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Evaluation of the website of public hospitals in Isfahan with the WebMedQual approach in 2018

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Abstract:

INTRODUCTION: Hospital websites are one of the most important communication and information distribution tools in hospitals. Evaluation of hospital websites based on different aspects including design, content, accessibility, and other related criteria can determine hospitals' situation in the use of novel information technologies. Therefore, this study aims to evaluate public hospital websites of Isfahan using WebMedQual approach.

MATERIALS AND METHODS: This study is an applied study carried out using a survey method which evaluated the public hospital websites of Isfahan using WebMedQual scale in the year 2015. Validity and reliability of the scale was confirmed. This scale includes 8 main components, 8 subcomponents, 95 items, and 3 supplementary questions. The study population included 17 public hospital websites in the city of Isfahan. Data were analyzed using SPSS version 22 software.

RESULTS: Based on the general score of WebMedQual scale, the websites of Noor and Ali Asghar hospitals with 42.21% had the highest and the website of Ibn Sina hospital with 22.81% had the lowest score. Findings also showed that among eight factors used in this scale, design with 59.96% and accessibility with 44.70% had the highest average scores. On the other hand, source credibility, user support, and privacy have the lowest average scores with averages of 22.87%, 21.56%, and 1.63%, respectively. The total average score of all factors was 31.94%.

CONCLUSION: Scores showed that based on WebMedQual, public hospital websites in Isfahan have low quality. Therefore, it is necessary to review and make corrections regarding privacy and confidentiality guidelines, update website information, website content (clinical content and other contents) and website writers, and provide forums and other design-related factors for these websites.

Keywords:

Evaluation, health information, hospital, website

Introduction

World Wide Web (WWW) is the most important information distribution tool[1] and currently, websites can be considered as the most important professional media outlets.[2,3] Hospital websites are one of these information networks and their varieties depend on the needs of patients, health-care providers, and health centers.

Health information is one of the three highly popular topics of Internet users, and every day, many people worldwide visit health-center websites to gather their health-related information.[4,5] Clinical and nonclinical staff of hospitals also require access to accurate information generated in each health center for patient and hospital management tasks. It is possible to gather, store, and retrieve relevant information using patient's information management systems such as hospital information systems, electronic patient's files, and

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Internet websites. Hospital websites can also be used as an important communication tool in society. For example, during social crises, hospitals can answer public queries using their websites.[6]

In the last two decades in which WWW has become a widespread tool for increasing people's access to information, hospitals have attempted to develop their websites to provide access to necessary information for their customers. However, it seems that most hospitals have failed to get a clear view of facilities, services, and resources necessary for users and suitable accessibility options.[7] This is despite the fact that hospital websites should provide a system for information exchange and communication between patients, hospital, and treatment staff.[4,8] Hospital managers have a high incrimination toward the use of computer facilities to access patient's information for decision-making activities. The most important and vital reason for creating and optimizing hospital websites is the fact that, under current conditions, these websites are not suitable for providing information for hospital staff and patients.[4]

Hospital websites require characteristics such as high credibility, facilitating of constant communication, training and staff members and patients through accepted scientific content, easy of access, information privacy, and design based on users' needs. Researchers attempting to evaluate the quality of hospital websites proposed a specific scale based on the needs of hospital websites called WebMedQual. This scale measures the success of hospital websites in increasing user satisfaction. Despite the development of hospital websites in recent years, the websites successful in attracting users are the ones which offer suitable services in a timely fashion and with attractive and user-friendly content.[4] If users are unable to effectively access their information needs, they will give up on the website and more to other sources. Evaluation of hospital websites measures their attractiveness and execution of their stated aims. This evaluation can also help website designers to determine any present design errors.[4]

Kumar Singh *et al*. implemented a model for equality evaluation of websites. Their findings showed that multimedia facilities had the highest and credibility had the lowest ranking. Characteristics such as ease-of-use, esthetics, and content also had acceptable scores.[9] Salarvand *et al*. determined the quality indicators of hospital websites. Their findings indicated that, given the importance of hospital website quality and medical tourism, it is better for hospital websites to be useful, helpful, efficient, credible, secure, and accessible to increase customer satisfaction.[10]

The current study investigates aspects such as provided information, legibility, accessibility, design, reception and queueing services, up-to-date information, and public relations.

Hagerty P (2012) evaluated the quality of hospital websites in Norway dedicated to cancer treatment. His finding showed that hospital websites offer useful information for cancer patients and their families, but that these websites are not effective or attractive.[11] Joaquín Mira *et. al*. (2006) evaluated the quality of public hospital websites in Spain. Their findings showed that these websites satisfied legibility criteria but failed to satisfy accessibility criteria.[12] Teymour Pour (1390) ranked the hospital websites of the Ministry of Health based on the webometrics criteria. In this ranking, hospital websites of medical science universities of Tehran, Shiraz, and Mashhad had the highest ranks.[13] Zahedi *et al*. (2013) evaluated the quality of Farsi websites related to addiction. Their findings showed that Farsi websites related to addiction had generally low quality.[14] Findings by Khaleghi & Davarpanah (2003) showed that more than half of the evaluated websites had acceptable conditions.[15] Jahanbakhsh *et al*. (2018) compared the quality of hospital websites for public and private hospitals in Isfahan. Their results showed statistically significant differences in four main criteria of "content information and methods," "reception and queueing services," "design characteristics," and "up-to-date pages and public relations."[16]

The results of previous studies indicate that the quality of hospital websites is low in general with mediocre scores in regard to structure and very low scores in regard to content. Many studies failed to precisely determine the capabilities and weaknesses of hospital websites. Therefore, the current study aims to evaluate the current quality situation of public hospital websites of Isfahan based on website content, source credibility, design, accessibility, website links, user support, and privacy based on the WebMedQual scale.

