[Downloaded free from http://www.jehp.net on Monday, January 23, 2023, IP: 93.110.213.184]

Original Article

Access this article online

Quick Response Code:

Website: www.jehp.net

DOI: 10.4103/jehp.jehp_83_14

Quality evaluation of Persian nutrition and diet therapy websites

Zahra Gholizadeh, Ahmad Papi[1], Hasan Ashrafi-rizi[1], Leila Shahrzadi[1], Akbar Hasanzadeh[2]

Abstract:

INTRODUCTION: Nowadays websites are among the most important information sources used by most people. With the spread of websites, especially those related to health issues, the number of their visitors also increases, more than half of which are about nutritional information. Therefore, quality analysis of nutrition and diet therapy websites is of outmost importance. This study aims to evaluate the quality of Persian nutrition and diet therapy websites.

METHODS: The current work is a survey study and uses an applied study method. The statistical population consists of 51 Persian websites about nutrition and diet therapy and census method was used in order to study them. Data gathering was done using a checklist and with direct visit to each website. Descriptive and analytical statistics were used to analyse the gathered data with the help of SPSS 21 software.

RESULTS: Findings showed that content (66.7%), organization (82.4%), user friendly interfaces (52.9%) and total quality (70.6%) of most websites had a mediocre score while the design score for most of the websites (70.6%) was acceptable also organizational websites had better design, organization and quality compared to private websites. The three websites with the highest general quality score were the websites of "Novel Diet Therapy," "Behsite" and "Dr. BehdadiPour" (jointly) and "Dr. Kermani" respectively. Also in the dimension of content the factors of goal, relevance and credibility, in the dimension of design the factors of color, text and sound, pictures and videos, in the dimension of organization the factors of stability and indexing and in the dimension of user friendliness the factors of confidentiality, credibility and personalization had the highest scores.

CONCLUSION: The results showed that the design score was higher than other scores. Also the general quality score of the websites was mediocre and was not desirable. Also websites didn't have suitable scores in every factor. Since most people search the internet for nutritional and diet therapy information, the creators of these websites should endeavor to fix the shortcomings of their websites and increase the quality of their websites in several different areas.

Keywords:

Diet therapy, evaluation, nutrition, quality, websites

Department of Medical Library and Information Science, Isfahan University of Medical Sciences, [1]Department of Medical Library and Information Science, Health Information Technology Research Center, Isfahan University of Medical Sciences, [2]Department of Biostatistics and Epidemiology, Faculty of Health, Isfahan University of Medical Sciences, Isfahan, Iran

Address for correspondence to:
Mr. Ahmad Papi, Department of Medical Library and Information Science, Health Information Technology Research Center, Isfahan University of Medical Sciences, Isfahan, Iran.
E-mail: papi@mng.mui.ac.ir

Introduction

Nowadays internet has changed various aspects of its users' lives and their information seeking behavior.[1] Web's unique and special properties in information sharing such as the ability of fast sharing of up to date information, multimedia capabilities and fast and easy search and indexing has led to the sharing of a great deal of information and an increasing number of users worldwide.[2]

In the recent years, the web space has witnessed an increased number of websites playing important roles in different aspects of our lives such as investments, education, industry, business and medicine.[3] Health related information is among the most frequent subjects of internet[4] and the demand for health related websites is on the rise every day.[5]

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Gholizadeh Z, Papi A, Ashrafi-rizi H, Shahrzadi L, Hasanzadeh A. Quality evaluation of Persian nutrition and diet therapy websites. J Edu Health Promot 2017;6:48.

