

Health Knowledge Insufficiency Motivates Health Information Seeking

Fen-Fen Huang, Yi-Horng Lai, Chih-Hsiang Lin, Hsieh-Hua Yang
Oriental Institute of Technology
Taiwan
FL005@mail.oit.edu.tw



ABSTRACT: Health information on the Internet is available to help people increase their knowledge and take more responsibility for their health. This study explored how people that vary in severity of health anxiety search for online health information. A cross-sectional research design was employed to evaluate the relationship between online health information seeking and health anxiety. This study surveyed 275 male and 234 female participants aged 15–67 years living in New Taipei City. The results showed that health anxiety is an effective predictor of health information seeking and that health information seeking is motivated by a health knowledge insufficiency. They also showed a difference between the frequency of online health information seeking and the number of websites visited. In conclusion, online health information seeking is a purposive behavior that can be affected by health anxiety.

Keywords: Cognitive–Behavioral Theory (CBT), Health Knowledge Insufficiency, Online Health Information Seeking

Received: 19 September 2015, Revised 24 October 2015, Accepted 30 October 2015

© 2016 DLINE. All Rights Reserved

1. Introduction

The Internet enables the public to search for health information, enabling people to increase their health knowledge and take more responsibility for their health. However, cognitive–behavioral theory (CBT) states that people with health anxiety misinterpret medical information and perceive health issues as being more dangerous than they really are.

2. Literature Review

2.1 Health Anxiety

Health anxiety is often considered “hypochondriasis” [1], [2]. It entails a negative bias toward disease-related information [3], and information misunderstanding can cause a cognitive bias toward perceiving personal threats and catastrophes. Anxiety is a common phenomenon and is mainly considered in terms of health, by both the public and clinical professionals [4]. CBT can facilitate interpretation of the development and maintenance of health anxiety [2], [5]. The theory predicts health anxiety- and attention bias-related diseases as well as a cognitive bias toward misunderstanding health information.

People that worry about their health are more likely to misunderstand health information about personal threats. Individual differences affect the emotional impact on people with health anxiety interpreting health-related information. Health anxiety is likely to amplify health threats, and those that experience it are at risk of disease and report higher levels of pain [6]. Muse et al. [7] reported that seeking health information online may exacerbate the severity, duration, and frequency of health

anxiety.

2.2 Online Health Information Seeking

Online health information seeking is related to users' situational and personal characteristics [8]. Personal characteristics include psychological and socioeconomic factors. For example, married women with a higher income are more likely to look for health information [9]. Those with more education, a younger age, and a high income and those that were employed were observed to seek health information on the Internet more frequently [10]. People with more control interpretations of their own health and tended to find more health information [11]. McKinley and Ruppel [12] found that self-efficacy and perceived threat play a small, yet significant, role in explaining online mental health information seeking. For older adults, Chang and Im [13] indicated two variables, prior experience and usage intention, that had positive direct effects on online health information seeking. A review by Anker et al. [14] revealed that factors affecting information seeking for concerns regarding both personal health and others' health, including gender, education, income, age, and health literacy, were associated with patient satisfaction, interactions with physicians, treatment decisions, treatment options discussed, and knowledge obtained through search results. In summation, employment (i.e., part-time), gender (i.e., female), and specific health concerns (i.e., new drug or treatment prescribed, ongoing medical condition, and new diagnosis of a health problem) influence people to participate in online searching for health information more than other Internet activities to address health concerns [15].

Regarding situational factors, Xiao et al. [16] found that perceived quality of communication with doctors and perceived health status can both affect online health information seeking. Some health information seekers participating in Rice's study [15] reported that they obtained information from the Internet to find another doctor, receive a second opinion, prepare for discussion with their doctor, or decide whether to see a doctor. AlGhamdi and Moussa [10] found that the reasons for online health information seeking included not believing the information provided by the doctor and not obtaining enough information from the doctor.

2.3 Theory

The development of health anxiety can be explained using CBT [2], [5]. Regarding the cognitive processes of CBT models, the forms of meanings, assumptions, appraisals, and judgments associated with specific life events are the primary determinants of personal actions and feelings and thus either hinder or facilitate the adaptation process. In other words, in addition to environmental influences, a person's feelings and thoughts are believed to distinctly contribute to health behavior. CBT suggests that health anxiety is related to an attentional and cognitive bias toward misunderstanding information as well as noticing disease-related information in a personally threatening and catastrophic manner.

