Research Article

A Tailored Approach to Identifying and Addressing College Students' Online Health Information Literacy

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ABSTRACT

Background: *College students may fail to practice information literacy skills because they are unaware of their skill level or are not concerned with the risks.* ***Purpose:*** *In order to develop an effective message that motivates college students to learn online health information literacy skills, a better understanding of perceptions about such skills and use of the internet to locate health information is needed.* ***Methods:*** *A risk assessment and internet use survey were administered to participants (n=98). The risk assessment evaluated and grouped individuals into one of three risk-response states based on perceived threat severity and susceptibility, as well as perceived self- and response-efficacy.* ***Discussion:*** *Risk-response states and frequency of internet use to locate health information varied significantly ($p<.001$). A significant relationship was also found between frequency of use and risk-response state ($p<.01$). Topics most researched included an illness or condition; nutrition, exercise, or weight-control issues; and mental health issues.* ***Translation to Health Education Practice:*** *When seeking to motivate college students to learn online health information literacy skills, educators should tailor their messages based on risk-response states, frequency of internet use to locate health information, and topics researched.*

BACKGROUND

In today's wired society, more and more Americans seeking medical advice choose online health resources over a visit to an actual health professional. According to the Pew Internet and American Life Project, on any given day, over 8 million Americans use the internet to research health topics.[1] In many of its reports, the Pew project refers to such individuals as online health seekers.[1-4] Online health seekers use the internet to look up information about a particular doctor, a specific health condition, alternative or experimental treatments, or sensitive health topics that are difficult to discuss. Although the internet offers an endless supply of health advice to those who seek it, no government authority is responsible for the evaluation and regulation of this information, leaving online health seekers to fend for themselves. Considering that 66% percent of online health seekers began their last health inquiry at a search engine,[1] the risk of exposing oneself to unreliable health information or misdiagnosing oneself is high.

According to the Database of Adverse Events Related to the Internet,[5] a project initiated by the Research Unit for Cybermedicine and E-health at the University of Heidelberg, improper use of health information or use of poor-quality information found on the internet may lead to adverse health outcomes, including:

- Psychological or physical harm as a result of misinformation or misdiagnosis
- Delaying a visit to a physician because of an internet-supported diagnosis
- Recurrent or needless consultation with one's physician due to internet findings
- Ordering of harmful drugs or other health-impacting products.[5]

According to the Pew report *Online*

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Health Search 2006,[1] approximately 31% of online health seekers indicated that they or someone they know has been significantly helped by health information found on the internet. At the same time, 3%, or about 3 million adults, said that they or someone they know has been seriously harmed by following health advice or information found online, and this percentage could be a gross underestimation given that few online health seekers would actually report bad outcomes.[1] There seems to be a need, then, for building and practicing health and information literacy skills for healthful outcomes, much like building and practicing good nutrition and stress-management skills.

Before proceeding further, it is necessary to define the terms health literacy, information literacy, and online health information literacy as used in this article. The Office of Disease Prevention and Health Promotion defines health literacy as "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions."[6(p11)] Similarly, the Association of Colleges and Research Libraries defines information literacy as "the set of skills needed to find, retrieve, analyze, and use information."[7(p1)] Combining the above definitions with the Pew term "online health seekers" yields the term "online health information literacy skills," used here to describe the set of skills needed to find, retrieve, analyze, and use health information found on the internet.

To help individuals practice such skills, guidelines for evaluating the accuracy and currency of health information websites have been established by reputable organizations such as the Medical Library Association,[8] the Health on the Net Foundation,[9] and the U.S. National Library of Medicine in partnership with the National Institutes of Health.[10] Guidelines include, but are not limited to, quality, currency, bias, sponsorship, evidence, source, and privacy protection.[8-10] Most consumers do not know about these guidelines, however, or choose not to use them. According to Fox,[1] only 15% of online health seekers check the source and date of health information they find; another 10% do so only sporadically. Fox also reported that 75% of American online health seekers rely only on common sense or a casual protocol to validate information.[1] This means that at least three-fourths of these consumers could be at risk for adverse health outcomes.

