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E-Health Literacy and Health Information Seeking Behavior Among University Students in Bangladesh

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Abstract

Web 2.0 has become a leading health communication platform and will continue to attract young users; therefore, the objective of this study was to understand the impact of Web 2.0 on health information seeking behavior among university students in Bangladesh. A random sample of adults (n= 199, mean 23.75 years, SD 2.87) participated in a cross-sectional, a survey that included the eHealth literacy scale (eHEALS) assessed use of Web 2.0 for health information. Collected data were analyzed using a descriptive statistical method and t-tests. Finally logistic regression analyses were conducted to determine associations between sociodemographic, social determinants, and use of Web 2.0 for seeking and sharing health information. Almost 74% of older Web 2.0 users (147/199, 73.9%) reported using popular Web 2.0 websites, such as Facebook and Twitter, to find and share health information. Current study support that current Web-based health information seeking and sharing behaviors influence health-related decision making.

Keywords:
Health Literacy; Social Media; Cross-Sectional Studies

Introduction

Nowadays, the Internet is a very common tools to seek information about healthcare and health conditions [1]. A study has confirmed that 83.4% of the frequent internet users age between twenty years to forty years, shows 72% of them are engaged in social networking days and nights [2]. As a large amount of health information is available in web 2.0; so it can be used to educate and empower people. The concept of eHealth literacy which refers to the ability to read, understand and communicate about health information to make the people to take proper health decision [3].

Consumer-directed eHealth requires the ability to seek out, find, evaluate and appraise, integrate, and apply what is gained in electronic environments toward solving a health problem, or eHealth literacy [4]. This composite skill requires that people are able to work with technology, critically think about issues of media and science, and navigate through a vast array of information tools and sources to acquire the information necessary to make decisions [3]. According to Norman and Skinner [5], eHealth literacy is ability to navigate the internet for health information. Thus, eHealth literacy comprise of computer literacy, scientific literacy, health literacy, traditional literacy, media literacy, and information literacy [6]. Norman and Skinner [7] created the eHealth Literacy Scale (eHEALS) to measure individuals' perceptions of their own digital health literacy skills [8].

Although many studies have used eHEALS scale to determine eHealth literacy despite of lack of evidence [9-13]. Asian countries like Japan and Taiwan researcher used this eHEALS scale for predicting eHealth literacy. But there is no research in Southeast Asian countries using eHEALS scale to determine eHealth literacy. In this study, we construct validity of eHEALS was analyzed among the university students who use web 2.0.

Methods

Study population

A cross-sectional study was conducted in four university (Dhaka Dental College, American International University Bangladesh, Manarat University Bangladesh, and Stamford University Bangladesh). Participants were eligible if they were over 17 and less than 35 years old, capable of reading, writing English, and were willing to sign a consent form and able to complete questionnaire. A total of 199 participants were enrolled 4 investigators from November 2015 to March 2016. All of the 199 participants in this study were included according to gender, age, marital status, computer competency, and pattern of internet use.

Measurement

Computer knowledge and Internet use

Participant were asked about their computer knowledge and amount of internet use. In the past 12 months have they use popular social media and shared any information regarding health. It was not restriction to use desktop or laptop computer, cell phone, mobile handheld device like an e-reader or tablet.

eHealth literacy

In our study, we measured eHealth literacy by using eHealth literacy scale (eHEALS). It is introduced by Norman which is used determines consumers' combined knowledge, confidence, and perceived skills finding, evaluating, and applying electronic health information to health problems. eHEALS consists of 8-items scored on a 5-point Likert scale ranging

from 1 (strongly disagree) to 5 (strongly agree). Higher scores on the eHEALS indicates higher eHealth literacy (total score range=5-40). The internal consistency of the data collected using the eHEALS in this study was high (Cronbach alpha=.740), and comparable to reliability estimates reported in previous studies.

Use of Web 2.0 for Health Information

We asked participants, "In last 12 months, have you used the Internet for any of the following reasons to locate or share health information?" Respondents could select all reasons for using the Internet:

1. Participated in a Web-based-support group,
2. Used a social networking site like Facebook/Twitter/ LinkedIn,
3. Wrote in a Web-based diary or blog.

Sociodemographic and Social Determinant Variables

Gender (male or female), age (in years), education (higher secondary school/H.S.C, college graduate, post-graduate), and marital status (married, unmarried, widow and unknown) were all assessed. Perceived health status was also measured using the following scale: (1) poor, (2) fair, (3) good, (4) very good, and (5) excellent.