Overall, the aim of this investigation was to examine how people with different health anxiety severities seek health information by using the Internet.

3. Method

This study employed a cross-sectional research design. The participants lived in New Taipei City. The Health Anxiety Questionnaire modified by Chen [17] was applied to measure health anxiety. This instrument contains 19 questions and was adopted from a 21-question version developed by Lucock and Morler [18]. The Cronbach's alpha of the instrument was 0.92 in this study.

The dependent variables were frequency of online health information seeking and the number of websites used. The participants reported how often they had searched for health information and how many websites they used to search for health information.

The independent variables were gender, age, education, marriage, employment, and situational variables, namely health status and the motivation for seeking health information. Whether the participants or their family had chronic disease was measured as the health status. The motivations for seeking health information were increasing health knowledge and an insufficiency of information provided by doctors.

4. Results

The participants comprised 275 males and 234 females aged 15–67 years ($M = 26.39$, $SD = 9.26$). Most of them were not married and had graduated from university. Approximately half of the participants were unemployed. The motivation for

seeking online health information was not insufficiency of information provided by doctors for almost all the participants. Most of them searched for health information for increasing their health knowledge (Table 1).

Variables	N	%
Gender		
Male	275	54.0
Female	234	46.0
Education		
University	418	82.1
High school	91	17.9
Marriage		
Yes	103	20.2
No	406	79.8
Employment		
Yes	231	45.4
No	278	54.6
Insufficiency of health information from doctor		
Yes	48	9.4
No	461	90.6
Improving health knowledge		
Yes	239	47.0
No	270	53.0
	<u>Mean</u>	<u>SD</u>
Age (15-67)	26.39	9.26
Health anxiety (0-95)	28.61	16.10
Chronic disease of respondent s(0-3)	0.19	0.51
Chronic disease of family (0-3)	1.10	1.11
Frequency of seeking(0-3)	1.52	0.98
No. of websites(0-3)	0.82	0.79

Table 1. Description of participants

The regression model in Table 2 showed that gender, age, and education were correlated with the frequency of online health information seeking, but marriage and employment were not. Females had a higher probability than males to search for health information on the Internet. Regarding age, younger participants had a higher probability of health information seeking. Furthermore, the people with more education searched for health information online more frequently than did those with less education. Health anxiety was an effective predictor, and those who sought to improve their health knowledge were more likely to search for health information. Those whose family had chronic diseases were also more likely to seek health information online.

The factors that affected the number of websites visited are shown in Table 3. The significant factors were education, employment, health anxiety, motivation to improve health knowledge, and participants or their family having a chronic disease. The people with more education or that were employed browsed more websites. Health anxiety was also a key factor. The people with higher

health anxiety browsed more webpages to improve their health knowledge. Participants or family having a chronic disease was also associated with browsing more websites.

Variables	B	t	p
Gender (M/F)	-0.259	-3.244	0.001
Age	-0.012	-2.055	0.040
Education(University/high school)	0.329	2.939	0.003
Marriage(Y/N)	-0.112	-0.866	0.387
Employment(Y/N)	0.108	1.252	0.211
Health anxiety	0.010	3.966	<0.001
Insufficiency of health information from doctor (Y/N)	0.000	-0.003	0.997
Increasing health knowledge(Y/N)	0.528	6.723	<0.001
Chronic disease of respondents	0.033	0.400	0.690
Chronic disease of family	0.097	2.654	0.008
Constant	0.712	2.427	0.016
R		0.460	
R square		0.212	

Table 2. Factors for the frequency of Internet health information seeking

Variables	B	t	p
Gender (M/F)	-0.035	-0.543	0.588
Age	-0.007	-1.503	0.134
Education(University/high school)	0.239	2.620	0.009
Marriage(Y/N)	0.011	0.105	0.917
Employment(Y/N)	0.217	3.077	0.002
Health anxiety	0.006	2.765	0.006
Insufficiency of health information from doctor (Y/N)	-0.089	-0.809	0.419
Increasing health knowledge(Y/N)	0.440	6.863	<0.001
Chronic disease of respondents	0.287	4.268	<0.001
Chronic disease of family	0.061	2.044	0.041
Constant	-0.002	-0.008	0.994
R		0.436	
R square		0.190	

Table 3. Factors for the websites' number of internet health information seeking

Comparing the two regression models shown in Tables 2 and 3 revealed that education, health anxiety, improving health knowledge, and having a family member with a chronic disease were predictors of both the frequency of online health information seeking and the number of websites visited.