College Students' Use of the Internet to Locate Health Information

One subpopulation of online health seekers at particular risk for adverse outcomes is college students. As young adults, many college students are living on their own for the first time and find themselves independently responsible for their health and well-being. As avid and able users of technology, many of them will turn to the internet as a source of health information. According to a 2002 study of 743 undergraduate students, 73% used the internet to locate health information, and 32% indicated that they had done so in the past month.[4]

Despite such extensive use of the internet, college students may not be ideally responsible practitioners of online health information literacy skills. Escoffery et al.[11] and Ivanitskava, O'Boyle, and Casey[12] found that students were less avid and able users of technology when it came to researching health issues. Escoffrey et al. revealed that only 11% of this population reported that they "always" find the health information they are seeking, while just over half reported "usually" finding such information. Similarly, in their study of 400 Central Michigan University students, Ivanitskava et al. found that few students were able to narrow their internet searches despite understanding that single keyword searches return too many results. They also found that when students were presented with questionable websites on nonexistent nutritional supplements, only 50% were able to correctly identify the website with the most trustworthy features; less than 25% reached the correct conclusion that none of the websites made a good case for taking the nutritional supplements.

One reason why college students may fail to practice adequate online health information literacy skills is that they are unaware their skills are poor or are unconcerned with the risks of not practicing those skills. Ivanitskava et al.[12] indicated that while college students' self-perceptions of internet skills tended to increase with level of education, these perceptions were weakly correlated with actual skill level. The danger in these perceptions is that one may be comforted by a false sense of immunity. Getting a target audience to accurately perceive a risk and their ability to avoid that risk, however, can present a challenge. Just as one must be motivated to learn about the risks associated with poor fitness and nutrition habits, one must be motivated to learn about the risks associated with the poor practice of online health information literacy skills. What message could educators deliver that would motivate college students to learn and practice such skills, particularly when students may think there is a lack of danger? Witte's[13] Extended Parallel Process Model (EPPM) may help to answer that question.

The Extended Parallel Process Model and Message Design

The EPPM is a fear appeal theory that suggests health messages act as external stimuli to initiate two different cognitive appraisals: threat and efficacy.[13] Based on these appraisals, one of three outcomes will surface: low/no response, danger-control response, or fear-control response.[14,15] High threat and efficacy perceptions scores are associated with individuals becoming motivated to control the danger. In a danger-control state, these individuals are more inclined to want to learn more about the threat or to take action to reduce or eliminate it. Their beliefs, attitudes, intentions, and behaviors are in line with the recommendation. In contrast, high threat but low efficacy perceptions scores are associated with individuals becoming motivated to control the fear. In a fear-control state, these individuals are more inclined to reject threat messages. Rejection may occur in the form of defense avoidance, denial, or reactance to the message. Finally, low or no perceptions of personal threat susceptibility or overall threat severity are associated with individuals being unmotivated to respond due to lack of risk recognition.

After exposure to a recommended response message, those in a low/no threat state are unlikely to exhibit a change in attitude, intention, beliefs, or behaviors.

Studies conducted to confirm the presence of danger- and fear-control states, as identified in the EPPM, suggest that these states do exist. In a study where participants were exposed to messages about electromagnetic fields, for example, Witte[16] found that high threat and high efficacy (i.e., a danger-control state) were associated with significantly greater safety protection behaviors ($p<.05$). Similarly, Morrison[17] found that college students exposed to messages about the threat of rape were more likely to declare an intention to learn how to practice self-defense when they perceived high amounts of threat and efficacy ($p<.05$). In contrast, in Gore and Bracken's[18] meningitis study, when participants perceived threat to be high but efficacy to be low (i.e., a fear-control state), they did not act to reduce their risk by way of requesting a vaccination.[11] Likewise, Witte[13] found that sexually active, unmarried participants who perceived high threat but low efficacy (i.e., fear-control) after reviewing HIV/AIDS education materials were more likely to exhibit defense-avoidance or message minimization—both message-rejection responses. Although all four of these studies observed different threats and responses, they support the theory behind Witte's[13] EPPM that,depending on one's threat and efficacy perceptions, one responds to a suggested response in different ways.