Materials and Methods

This is an applied, descriptive, and cross-sectional study. The study population consisted of all public hospital websites of Isfahan (17 hospitals) which were evaluated using survey method. Based on the literature review, the first attempt for comprehensive quality evaluation and improvement of health-care websites was presented in the article titled "The initial development of the WebMedQual scale: Domain assessment of the construct of quality of health websites" by Provost *et al*. in 2006.[17] Therefore, the WebMedQual scale was used in the current study due to its comprehensiveness and relation to health-care activities.

The WebMedQual scale is a checklist and one of the most comprehensive quality evaluation scales for medical websites extracted form 26 sources. This scale includes 8 main components, 8 subcomponents, 95 items, and 3 supplementary questions. The main components include website content, source credibility, design, accessibility and usefulness, files, user support, privacy, and e-commerce (due to optional nature of the e-commerce component, it was not used in the current study). Subcomponents of the scale include content, up-to-date information, credibility and citation of information, intended audience (audience groups), disclosure of writer and site manager identities, discloser of website sponsors, contact address and feedback mechanisms, and access to resources, and information sources for users. To determine the validity of the scale, copies were translated and presented to the center of statistics and informatics, department of management and medical information technology, and department of medical informatics of Isfahan University of Medical Sciences and evaluated by experts.

Data gathering was carried out through observation and filling of the checklist. Data gathering was carried out after initial training and review of websites by design experts and through careful observation of studied websites. The scoring method of the checklist is based on the two-value scoring (yes or no), and data analysis was carried out using SPSS version 22 software (IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp). Due to the possibility of changes in websites, all websites were evaluated in a 15-day period in January 2015. The average scores were categorized for each hospital and each main component of the checklist as very good (81–100), good (61–80), mediocre (41–60), weak (21–40), and very weak (0–20).

Results

The findings regarding content, source credibility, design, accessibility, links, user support, and privacy of each hospital website based on the WebMedQual scale are presented in Table 1.

As can be seen in Table 1, in regard to website content (quality, credibility, accuracy, and depth), Askarieh, Family, and Farabi hospitals had the highest score percentage with 52.63%, while Hazrat-E-Zahra, Chamran, and Milad hospitals had the lowest average score of 21.05% in regard to source credibility, websites of Farabi and Askarieh hospitals with 33.33% and website of Al Zahra hospital with 11.11% had the highest and lowest scores, respectively. In website design, Al Zahra hospital had the highest score of 81.82% and Sina hospital had the lowest score of 40.51%. In regard to accessibility, Milad hospital had the highest ranking with average score of 80%, while Imam Hossein pediatrics hospital had the lowest score with 20%. In links, Noor and Ali Asghar hospitals had the highest average score of 75% and Sina and Family hospitals had the lowest ranking with no scores. In regard to user support, Askarieh hospital had the highest ranking with 44.44% and Chamran and Sina hospital websites with no scores had the lowest ranking. In privacy, Milad, Noor, and Ali Asghar hospitals with 11.11% and Kashani with 5.56% had the first to third ranks, and other hospitals had no scores in this component.

Findings regarding total scores in components of content, source credibility, design, accessibility, links, user support, and privacy based on the WebMedQual scale are presented in Figure 1.

Table 1: Scores of public hospital websites of Isfahan based on score percentage

Hospital	Content	Source credibility	Design	Accessibility	Links	Suppose	Privacy	Total score
Askarieh	52.63	33.33	68.18	40	25	44.44	0	37.66
Specialist family clinic	52.63	22.22	63.64	40	0	22.22	0	28.67
Farabi	52.63	33.33	63.64	40	25	33.33	0	35.42
Al Zahra	47.37	11.11	81.82	60	50	33.33	0	38.93
Sina	42.11	16.67	40.51	60	0	0	0	22.81
Amir- al-Momenin	42.11	22.22	59.09	40	50	22.22	0	33.66
Mousa Kazem	42.11	22.22	50	40	25	22.22	0	28.79
Noor and Ali Asghar	42.11	27.78	77.27	40	75	22.22	11.11	42.21
Amin	36.84	22.22	77.27	40	50	33.33	0	37.1
Kashani	36.85	22.22	54.55	40	50	11.11	5.56	31.47
Feyz	31.58	22.22	54.55	40	50	22.22	0	31.51
Seyed-al-Shohada	31.58	22.22	50	40	25	22.22	0	27.29
Isabn-e-Maryam Hospital	26.32	22.22	54.55	40	50	11.11	0	29.17
Imam Hossein pediatrics	26.32	22.22	59.09	20	50	11.11	0	26.96
Hazrat-eZahra	21.05	22.22	50	60	25	33.33	0	30.23
Chamran	21.05	22.22	50	40	50	0	0	26.18
Milad	21.05	22.22	63.64	80	25	22.22	11.11	35.03