Statistical Analysis

In our study, we used SPSS version 23.0 to compute frequency and descriptive statistics to analyses sociodemographic and social determinant characteristics, frequency statistics for each eHEALS item, and the number of respondents reporting use of Web 2.0 for health information. An independent samples t-test was performed to compare eHealth literacy among users and non-users of Web 2.0 for health information. We also conducted a multiple linear regression to determine whether use of internet and computer knowledge, sociodemographic variables (sex, age, education, marital status), and perceived health status as a determinant predicted overall eHEALS scores. Finally, a binominal logistic regression was conducted to determine whether these predictor variables were associated with the use/non-use of Web 2.0 for health information. Analyses were considered statistically significant at the P<.05 alpha level (two-tailed).

Results

Participant characteristics

Our study shows that participants age ranged from 17 to 35 years (mean 23.75, SD= 2.87). Male participant had 133 (66.8%) and female had 66 (33.2%). Among participant unmarried was highest number 138 (69.3%), 48 (24.1) were married, 1 (0.5) was widow and 12 (6%) did not answer this question. Over 72% of participant reported completing Bachelor degree and almost a quarter 23.1 %(46/199) completed Master's degree. A little over one quarter (27.6%) participants had very good health and 30.7% (61/199) participants had good health status. **Table 1:** shows the characteristics of study participants included this study (n=199).

Computer competency and internet use

A little over half of the participants were competent in computer 53.3% (106/199), 31.7% (63/199) of despondences were just beginner in computer and about one six percent 15.1% (30/199) despondences were above competent. In the case of internet use, 82.9% (165/199) of participants use internet daily, 11.6% (23/199) use internet once a week.

Table 1 - Sociodemographic and health status, computer knowledge and internet use characteristics of study participants (N=199)

Demographic		N (%)
Gender	Male	133 (66.8)
	Female	66 (33.2)
Mean (SD) age (Years)	23.75 (2.87)	
Marital status	Married	48 (24.1)
	Unmarried	138(69.3)
	Widow	1 (0.5)
	Unknown	12 (6)
Education	Higher secondary	9 (4.5)
	Bachelor	144 (72.4)
	Masters	46 (23.1)
Health status	Excellent	56 (28.1)
	Very good	55 (27.6)
	Good	61 (30.7)
	Fair	18 (9)
	Poor	2 (1)
	Not answer	7 (3.5)
Computer knowledge	Beginner	63 (31.7)
	Competent	106 (53.3)
	Above competent	30(15.1)
Use of Internet	Daily	165(82.9)
	Once a week	23 (11.6)
	More than one times a week	7 (3.5)
	Once a month	4 (2.0)
	Never	0 (0)

Use of Web 2.0 for health information

Almost three fourth of participants 71.9% (143/199) use popular social media like face book, twitter etc. and share health information. However, almost 40% (79/199) of participants does not share any information in web based support group and 94% (187/199) of participant does not share any information in blog. Almost three fourth 73.9% (147/199) of participant reported use at least one social media for sharing health information. **Table 2:** shows the frequency and percentage of young's who used Web 2.0 to locate or share health information.

Table 2 - Frequency and percentage of young's who used Web 2.0 to locate or share health information (N=199).

In last 12 months, have you used the Internet for any of the following reasons to locate or share health information?	N (%)
Popular social media	
Yes	143 (71.9)
No	56(28.1)
Web-based support group	
Yes	79(39.7)
No	120(60.3)
Blogs	
Yes	12(6)
No	187(94)
Report using at least one of these types of social media	
Yes	147(73.9)
No	52 (26.1)

Reliability and validity

In our study, total scale of eHEALS ranged from 13 to 40 (means 27.46, SD= 4.99). Table 3 illustrates the response frequencies for each eHEALS items. The internal consistency of the eHEALS was alpha= 0.74. The variance of the scale was 50.7 percent and all items loaded high on this component,

ranging from .423 to .642. **Table 3**: shows the correlation the scores on the eHEALS and the variable measured in this study.

Association between Web 2 for health information and eHealth literacy

In the case of social media use, the respondents reported the difference in the total eHEALS scores among popular social media such as Facebook, twitter, etc. users (means 28.01, SD= 4.95) and non-users (means 25.98, SD= 4.79). Other response in this question included the difference in the total eHEALS scores among the web support group users (means 27.75, SD= 4.28) and non-users (means 27.24, SD= 5.398). This difference is also observed in the case of blogs, the difference in the total eHEALS scores among blog users (means 27.83, SD= 5.95) and non-users (means 27.42, SD= 4.93). Taken together, these results suggest that there is an association between Web 2 for health information and eHealth literacy.

Predictors of Web 2 use for health information

Binominal logistic regression analysis were used to analyze the relationship between web 2.0 use and eHealth literacy. **Table 4** provides the summary statistic for predicting use of web 2 for the health information.

Discussion

The present study was designed to determine the effect of internet on health literacy among the university students in Bangladesh. In this study sociodemographic variable such as health status and social determinant (e.g. marital status, income etc.) were not significant predictors of eHealth literacy among the university students in Bangladesh. However, gender appeared significant effect especially female significantly effects the use of internet on health information. This finding is contrary to previous study which has suggested that education level, advanced age, and the extent to which electronic devices were used did appear to affect eHealth literacy. Also, they found the level of education, electronic device use influenced the use of internet for health-related information [14]. Furthermore, this present study found that the majority of students used the Internet to find health information, and believed the Internet was useful for helping to make health decisions.

