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HOW CAN A UNIVERSITY WEBSITE BOOST MEDICAL EDUCATION?

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ABSTRACT

Introduction: To assess if website of a university of medical sciences has been able to meet students' medical education needs? Material and Methods: This descriptive study was performed on 529 medical and allied students in schools affiliated to Semnan University of Medical Sciences, Iran. An anonymous self-administered questionnaire was developed.
Results: Findings indicated that mean score of the study subjects' attitude towards the web site helps them to correctly understand scientific and health information and helps them to evaluate the validity of information resources related to health issues was 3.42; and towards the web site helps them to insert questions related to health topics within the website and to find their answers was 2.98. There were significant differences (P<0.05) among mean scores of the participants' attitudes. There were significant relationships among the study subjects' demographic characteristics and their attitudes. (P<0.05)
Discussion: The present study showed that a university of medical sciences wishing to provide its clients with quality information via website, and obtain high levels of educational success should try to make the website compatible with a great proportion of its users. The present study also showed that both the quality of contents of the website and clients are important in terms of application and methodological considerations.

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Introduction

Social changes have increased the tendency toward medical information for making decisions [1]. Accordingly, most medical information seekers have turned to the internet. A study by [2] showed that more than 70% of the internet users search for medical information.

Advances in information technology have attracted users and students to websites [3]. Not only have websites made health information and services easily accessible to users and clients, but also they have turned into information sources that provide users with information about various areas of education, industry, and medicine [4,5], such that 24% of users use websites to search for health-related information [6]. Higher education institutions seek client-based approaches in order to provide quality services to students and remain in this competitive market [7]. Thus, they spend time and money on designing their own websites [8].

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The website of Semnan University of Medical Sciences in addition to marketing for recruiting students and publishing curricula of various disciplines, has tried to use the digital library, social media, message systems and information which are in the health department to provide health information for medical and allied health students. Considering that the mission of universities of medical sciences in Iran is education and promotion of health in their own geographical regions, the question arises if health department website of Semnan university of medical sciences has been able to meet students' educational need. Therefore, it seems essential to evaluate students' perspective on the quality of health information provided by health department website.

Material and Methods

Participants in this study were medical and allied health students of Semnan University of medical sciences in Iran. The research was conducted over five months, from December 2016 to May 2017. The census method was used and the sampling method was not used in the current study. A total of 832 questionnaires were distributed; 529 were returned, which represented a response rate of 63.5%. Ethics approval was obtained from the Semnan University of Medical Ethics Committee (IR. SEMUMS. REC.1395.204). A covering letter was prepared for distribution with the survey document, which described the purposes of the study and explained that a response to the survey would indicate the consent of the participant to take part in the research. It also assured participants of the confidentiality of their responses.

The questionnaire used in this study was developed by the authors, after reviewing the related literatures. It was divided into four sections. The first section focused on demographic information (sex, age, education, computer skill, general health status, the frequency of the use of website and the frequency of the use of telegram. The second section comprised a scale to measure the attitudes of the students in relation to the understanding of concepts in the website (the understanding of physical, mental and emotional health, the understanding of scientific and medical information, the website's awareness of students' needs). The third section measured communications in the website (communication with other people in health issues, obtaining health-related information, referring to other websites to answer to health-related questions, communication with website by telegram , inserting questions related to health topics within the web site and to find their answers) ; and The fourth section evaluated patient-centered in the website (making informed decisions to solve health problems, evaluating the validity of information resources related to health issues and evaluating health care services offered, patients to be supported by their friends and family). The original attitude scale contained 12 items, and attitudes on each item were measured on a 5-point Likert type scale, where completely disagree = 1, disagree = 2, neither disagree nor agree = 3, agree = 4 and completely agree = 5. The primary questionnaire was reviewed for content validity (through the content validity index (CVI)), and evaluated by 10 experts, who offered feedback in relation to the simplicity and clarity of questions, and the relationship between questions. The questionnaire was then pilot tested on 35 students, randomly selected from medical and allied health schools. Participants in the pilot study were excluded from the study. Internal consistency was expressed as Cronbach's alpha 0.743 for the section of the understanding of concepts in the website, 0.815 for the section of communications in the website; and 0.687 for the section of patient-centered in the website. Next, further revisions were made and some statements were rephrased. Lastly, the final version of the anonymous questionnaire was distributed among the students and they were asked to complete the questionnaire.

The final version of the questionnaire was distributed among students in medical and allied health schools. Questionnaires were self-administered, completed anonymously, and returned to the researcher within 72 hours.