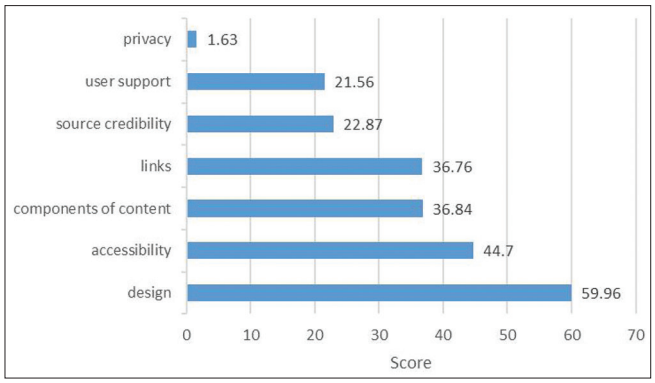

Figure 1: Total scores in each component

Total average scores of different components show that, in total, websites had the highest average score in design component with 59.96% and the lowest average score in privacy with 1.63% [Figure 1].

Discussion

As can be seen from the findings of this study, the average score of public hospital websites based on the WebMedQual scale is weak and below average in all components (except design). Previous studies which have used a variety of different scales to evaluate websites also confirm the weaknesses of Farsi websites. Although scales and evaluation criteria in the current study and previous studies are different from each other, it is useful to compare these results with each other.

Zahedi *et al*.(2013) state that the quality of Farsi websites related to addiction is low.[14] Furthermore, according to Hagerty P (2012), the hospital websites of Norway related to cancer were also not attractive.[11] Joaquín Mira *et al*. (2006) also state that none of the websites satisfy the essential needs and accessibility standards.[12] Farhadi Pour *et al*.(2014) in their studies state that Farsi websites for children and adolescents are far from desirable conditions.[18] Kaicker *et al*. reported mediocre quality for websites related to chronic pains.[19] Salarvand *et al*. (2016)[10] and Shadpour *et al*. (2013)[13] also reported similar results. The findings of the study by Griffiths and Christensen showed the low quality of information in websites about depression. They stated that although investigated websites contain useful information, they had generally low quality of information.[20] Although different scales were used in different studies to measure different components in different samples, the results are mostly compatible with each other.

On the other hand, Ajili *et al*. (2017) stated that journal websites had satisfactory conditions in regard to esthetics, structure, and content.[21] Khaleghi & Davarpanah (2003) also stated that more than half of investigated websites had acceptable quality,[15] both of which are the opposite of the results of the current study.

Kumar Singh *et al*. stated that credibility component has the lowest score[9] which agrees with the results of the current study.

Furthermore, it is worth mentioning that the current study investigates more components in the evaluation of websites compared to previous studies. Therefore, we can claim that our study offers a more comprehensive and extensive evaluation of hospital websites. Based on the results of the current study and previous works, we suggest that users should have a critical view toward the contents of these websites and do not trust the accuracy of contents without first considering source credibility criteria. Furthermore, it is necessary for website designers to pay special attention to design components such as content, design, and accessibility while also considering components such as website links, scientific credibility, and accessibility of website services. This helps provide useful health information for websites' users and improves the quality of websites as a result.

The most important limitation of the current study was lack of website maps and categorization of provided information and services and scattered information which increased the time necessary for filling the checklist.

Conclusion

By evaluating the total average scores of public hospital websites in Isfahan based on the WebMedQual scale, it is clear that none of these websites are in desirable conditions. It seems that these undesirable conditions are due to lack of consultation with experts, lack of attention to website design principles, and lack of content management and monitoring. Use of experts in website design, attention to the importance of design, and hospital rankings can be among valuable steps in improving the quality of hospital websites. In general, the reasons for low-quality score of websites based on the WebMedQual scale are as follows:

- Lack of clinical content and health information on websites
- Lack of up-to-date information
- Lack of citation
- Lack of forums for website users
- Lack of FAQ menu in websites
- Lack of capabilities for selecting more than one language
- Lack of possibility for contacting hospital management and staff
- Lack of information regarding privacy, guidelines, and confidentiality of information.

Since hospital websites provide a useful method of communication between the hospital, patients, and medical teams, they can help improve the quality of services provided for patients. Hospital websites with coordinated structure and content can increase the efficiency and user satisfaction. Furthermore, the key to improving the quality of hospital websites is considering criteria such as content quality and credibility, quality of links to other websites, and privacy and confidentiality of personal information and care in design components of the website. To reach the quality goals, a comprehensive effort by subject experts and website designers is necessary. However, these efforts will not reach fruition without the help of management and regulatory organizations at the national level.

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Conflicts of interest

There are no conflicts of interest.

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