E-Health literacy was found to be influenced by age, education, and marital status, computer knowledge used to search for health information in this study. Participants having higher level of education has been associated with higher amount of internet use for searching health information. Although, Powel et al. [15] studies mentioned education has been associated with more frequent use of the Internet for health information. This view is also supported by a group of researchers from Israel [12]. Besides, unmarried participant's searching frequency were higher than married participants. In addition, computer competency had great influence in

Table 3 - eHEALS scale mean, SD, reliability and factor analysis

Items	Mean	SD	Factor loading	Item-total correlation
I know **what** health resources are available on the Internet	3.61	.874	.423	.370
I know **where** to find helpful health resources on the Internet	3.57	.950	.582	.486
I know **how** to find helpful health resources on the Internet	3.51	1.024	.642	.508
I know **how to use** the Internet to answer my health questions	3.32	1.171	.594	.470
I know how to use **the health information** I find on the Internet to help me	3.61	.880	.468	.395
I have the skills I need to **evaluate** the health resources I find on the Internet	3.30	1.158	.565	.465
I can tell **high quality** from **low quality** health resources on the Internet	3.24	1.159	.493	.407
I feel **confident** in using information from the Internet to make health decisions	3.30	1.114	.433	.389
Mean (SD) sum score	27.46	4.99		
Variance accounted for	50.07%			
Cronbach alpha	.740			

Table 4 - Logistic regression predicting use of Web 2.0 for health information

Variables		B	SE B	Wald	Exp (β)	95% CI
Constant						
Age		-.026	.063	.17	.974	.86-1.10
Gender		-.407	.368	1.22	.666	.32-1.37
Marital status[b]						
	Married	1.887	1.145	2.71	6.601	.70-62.2
	Unmarried	1.594	1.099	2.10	4.923	.57-42.4
Education[c]						
	Bachelor	.310	.390	.63	1.363	.63-2.92
	Master's	532	.908	.34	.587	.09-3.48
Computer knowledge[d]						
	Beginner	.169	.394	.18	1.184	.54-2.56
	Competent	.286	.540	.28	1.332	.46-3.83
Internet use[e]						
	Daily	1.163	.502	5.36	3.201[a]	1.19-8.56
	Once a week	.540	.892	.36	1.715	.29-9.86
	More than one a week	1.116	1.067	1.29	3.374	.41-27.32

[a]P<.05 two-tailed; [b]Reference category: Not answer; [c]Reference category: Higher secondary school certificate;
[d]Reference category: Above competent; [e]Reference category: Once a month

searching health information in internet and it shifted from beginners to competent. Several studies mentioned that demographics, educational background, and technology use uniquely influences health literacy [16-18] and eHealth literacy [4; 19; 20] in the general population.

As Bangladesh is a developing country so there has been some concern that those at lower socio-economic levels do not have equal access to Internet health resources. It is clearly understandable that access to computers are limited, literacy abilities are insufficient, and always lacking of basic computer skills. However, it is true that university students are still the largest percentage of Internet health information seekers and it also exponentially increasing to the other segments of society, obviously they are likely to search for health information. As significant number of university student are using Internet for seeking health resources but how they look for and find high-quality information on the Web still not clear.

While it is important to use the Internet to seek out general health information, majority of adult does not feel interest to discuss their own health problems or obtain personalized medical advice over the Internet. Most of cases they are reluctance to using interactive Internet applications for health communication purposes. It would be more valuable if they seek and share their personal health information other than just usual interaction. It could be the result of contextual Web security issues affecting confidentiality. The issue of trust when using the Internet to seek and share medical information is an important one to consider, especially with the emergence of peer-to-peer or horizontal health communication among university students. More research should be done to discover what particular sources of Web-based health information college students are consulting and which cause uneasy feelings originating from potential threats to data security and privacy.

There are some limitation in our study. Firstly, we only focus young generation who are studying different university; we did not include participants who were not studied in institution. Secondly, we only conducted survey one district, it does not present whole country situation. There may be a need for a more comprehensive survey instrument that assesses health information seeking and sharing using all types of Internet applications. Finally, the cross-sectional research design limits the researchers from establishing causation when considering the interrelationships between sociodemographic variables, social determinants, and health communication outcomes.

Conclusion

Although university students are highly connected to, and feel comfortable with, using the Internet to find health information but it is not still satisfactory. This study has shown that eHealth literacy enhancing program is needed among university students. It is important those who are in the medical and health professions, need customized eHealth literacy training for finding, interpreting, and evaluating health- and medical-related information available on the Internet.

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