PURPOSE

To best develop an effective message that motivates college students to learn and practice online health information literacy skills, educators require a better understanding of students' perceptions regarding said skills, as well as the relationship between those perceptions and their use of such skills. Currently, there is very little literature depicting these perceptions or relationships; accordingly, this study sought to answer the following questions:

1. What are the health topics most often researched by college students?

2. How often do college students use the internet to locate health information?

3. What are college students' perceptions of learning online information literacy skills and the risk of not practicing them?

4. What relationships exist between the frequency of internet use to locate health information, the topics researched, and factors such as gender and age? And how are these relationships connected with perceptions about learning online information literacy skills and the risk of not practicing them?

METHODS

Participants

With approval from the Northern Illinois University institutional review board, participants were recruited from all seven sections of a Fall 2006 educational technology course required by the university's teacher education program. This course was selected because internet searching and website evaluation was already a part of its curriculum; thus, asking students to share their perceptions about learning/using online information literacy skills fit into the course's natural flow.

Six of the seven course sections invited to participate in the study accepted the invitation. All students in these sections were education majors. Individual participation was voluntary, and extra credit was offered by their instructors. Students were granted time in class to complete all study materials. Of the 105 students enrolled in these sections, 98 participated; the seven students who did not participate were absent from class the day their instructors administered the study materials. Upon returning to class, they were given the option of completing the study at a later time or at home; this option was declined.

Procedures

The researcher discussed the research goals with each of the instructors and gave them packets containing the assessment to distribute to students on a day of their choosing during the months of October and November. Instructors gave students the opportunity to complete the activity in class as part of regularly scheduled instruction, on their own time, or not at all.

Measures

A risk assessment was selected as the best measurement tool to identify audience perceptions because of its ability to quickly quantify and classify salient beliefs about a topic and a suggested response. In this study, Witte et al.'s (1996) Risk Behavior Diagnosis Scale (RBD) was the risk assessment used to measure students' perceptions about learning online health information literacy skills. "Risks" are consequences associated with not practicing a suggested behavior or adopting a suggested attitude. Theoretically grounded in Witte's (1994) EPPM, the RBD evaluates an individual's perceived threat severity and susceptibility to a given risk, as well as their perceived self- and response-efficacy to avoid the risk on a 5-point Likert scale, with responses ranging from "1-strongly disagree" to "5-strongly agree."

The "fill-in-the-blank" design of the RBD allows an educator/researcher to easily drop in a selected health threat and recommended response into each of its 12 questions. For example, "[Recommended response] is effective in preventing [health threat]." In this study, the health threat inserted into each question was "not recognizing and then using poor quality health information found on the internet" the recommended response was "learning website evaluation criteria." (Figure 1).

The RBD evaluates an individual's perceived threat severity and susceptibility to a given risk, as well as his/her perceived self- and response-efficacy to avoid the risk. Perceptions are evaluated based on a 5-point Likert scale, with responses ranging from "strongly disagree" to "strongly agree." "Risks" are consequences associated with not practicing a suggested behavior or adopting a suggested attitude. In this study, the risks were the consequences of not learning and practicing information literacy skills when seeking health information online (Figure 1).