[Downloaded free from http://www.jehp.net on Monday, January 23, 2023, IP: 93.110.213.184]

One of the most important health information that affects the society is the information regarding nutrition and diet therapy, having a visible effect on many of our society's problems such as obesity and health problems caused by unhealthy eating habits and not following nutritional recommendations.[6] Many diseases can be controlled using special diets and there are times when diets therapy is the only viable way of treatment.[7] Therefore nutrition is an important element in a person's health and nutritional information can help improve the health situation of people and society as a whole and also prevent many secondary diseases and complications. On the other hand using wrong information in this area can lead to serious threats to a person's health.[8]

In today's world, websites are one of the most important tools of information sharing and many people look to them for educational information in different areas. The fact that how much a website can satisfy the demands of its users is an important question that has direct relation with the quality of the said website[9] or in other words one can say that a high quality website is suitable for public use.[10] Since the sheer among of suspect and incorrect information present on the internet, present due to a lack of dedicated filtering and editing of information, means that many incorrect and unreliable information get published on the world wide web,[11] websites with similar topics don't necessarily have the same quality.[12] Among these websites, those dedicated to medical and health issues see an increasing number of visitors and more than half of these visitors are seeking nutritional information[13] which means that the quality of these websites is important. Many studies in Iran and other countries about the quality of websites have been carried out.

Parvizrad and Mirzaee evaluated the quality of Iranian internet databases related to health and reported that these websites had unsuitable qualities.[14]

Fathifar *et al*. evaluated the properties of Persian medical websites based on Silberg criteria. Their results showed that only 44% of the websites had shown the date of their last update.[15]

Moradi *et al*. investigated the structure and content of selected Iranian hospital websites and reported that these websites had weak contents.[16]

Ashrafi-rizi *et al*. investigated the quality of Persian websites regarding addiction based on Silberg, Discern and WQET criteria. Their results showed that these websites had managed to gain half or more than half of the content scores while obtaining less than half of the credibility scores. Also these websites had Acceptable link quality while having poor scores when it came to content quality and up to date contents.[17]

Sutherland *et al*. evaluated the content quality and legibility of nutritional websites. Their results showed that the investigated websites had high scores when it came to being up to date while having mediocre content and link quality scores.[13]

Ahn *et al*. attempted a systematic evaluation of the qualitative and quantitative aspects of nutrition education websites of Korea. Their results showed that most of the websites met the design, stability and content criteria but needed improvement when it came to being up to date.[18]

Borzekowski *et al*. conducted a study called "A Content analysis of pro-eating disorder Web sites." Their results showed that among the investigated websites 79% had met the interaction and 24% had met the update criteria.[19]

Hallingbye and Serafini attempted to evaluate the quality of websites with postherpetic neuralgia treatment information. Their results showed that these websites had poor quality levels.[20]

Smith *et al*. evaluated the internet information quality for ten common foot and ankle diagnoses. Their findings showed that the average content quality was 50% and more than half of the websites had met the criteria regarding validity of the information, confidentiality and being up to date.[21]

Lam *et al*. conducted a study titled "Survey of quality, readability and social reach of websites on osteosarcoma in adolescents." Their findings showed the quality of the websites to be mediocre.[22]

Looking at similar previous studies showed that in some of them the websites had low scores when it came to being up to date and that the general quality of these websites were often mediocre or poor. Therefore with the increasing number of health related websites and due to the important role of these websites on the society, it's important to pay special attention to the quality of these websites.

Nutritional websites are among the most visited health related websites and many people use these websites to access their nutritional information. However very few studies investigate the quality of nutritional websites and no such study has ever been conducted regarding Persian nutritional websites. Therefore, the current study aims to evaluate the quality of the Persian websites in the area of nutrition and diet therapy in order to determine the number of standards observed in them thus ranking the investigated websites.

[Downloaded free from http://www.jehp.net on Monday, January 23, 2023, IP: 93.110.213.184]