5. Discussion and Conclusion

The Internet has become a uniquely attractive place for acquiring knowledge of various health problems. It is widely regarded as a crucial mechanism for enhancing public health and health care [19], [20]. The Internet offers clear promise as a health education and communication tool [21], [22]. However, the effects of health anxiety on online health information seeking cannot be ignored.

5.1 Health Anxiety is an Effective Predictor of Health Information Seeking

The current results are consistent with those of previous studies. Regarding health information seeking, the frequency and number of health information website visits are significantly associated with health anxiety. People who are more anxious about their health are more likely to frequently seek health information and browse more websites. People with a disease can use health information to understand their treatment options and diagnosis, and those without a disease can use it for disease prevention and risk evaluation [23]. In this study, most of the participants were healthy people that browsed online health information to increase their health knowledge. It is supposed that online health information browsing can facilitate disease prevention and health promotion.

5.2 Health Information Seeking is Motivated by Health Knowledge Insufficiency

For approximately half of the participants, the motivation for health information seeking was to increase health knowledge, but not because of an insufficiency of health information provided by their doctor. This result is contrary to that of other studies. AlGhamdi and Moussa [10] indicated that not obtaining enough information from doctors or not believing the information provided by doctors motivated health information seeking. Rice [15] found that online health information led participants to ask their doctor new questions.

The discrepancy can be attributed to two differences between the current study population and those of the previous studies. First, the participants in the current study were young and healthy Taiwanese living in New Taipei City. Most of them were healthy, had no chronic disease, and did not need to visit doctors frequently. The context of interacting with a doctor did not exist in their daily living. They may have been curious about health information and want to increase it, but not for communicating with doctors.

The second point relates to Chinese culture. Historically, the Taiwanese have been strongly influenced by Confucianism. Confucian thought focuses on li (禮), which entails properly interacting with others in accordance with a system of ritual norms and propriety. In ancient times, the doctors were wise and compassionate. They healed the poor without asking for anything in return. All doctors were respectful and the patients complied with doctors and did not ask any questions. Currently, the health system is changing dramatically. The doctors are employed by health organizations. They may be competent, reliable, and dependable, but are not necessarily compassionate. However, Confucian tradition still has an impact on patients, hindering them from arguing with doctors. Consequently, receiving insufficient health information from a doctor did not influence health information seeking.

5.3 Difference between Frequency and Number of Websites Visited for Health Information

Gender and age influenced the frequency, but not the number, of websites visited for health information. Females searched for health information more frequently than did males. The younger participants had a higher frequency of seeking online health information.

The purpose of information seeking is information acquisition from a selected information carrier. The frequency of seeking represents different instances of browsing online health information. It is supposed that Internet browsing behavior is triggered by experiences with health problems. When there is a specific health concern, a person seeks information. Females are more concerned with health problems and have a higher frequency of browsing health information.

The occurrence of chronic diseases in either the participant or the participant's family was related to the number of websites browsed, whereas only the occurrence of chronic diseases of participant's family was related to online health information seeking. Website browsing is performed for a specific purpose. When a person has a health-related problem, he or she searches for related websites. Therefore, the occurrence of chronic disease in both the participants and their family was related to the number of websites browsed.

In conclusion, online health information has many benefits, including effective and efficient retrieval, lack of embarrassment and privacy protection, and the ability to tailor information to satisfy personal needs [24], especially for those with chronic diseases. However, the problem of health anxiety triggered by health information should not be ignored.