Divided into two parts, an individual's overall score is determined by subtracting the added sum of their threat perception responses from the added sum of their

efficacy perception responses. This score, referred to as the critical value, indicates whether an individual is in a danger-control, fear-control, or low threat perception state. Once an educator knows a learner's RBD score, he/she can work to move that individual into a danger-control response state, which is associated with significantly greater safety protection behaviors.[9] Previously tested as a template, the RBD has demonstrated content, construct, and predictive validity.[14] Research conducted by Witte et al.[14] indicated the four dimensions in the scale (severity, susceptibility, response efficacy, and self-efficacy) act uniquely; the items within each dimension represent the theoretical constructs they are intended to represent, and scores from the scale can be used to predict risk response. As for reliability, the researchers used SPSS to conduct an internal consistency reliability test on the RBD constructed for and used in this study; the resultant Cronbach's alpha value was .752.

Other measures. In addition to the risk assessment, two internet-use questions and two basic demographic questions were administered. The purpose of the internet-use questions was to better understand the relationship between college students' perceptions of learning information literacy skills and their actual use of the internet to locate health information. Questions asked included one item about frequency of internet use to locate health information and one multipart item about health topics researched on the internet (Figure 2). The multipart question about health topics researched is a modified version of question HEA05 from the August 2006 Activity Tracking Survey[19] administered for Fox's[1] *Online Health Search 2006* study. Demographic questions asked participants to report their age and gender.

RESULTS

All 98 students present on the day of the study chose to complete the assessments during the class time set aside by their instructor. Participants' ages ranged from 18 to 52 years. Ninety-one percent of the participants were under age 28, and 80% were under the age of 23. Eighty-nine students (91%) were female, eight were male (8%), and one (1%) did not complete the demographic data.

Table 1. Frequency of Health Topics Researched

Topic	Count*	Percentage
A particular illness or condition	78	81.3
Nutrition, exercise, or weight control	63	66.3
A mental health issue like depression or anxiety	25	26.0
A particular doctor or hospital	25	26.0
Prescription drugs	24	25.0
A sensitive health topic difficult to talk about with others	22	22.9
Information before visiting my doctor	15	15.6
Alternative or experimental treatments or medicines	11	11.5
To diagnose/treat a medical condition	10	10.4

*n=96; two participants did not report internet use to locate health information

With regard to the types of topics researched on the internet, certain health topics were reported as more likely to be researched than others (Table 1). A particular illness or condition (83%) and nutrition, exercise, or weight-control issues (66.3%) were the topics most often researched. A mental health issue (26%), a particular doctor or hospital (26%), and a particular prescription drug (25%) were the topics next most likely to be researched.

A chi-square goodness of fit test revealed that the frequency of internet use to locate health information varied significantly: $X^2(4, n=98) = 86.81$, $p<.001$. Results indicated that 8.2% of students never use the internet to locate health information; 55.2% use it a couple of times per year; 25.3% use it monthly; 5% use it on a weekly basis; and 6.3% use it daily.

A chi-square goodness of fit test of the RBD results indicated a significant difference in participants' risk-response states: $X^2(2, n=98) = 27.57$, $p<.001$. When it came to risk perceptions related to learning and practicing online health information literacy skills, the majority (51%) of participants were in a state of danger control. Of the remaining participants, 39.8% were in a state of fear control and 9.2% were in a state of low/no threat control.

A Pearson chi-square test for independence failed to reveal a significant relationship between gender and age and risk-response state. It did, however, reveal a significant relationship between frequency of online health research and risk-response state: $X^2(8, n=96) = 24.85$, $p<.01$; $V=.360$. It was also discovered that 83% of those participants in a danger-control state use the internet on a daily basis to locate health information, compared to 16.7% of those in a fear-control state. In fact, 63% percent of those in a fear-control state never use the internet to locate health information (Table 2). These observations could mean that college students, who have greater perceived self- and response-efficacy about online information literacy skills, are more likely to be regular online health seekers; it could also mean that those who are regular online health seekers have greater perceived self- and response-efficacy. The causes of these actions or beliefs should be investigated in future research.

