviors. The accessibility and reliability of the vast information across the world wide web could provide varying facts and opinions about the participants' health concerns regarding nutrition and health responsibility, thereafter, being equipped with the capacity to decipher credible information, eHealth literacy, will positively empower them to adapt to a fitness-promoting lifestyle. eHealth literacy, exercise hours, subjective health status, and health concerns strongly correlated with health-promoting activities. Interventions for health-promoting behaviors, such as strengthening competencies relevant to critical eHealth literacy and increasing exercise hours, must be created to enable nursing students' health-promoting habits. This then supports the positive relationship of a high-level e-Health literacy being in line with health-promoting behaviors.

The internet's accessibility to a wide range of health-related information has made it a more popular source of health information, particularly among those in their 20s. In line with this, e-health

literacy has been a determinant for users in general in the realm of social media. Their reach has made it possible to further the spread of important information with regard to health on a myriad of different social media platforms.

Strengths and limitations of the study

One of the strengths of the current study was there was no bias in the selection process because every student was invited to participate. When respondents to a survey are the kind of people who like to complete surveys, self-report bias may arise, which can affect and restrict the findings. However, some restrictions must be taken into account. When doing statistical analyses and making suitable population-level generalizations, power calculation is frequently advised. This study only included students enrolled in one university, therefore, it is only possible to generalize the results to this population. Also, another limitation is that correlational studies cannot establish a cause-and-effect relationship.

Conclusion

The study revealed a significant relationship between eHealth literacy and health-promoting behaviors. Thus, nursing students with a high level of eHealth literacy have the edge in making healthy behaviors. Moreover, identified intervention strategies based on eHealth literacy are needed to encourage healthy practices, which may reduce risks of illnesses due to unhealthy lifestyle behaviors among nursing students. Also, future research can be done to include students from other professions.

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Declaration of Interests

The authors declare that they have no competing interests.

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