Kolmogorov- Smirnoff test indicated that data distribution was normal. Means and standard deviations were calculated for individual items on the attitude scale, which measured participants attitudes towards the understanding of concepts, communications; and patient-centered in the website of health department of Semnan university of medical sciences. To determine the distributions of responses, SPSS was used to perform descriptive statistics. The mean and standard deviation was reported. A total attitude score for each of the section was calculated based on the mean scores for each of the 12 items (low score $\leq$3.4; high score $\geq$3.5). A low score indicated a negative attitude, while a high score indicated a positive attitude. Friedman, independent –samples T and one-way ANOVA tests were used to analyze data in significant level of 0.05.

Results

The participants' age mean was 21.37 years. There were 304 (57.5%) female, 353 (67.1%) people were undergraduates, 206 (39%) people had moderate computer skill. 271 (51.2%) people had good general health, 230 (43.5%) people used of the website monthly. 315(59.5%) used of telegram daily.

Table 1 shows mean scores and standard deviations of participants' responses on each of the 12 items and each of the categories. Findings indicated that mean score of the study subjects' attitude towards the web site helps them to correctly understand scientific and health information and helps them to evaluate the validity of information resources related to health issues was 3.42; and towards the web site helps them to insert questions related to health topics within the web site and to find their answers was 2.98. There were significant differences ($P<0.05$) among mean scores of the participants' attitudes. The relationship between the demographic characteristics of participants and the attitudes they expressed towards the quality of the website were also explored in relation to the three categories generated from the data in this study.

Table 1. Scores for individual items on the attitude scale showing means, standard deviations and mean rank of participants' responses for each item and total mean for each category

Website quality	Items	Mean	SD	Mean Rank	Total mean	P-Value
Understanding of concepts	Web site helps me to correctly understand physical, mental and emotional health	3.29	1	1.94	3.35	0.023
	Web site helps me to correctly understand scientific and health information	3.42	1.02	2.07		
	Web site is aware that I, as a user in the health field, what topics want to know	3.34	1.01	1.99		
Communications	Web site helps me to communicate with other people in health issues	3.19	0.92	3.13	3.13	<0.001
	Web site helps me to obtain health-related information.	3.27	0.94	3.20		
	Web site give health related subjects me via telegram	3.09	0.98	2.91		
	Web site helps me to refer to other websites to answer to health-related questions.	3.14	0.96	3.02		
	Web site helps me to insert questions related to health topics within the web site and to find their answers	2.98	0.93	2.75		
Patient-centered	Web site helps me to make informed decisions to solve my health problems	3.42	1.01	2.67	3.32	<0.001
	Web site helps me to correctly evaluate health care services offered	3.45	0.97	2.72		
	Website helps patients to be supported by their friends and family.	3.02	1.82	2.03		
	Web site helps me to evaluate the validity of information resources related to health issues	3.42	0.93	2.61		

Results in Table 2 showed that there were significant relationships (P<0.05) among the study subjects' demographic characteristics and their attitudes.

Table 2. Relationships between participants' characteristics and their attitudes towards the website quality as represented by the following three categories (understanding of concepts, communications and patient-centered)

Characteristics Website quality	Sex	Education	Computer skill	General health	Use of website	Use of telegram
Understanding of concepts	0.80	0.97	<0.001	<0.001	0.01	<0.001
Communications	0.23	0.01	0.01	0.02	0.01	0.19
Patient-centered	0.64	0.76	<0.001	<0.001	0.05	0.02

Discussion

The results obtained showed that students were unable to gain a proper understanding of the concept of health through the university website (mean=3.29). Although the present study showed a significant relationship between students' general health status and their understanding of health issues (P<0.05), it is expected that health information provided on the website be based on medical protocols and experts' opinions. This helps students to properly understand health information and evaluate health services. Other studies have assessed the reliability of web pages according to gold standards [9, 10].

Although university website isinfluenced by a variety of political and social pressures in order to meet different expectations and demands [11], the results show that health department website has overlooked certain elements that boost health relations such as students' information needs (mean=3.34). Previous studies have shown that some users search information relating to weight control and others search information about hospitals and healthcare providers in health-related websites [10,12,13].

The results showed that students were unable to communicate with one another on the website (mean=3.19). Moreover, university health department website did not provide students with the opportunity to visit other relevant websites (mean=3.14). Although half of the students had poor to moderate computer skills and there was a significant relationship between their skill and their understanding of the website's interactive capabilities (P<0.05), the results revealed poor interaction among users in health department website. When feedback mechanism and health customers' information exchange tools are not user-friendly on the website, they tend to use the website less often [14,15]. Unlike the present study results, [16,17] reported that website users were able to easily ask questions and receive answers from one another rather than visit other websites. The results show that interactive services such as chat rooms or online questions are not provided

on the university health department website (mean=2.97). If a university wishes to establish a chat room on the website, chat room manager and access levels should be identified [18].