In addition to frequency of use, a significant relationship was found between participants' risk-response state and researching certain health topics (Table 3). A Pearson chi-square test for independence revealed a significant relationship between one's risk-response state and researching a particular doctor or hospital: $X^2(2, n=96) = 7.91$, $p=.019$; $V=.287$. Of those in a state of danger control, 72% indicated they had researched

Table 2. Cross-Tabulation of Risk-Response States with Internet Use to Locate Health Information

			Internet Use to Locate Health Information*					
			Never	Couple Times	Monthly	Weekly	Daily	Totals
Risk-Response State	Danger	count	1	33	8	2	5	49
		%	12.5%	62.3%	33.3%	40.0%	83.3%	51.0%
	Fear	count	5	15	16	1	1	38
		%	62.5%	28.3%	66.7%	20.0%	16.7%	39.6%
	Low/No	count	2	5	0	2	0	9
		%	25.0%	9.4%	.0%	40.0%	.0%	9.4%
	Total	count	8	53	24	5	6	96
		%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

*n=96; two participants did not report internet use

information on a doctor or hospital, versus only 16% percent of those in a state of fear control. Additionally, positive—but not statistically significant—trends were noted for a relationship between risk-response state and researching a particular illness or condition, and between response state and researching nutrition, exercise, or weight-control issues. Additional research into these relationships should be conducted.

DISCUSSION

In this study, college students' risk-response states varied significantly. The majority, however, fell into one of two categories: danger control (51%) or fear control (39.8%); only 9.2% were in a state of low/no control. In addition, 91.8% of the students use the internet to locate health information—greater than the 73% reported by Escoffrey et al.[11] in 2002. The higher percentage found in the current study could be related to an increase in internet use to locate health information, an increase in overall internet use, or a change in other factors since that time. Regardless of the reason, the increase in college students' use of the internet to locate health information does point to a larger population that potentially could be at risk of adverse health consequences due to poor online health information literacy skills.

Another finding was the significant relationship between frequency of online health research and risk-response state. As mentioned previously, of those participants in a danger-control state, 83% use the internet on a daily basis to locate health information, compared to only 16.7% of those participants in a fear-control state. This could mean that as one's use of the internet to locate health information increases, so too does the likelihood that one is in a danger-control state—i.e., a state in which one's efficacy and threat perceptions are high and one is more open to learning and practicing a suggested risk response.

With regard to the most commonly researched health topics, some were reported to be more widely researched on the internet than others. Topics most likely to be researched by the college students in this study were, in descending order, a particular illness or condition; nutrition, exercise, or weight-control issues; mental health issues; a particular doctor or hospital; or a particular prescription drug. These results are similar to those reported in the 2006 Pew Internet and American Life Project study,[1] which found the most frequently researched topics to be a specific disease or medical problem; a certain medical treatment or procedure; diet, nutrition, vitamins, or nutritional supplements; exercise or fitness; prescription or over-the-counter drugs; or a particular doctor or hospital. The variation in topic order could be related to the difference in the average age of participants—most participants in the current study were under age 28. In other words, having younger participants could have decreased the number of respondents seeking information about medical procedures or drugs. To continue the study of topics most commonly researched by college students, future research should expand to include more topic choices (e.g., sexual health) and should split nutrition, exercise, and weight control into separate questions.

According to the Pew Internet and American Life Project,[1] when individuals were given ways to describe their beliefs about using the internet to locate health information, 74% felt assured in doing so. In that same study, however, 25% of participants stated that they felt overwhelmed about the amount of information found online; 22% said they felt frustrated by a lack of information or inability to find what they were looking for; and 18% said they felt confused by the information they found.[1] If we consider that approximately 39% of the students in the present study were in a state of fear control, it is possible that they were experiencing some of these negative feelings as well. Future research could investigate some of the feelings and beliefs behind in-

dividuals' online health information literacy risk perceptions.