References

- [1] Salkovskis, P. M., Bass, C. (1997). Hypochondriasis, *In: The science and practice of cognitive-behavioral therapy*, Oxford: *Oxford University Press*, 313–339.
- [2] Warwick, H. M., Salkovskis, P. M. (1990). Hypochondriasis, *Behaviour Research and Therapy*, 28, 105-117.
- [3] Owens, K. M. B., Asmundson, G. J. G., Hadjistavropoulos, T., Owens, T. J. (2004). Attentional bias toward illness threat in individuals with elevated health anxiety, *Cognitive Therapy and Research*, 28, 57–66.
- [4] Salkovskis, P. M., Warwick, H. M. C. (2001). Making sense of hypochondriasis: a cognitive theory of health anxiety. *In: G. J. G. Asmundson, S. Taylor, B. J. Cox (Eds.), Health anxiety: Clinical and research perspectives on hypochondriasis and related conditions*. NY: Wiley, 46-64.
- [5] Salkovskis, P. M., Warwick, H. M. (1986). Morbid preoccupations, health anxiety and reassurance: *A cognitive-behavioural approach to hypochondriasis*, *Behaviour Research and Therapy*, 24, 597-602.
- [6] Miller, S. M., Fang, C. Y., Manne, S. L., Engstrom, P. F., Daly, M. B. (1999). Decision making about prophylactic oophorectomy among at-risk women: Psychological influences and implications. *Gynecological Oncology*, 75, 406-412.
- [7] Muse, K., McManus, F., Leung, C., Meghreblian, B., Williams, J. M. G. (2012). Cyberchondriasis: Fact or fiction? A preliminary examination of the relationship between health anxiety and seeking for health information on the Internet. *Journal of Anxiety Disorders*, 26, 189-196.
- [8] Lambert, S., Loiselle, C. (2007). Health information seeking behavior. *Qualitative Health Research*, 17, 1006.
- [9] Czaja, R., Manfredi, C., Price, J. (2003). The determinants and consequences of information seeking among cancer patients. *Journal of Health Communication*, 8, 529-562.
- [10] AlGhamdi, K. M., Moussa, N. A. (2012). Internet use by the public to search for health-related information. *International Journal of Medical Informatics*, 81, 363-373.
- [11] DeVito, A. J., Bogdanowicz, J., Reznikoff, M. (1982). Actual and intended health-related information seeking and health locus of control. *Journal of Personality Assessment*, 46, 63-69.
- [12] McKinley, C. J., Ruppel, E. K. (2014). Exploring how perceived threat and self-efficacy contribute to college students' use and perceptions of online mental health resources. *Computers in Human Behavior*, 34, 101-109.
- [13] Chang, S.J., Im, E.O. (2014). A path analysis of internet health information seeking behaviors in South Korean older adults. *Geriatric Nursing*, 35 (2), 137-141.
- [14] Anker, A. E., Reinhart, A. M., Feeley, T. H. (2011). Health information Fseeking: A review of measures and methods. *Patient Education and Counseling*, 82, 346-354.
- [15] Rice, R. E. (2006). Influences, usage, and outcomes of Internet health information seeking: Multivariate results from the Pew surveys. *International Journal of Medical Informatics*, 75, 8-28.
- [16] Xiao, N., Sharman, R., Rao, H. R., Upadhyaya, S. (2014). Factors influencing online health information search: An empirical analysis of a national cancer-related survey. *Decision Support Systems*, 57, 417-427.
- [17] Chen, H. C. (2006). Exploring modulated factors between health anxiety characters and emotionality: the functions of health cognitive appraisal and conscientiousness personality. Dissertation of Department of Psychology, Fujen Catholic University.
- [18] Lucock, M. P., Morley, S. (1996). The health anxiety questionnaire. *British Journal of Health Psychology*, 1. 137-150.
- [19] Baker, L., Singer, T. H., Singer, S., Bundorf, M. K. (2003). Use of the internet and e-mail for health care information: Results from a national survey, *Journal of the American Medical Association*, 289 (18), 2400-2406.
- [20] Lintonen, T. P., Konu, A. I., Seedhouse, D. (2008). Information technology in health promotion, *Health Education Research*, 23, 560-566.

- [21] Berger, M., Wagner, T. H., Baker, L. C. (2005). Internet use and stigmatized illness, *Social Science & Medicine*, 61, 1821-1827.
- [22] Bundorf, M. K., Singer, S. J., Wagner, T. H., Baker, L. (2004). Consumers' use of the Internet for health insurance, *American Journal of Managed Care*, 10, 609-616.
- [23] Brashers, D. E., Neidig, J. L., Haas, S. M., Dobbs, L. K., Cardillo, L. W., Russell, J. A. (2000). Communication in the management of uncertainty: the case of persons living with HIV or AIDS, *Communication Monographs*, 67, 63-84.
- [24] Cline, R. J. W., Haynes, K. M. (2001). Consumer health information seeking on the internet: the state of the art, *Health Education Research*, 16, 671-692.