Methods

This is an applied study using analytical survey method. The statistical population consisted of all Persian websites in the area of nutrition and diet therapy (51 websites) and due to limited number of these websites, census method was used. Data gathering tool was a checklist extracted from a study by Hasan and Abuelrub[23] which was corrected to fit the current statistical population. This checklist consisted of 4 main dimensions, 21 side branches and 62 questions. The first dimension of content has 7 side branches (being up to date, relevance, multilingualism, diversity, accuracy, goal and credibility) and 17 questions (1–17). The second dimension, design, had 5 side branches (attractiveness, appropriateness, colors, picture/sound/video and text) and 19 questions (18–36). The third dimension, organization, includes 4 side branches (index, map, stability and links) and 9 questions (37–45) and finally the fourth dimension, user friendliness, had 5 side branches (usefulness, trustworthiness, being interactive, confidentiality and customization) and 17 questions (46–62). The yes/no or spectral scoring method was used to score each question based on its nature. The questions answered using yes/no method received 1 point for "No" and 3 points for each "Yes" answer. For the questions scored using spectral method, the options of Poor, Mediocre and Acceptable were available which received 1–3 points respectively. The desirable score was 51 in content dimension, 57 in design, 27 in organization and 51 in user friendliness and the desired general quality score (sum of all four dimensions) as 186. The score of each dimension and general quality score of each website was categorized in three categories of Poor, Mediocre and Acceptable in a way that the score of each category in each dimension and total quality score of each website were different. Then the websites were sorted based on their general quality scores. The validity of the checklist was confirmed by librarianship and medical informatics experts and data gathering was carried out by directly visiting each website. Data analysis was carried out with SPSS 21 [IBM Corp.: Armonk, NY] using descriptive (frequency distribution, average and standard deviation) and analytical (independent *t*-test) statistics in order to compare the quality of websites based on their ownership (private or organizational).

Results

In this study 51 Persian websites in the area of nutrition and diet therapy were investigated 20 of which had private and 31 of them had organizational ownerships.

Findings in Table 1 shows that in the dimension of content 66.7% of the websites had mediocre and 33.3 of them had acceptable qualities and that no meaningful distinction existed between privet and organizational websites (P = 0.83). In this dimension the factors of goal (100%), relevance (90.2%) and credibility (70.6%) had acceptable, the factors of diversity (64.7%) and accuracy (52.9%) had mediocre and the factors of multilingualism (94.1%) and being up to date (53%) had poor scores.

Findings in Table 2 show that 29.4% of the websites had mediocre quality in the dimension of design while 70.6% of them had acceptable quality. Also the average of organizational websites was meaningfully higher than that of private websites (P = 0.02). Among the important factors of this dimension, the factors of color (98%),

Table 1: Content quality score of Persian websites in the area of nutrition and diet therapy based on ownership type

Content quality score	Privet ownership		Organizational ownership		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Poor (17-27)	0	0	0	0	0	0
Mediocre (28-39)	14	70	20	64.5	34	66.7
Acceptable (40-51)	6	30	11	35.5	17	33.3
Average	38.5		38.3		*P*=0.83	
SD	3.4		4.6			

SD=Standard deviation

Table 2: Design quality score of Persian websites in the area of nutrition and diet therapy based on ownership type

Design quality score	Privet ownership		Organizational ownership		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Poor (19-31)	0	0	0	0	0	0
Mediocre (32-44)	9	45	6	19.4	15	29.4
Acceptable (45-57)	11	55	25	80.6	36	70.6
Average	44.6		47.3		*P*=0.02	
SD	5		3.1			

SD=Standard deviation

[Downloaded free from http://www.jehp.net on Monday, January 23, 2023, IP: 93.110.213.184]

text (94.1%) and picture/sound/video (84.3%) had acceptable and the factors of attractiveness (74.5%) and appropriateness (49%) had mediocre scores.

Based on findings presented in Table 3, in the dimension of organization, 82.4% of the websites had mediocre and 17.6% had acceptable quality and the average score of organizational websites were meaningfully higher than that of private ones (P = 0.04). In this dimension, the factors of stability (98%) and index (98%) had acceptable and the factor of links (68.6%) had mediocre and the factor of map (70.6) had poor quality scores.

Findings presented in Table 4 show that in the dimension of user friendliness, 52.9% of the websites had mediocre and 47.1% of them had acceptable qualities and no meaningful distinction existed between the score of organizational and private websites (P = 0.07). Among the factors of this dimension, confidentiality (100%), trustworthiness (92.2%) and customization (60.8%) had acceptable and usefulness (78.4%) and being interactive (78.4%) had mediocre scores.