Limitations

This study was intended to generalize to college students. Generalization could be hindered, however, by four major limitations: the interaction effect of testing and selection, the interaction effect of selection bias, the homogeneity of the sample, and the reliability of the RBD. Regarding the first limitation, the RBD and internet questions may have cued participants to consider their thoughts about online health information literacy skills when they might not otherwise have; in a non-experimental setting, students would normally not be asked to disclose their perceptions about the practice of this skill.

Regarding selection bias, the subject pool was limited to education majors enrolled in an educational technology course where online informational literacy skills were already a part of the curriculum. Because these students were education majors, they may have held a higher regard for the lesson topic (website evaluation skills) than non-education majors or the general public. Although this delimitation was intentional, future studies seeking to generalize to a wider college student population should expand the sample to include students from other majors.

The third limitation, sample homogeneity, was primarily a gender limitation—the majority (91%) of the participants in this study were women. College women's perceptions about online health information literacy skills or the practice of researching health topics could vary from college men's perceptions. Future studies should strive for a more heterogeneous sample.

Rather than detracting from the utility of the findings, these limitations should prompt others to conduct additional research into college students' perceptions and practice of online health information literacy skills. Moreover, future studies should seek to include a larger sample. In doing so, more generalized results could be obtained. Such findings would help educators better address skill deficiencies, promote skill strengths, and create greater awareness about the potential health risks and benefits when researching health topics on the internet.

Table 3. Relationship Between Risk-Response State and Health Topics Researched

Information Researched	value	Df	*p*
A particular illness or condition	5.014	2	.082
Nutrition, exercise, or weight control	5.036	2	.081
Prescription drugs	.686	2	.710
Information before visiting my doctor	3.103	2	.212
Alternative or experimental treatments or medicines	2.785	2	.248
A mental health issue like depression or anxiety	.296	2	.862
A sensitive health topic difficult to talk about with others	.791	2	.673
A particular doctor or hospital	7.907	2	.019
To diagnose/treat a medical condition	2.092	2	.351

TRANSLATION TO HEALTH EDUCATION PRACTICE

Although health educators might find it easier to deliver only one message about online health information literacy, the significant differences in risk-response states and frequency of internet use to locate health information suggest that the potential for students to be exposed to a less effective message is high. Therefore, different messages should be designed to address these individual differences.

According to Kreuter and Wray,[20] such tailored communications are different from targeted communications, which involve the "development of a single intervention approach for a defined population subgroup that takes into account characteristics shared by the subgroup's members."[21(p1)] In contrast, tailored messages are delivered based on individuals' actual characteristics, making the messages more personally relevant. When information is personally relevant, it is more likely to be thoughtfully processed and is therefore more successful than non-tailored information in guiding a person toward a suggested behavior change.[22,23] Recent studies show tailored health education materials and messages to be more effective in generating interest in a topic, increasing knowledge, and eliciting behavior change than non-tailored materials.[24-26] Witte et al's[14] RBD scale, the risk assessment tool used in this study, has been successfully used to identify a target audience and to develop such tailored educational messages.[13,14] To increase the likelihood of improved online health information literacy skills, identifying one's audience and tailoring the educational message for that audience is recommended.

According to Witte,[16] messages directed toward a danger-control state audience should further enforce existing high self- and response-efficacy perceptions so that the audience will become motivated to learn and practice the suggested skill. In the present study, the suggested skill was online information literacy, particularly when conducting health research. Educational messages directed toward a fear-control audience, however, should foster a greater sense of self- and response-efficacy about the suggested behavior. In this way, the audience's efficacy perceptions would come to outweigh their threat severity and susceptibility perceptions. As for a low/no threat audience, educational messages should foster a greater sense of threat severity and susceptibility.