The results indicate that the website has been unable to steer students in obtaining health information (mean=3.19). Although the results showed a significant relationship between students' use of the website and their understanding of the website's interactive capabilities ($P<0.05$), this may be related to poor information architecture on the website. A website should direct users to an environment where information is easily accessible [15,19]. The present study results agree with those obtained in a study (20), who reported too much information on webpages, difficulty in finding the information required, and no link between websites of different sectors as the reasons for the lack of access to information on the website. The theory of information foraging shows that users are constantly deciding which information to search for, what route they should take to find information, whether to continue their search for information in a particular site or visit another site, or stop their search altogether [21]. The decision to continue using a website to find information is based on a mechanism of cost-benefit analysis, which means that users weigh up information obtained against the amount of effort they make. When users feel that they cannot easily find the information they need, they turn to another website [19]. In a study by [22], students reported that they sometimes obtained information more easily verbally or from other students rather than from websites.

Although the results showed that students were more inclined toward social media, it seems that students believed that university health department website had been unable to establish adequate relations with its clients through Telegram® (mean=3.08). Considering that social media require allocation of resources, organizational structure and political stability to remain updated, many universities do not furnish their online visitors with access to their website via social media, and some universities only consider Facebook and Twitter [23,24]. Given students' tendency toward social media, it seems that university health department website should have an extensive presence in social marketing in the field of health.

The results showed that university health department website was unable to help students in clinical decision-making (mean=3.42). The results also showed a significant relationship between participants' general health status and their understanding of the website being patient-oriented ($P<0.05$). However, the results suggested that not only should the website have user-oriented information, but also it should contain evidence-based information in order to help users in decision-making [25,26], otherwise the website had failed to empower users. The results showed that students expected the website to provide correct health and medical information. Students require a strategy for evaluating the quality of worthwhile and correct information [27].

The results showed that it was difficult for students to determine reliability and rigor of information available in university health department website (mean=3.42). A website that displays information about the author of health information and literature used in collecting health information, and shows the latest update date creates greater user trust in the health sector website, so that they can make informed decisions for solving health and medical problems [14,28]. Other studies have also shown that some users did not use information provided by the website because the source of information was not identified [14, 19,29].

The present study has many implications. First, the present study revealed that students had an inadequate understanding of health concepts in university health department website. It seems that university health department website should contain health-related educational materials such as images and photos, so as to make it easy for students to understand health and medical issues.

Second, according to the results obtained, communications were poor on the health department website. It appears that redesigning this website will allow better communication between the university of medical sciences and its clients. Thus, the present study results are important to designers because designers should first understand various quality aspects that affect users' expectations, and then incorporate these quality features in the website design in order to have a quality website [30,31].

Third, the present study provides a user-oriented framework, with which the best performance in health literacy, quality of information, and design of human-computer interface and process of redesigning a website can be created.

Fourth, the present study results showed that interventional strategies are necessary for effective use of university health department website by students, so that a university ofmedical sciences wishing to enhance students' health literacy via its website should use a developmental model website for healthcare clients. This is a user-oriented and comprehensive approach to design and development of a website for clients [32, 33].

Limitations

The present study contained a number of limitations. First, the present study used a user-dependent methodology to assess the quality of health department website, which needed only users' understanding and that is not an easy task because the quality of a website cannot be assessed by merely collecting users' understanding. The second limitation was the small sample size. It is suggested that a study be conducted with a larger sample size. Third, there is no gold standard for evaluation of capabilities of a website. Thus, various methods measure different aspects of a website. Despite these limitations, the present study emphasizes the importance of training and design of a university health department website using electronic health software.

Conclusion

The present study was conducted with actual users to identify their perspective on the criteria relating to the quality of health department website in a university of medical sciences. The results showed that university health department website did not contain well-written and accessible educational materials for medical and health-related students. The present study showed that a university of medical sciences wishing to provide its clients with quality information via health department website, and obtain high levels of educational success should try to make the website compatible with a great proportion of its users. The present study also showed that both the quality of contents of the website and clients are important in terms of application and methodological considerations. Accordingly, it is necessary for universities of medical sciences to have a proper understanding of the potential audience, and apply user-oriented design approach to involve users in the process of website design.

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