If an educator must make a quick decision about which response state a person is in, results from this study could help—particularly the finding that the more often someone used the internet to locate health

Figure 1. RBD Developed to Assess Perceptions about Learning Website Evaluation Skills

	Strongly Disagree				Strongly Agree
1. Learning website evaluation criteria is an effective way to prevent someone from not recognizing and then using poor quality health information found on the internet.	1	2	3	4	5
2. Learning website evaluation criteria would work to keep someone from not recognizing and then using poor quality health information found on the internet.	1	2	3	4	5
3. If I learned website evaluation criteria, I would be less likely to not recognize and then use poor quality health information found on the internet.	1	2	3	4	5
4. If given the opportunity, I would be able to learn how to evaluate websites.	1	2	3	4	5
5. I have the time to learn how to evaluate websites.	1	2	3	4	5
6. I could easily learn how to evaluate websites.	1	2	3	4	5
7. I believe that not recognizing and then using poor quality health information from the internet could be dangerous.	1	2	3	4	5
8. I believe that not recognizing and then using poor quality health information from the internet could have negative outcomes.	1	2	3	4	5
9. I believe that not recognizing and then using poor quality health information from the internet could be extremely harmful.	1	2	3	4	5
10. It is likely that I would not recognize and then use poor quality health information from the internet.	1	2	3	4	5
11. I am at risk for not recognizing and then using poor quality health information on the internet.	1	2	3	4	5
12. It is possible that I might not recognize and then use poor quality health information from the internet.	1	2	3	4	5

Source: Format adapted from Witte et al.[14]
Note: Researchers wishing to replicate this study may choose to re-word these questions

information, the more likely he/she was in a danger-control state. However, until further studies are conducted to uncover the relationship between frequency of internet use to locate health information and threat perception, the RBD (or other reliable risk assessment) would be an effective tool for health educators to use when designing the content and context of an educational message.

With regard to message content, results indicated that some health topics are more widely researched on the internet than others. Educators designing messages to address college students' online health information literacy skills might want to consider using the most popular topics listed above and in Table 1. Also, because a significant relationship was found between seeking information about a doctor or hospital and one's risk-response state, this subject may be a good one to use in educational example scenarios.

Given that 39% of the students in this study were in a state of fear control, there does appear to be a need to increase college student's efficacy perceptions. When designing messages to address individuals in that state, health educators should also take a cue from the 2006 Pew study of online health seekers,[1] which uncovered feelings of being overwhelmed by the amount of information, frustrated by the lack of information or inability to find what they were looking for, and confused by the information that they found. Considering that nearly half of health seekers indicate that the last time they went online for health information was related to someone else's situation,[1] educators must consider the consequences not only for the college student online health seeker, but also for those whom he or she is seeking to help.

Getting a target audience to accurately perceive both a risk and their ability to avoid

Figure 2. Internet-Use Questions

1. How often do you use the internet as a source of health information? Check one.
   ___Daily
   ___Weekly
   ___Monthly
   ___A couple of times per year
   ___Never

2. For what kinds of health issues/topics have you used the internet as a source of information? (Check all that apply).
   ___A particular illness or condition
   ___Nutrition, exercise, or weight control
   ___Prescription drugs
   ___Gathering information before a doctor visit
   ___Alternative or experimental treatments or medicines
   ___A mental health issue like depression or anxiety
   ___A sensitive health topic that is difficult to talk about with others
   ___Information about a particular doctor or hospital
   ___Diagnosing/treating a medical condition on my own without consulting my doctor

that risk can be challenging. Ivanitskava et al.[12] indicated that college students' self-perceptions of internet skills tended to increase with level of education, but also that these perceptions are weakly correlated with actual skill level. If college students are unaware that their information literacy skills are poor, or if they are not concerned about the risks of not practicing those skills, the potential for adverse health outcomes is great. This false sense of immunity makes improved online health information literacy skills a particularly worthy goal for those working with college students. With such variance in risk-response states, as identified in this study, a risk assessment tool such as the RBD could help health educators identify their different audiences efficiently and accurately. As for the content of those messages, the results of this study could help them design educational messages more effectively.

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