Based on general quality scores, 70.6% of the websites had mediocre and 29.4% of them had acceptable quality scores and the quality score of organizational websites was meaningfully higher than that of privet websites (P = 0.03). According to the ranking of the websites based on their general quality score (acceptable score = 186), websites of "Novel Diet Therapy (Regime Darmani-e-Novin)" (score = 161), "Behsite" and "Dr. BehdadiPour" (jointly, score = 160) and "Dr. Kermani" (score = 158) had the highest and the websites of "Diet Therapy Center" (Markaz-e-Regime Darmani) (score = 122), "Dr. Rismanchian" (score = 129) and "Health Clinic" (Clinic-e Tandorosti) and "Dr. Hajian" (jointly, score = 131) had the lowest quality scores.

Discussion

Health related websites play an important role in sharing medical and health information and therefore are important to society's health situation. However, studies regarding the evaluation of Persian websites are scarce compared to similar studies worldwide. One of the most important areas of public health is the area of nutrition and diet therapy and many websites are active in this area, supplying people with necessary information. The goal of this study was to evaluate the quality of Persian websites in the area of nutrition and diet therapy.

Findings about the content quality of Persian nutrition and diet therapy websites show that most of these websites had mediocre quality while only a few had acceptable quality. In this dimension the factors of diversity and accuracy had mediocre scores. Also the factors of goal, relevance and credibility had the highest and the factors of multilingualism and being up to date had the lowest scores.

Findings in the dimension of content is similar to findings reported by Sutherland *et al*.[13] and Smith *et al*.[21] and Ashrafi-rizi *et al*.[17] about websites active in the area of addiction but is different from findings reported by Ahn *et al*.[18] about nutrition education websites and Moradi *et al*. about hospital websites.[16] It seems that due to the more educational nature of nutrition websites, these sites tend to focus more on having suitable content where since hospitals don't use their websites for sharing

Table 3: Organization quality score of Persian websites in the area of nutrition and diet therapy based on ownership type

Organization quality score	Privet ownership		Organizational ownership		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Poor (9-14)	0	0	0	0	0	0
Mediocre (15-21)	19	95	23	74.2	42	82.4
Acceptable (22-27)	1	5	8	25.8	9	17.6
Average	18.2		19.6		P=0.04	
SD	1.9		2.6			

SD=Standard deviation

Table 4: User friendly quality score of Persian websites in the area of nutrition and diet therapy based on ownership type

User friendly quality score	Privet ownership		Organizational ownership		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Poor (17-27)	0	0	0	0	0	0
Mediocre (28-39)	14	70	13	41.9	27	52.9
Acceptable (40-51)	6	30	18	58.1	24	47.1
Average	38.6		40.03		P=0.07	
SD	2.8		2.7			

SD=Standard deviation

[Downloaded free from http://www.jehp.net on Monday, January 23, 2023, IP: 93.110.213.184]

information and news, little attention is paid to the content of their websites.

The findings about the credibility factor contradict findings by Ashrafi-rizi *et al*.[17] which can be due to difference in statistical populations. Also the findings about the factor of accuracy are similar to findings by Smith *et al*. about information about ankle diagnoses present on the internet.[21]

In the factor of being up to date, the findings are similar to those reported by Ashrafi-rizi *et al*.[17] about websites related to addictions, Ahn *et al*.[18] about nutrition education websites and Borzekowski *et al*.[19] about websites related to eating disorders. Also a study by Fathifar *et al*.[15] showed that only 44% of Persian medical websites had mentioned the date of their last update. Also the findings are in contrast to findings by Sutherland *et al*.,[13] Hallingbye and Serafini[20] and Smith *et al*.[21] In general it seems that websites published in languages other than Persian pay more attention to updating their content.

Findings regarding design quality of Persian nutrition and diet therapy websites showed that most of these websites had acceptable design qualities. In this dimension the factors of color, picture/sound/video and text had acceptable and the factors of attractiveness and appropriateness had mediocre scores. These results are similar to findings by Ahn *et al*.[18] about nutrition education websites.

Results regarding organization quality of Persian nutrition and diet therapy websites showed that most websites had mediocre organization quality. In this dimension, the factor of links had mediocre score while the factors of stability and index had acceptable and the factor of map had poor scores. These results are similar to findings of Ahn *et al*.[18] about nutrition education websites.

The findings regarding the factor of links are similar to the ones reported by Sutherland *et al*.[13] but are different from findings by Ashrafi-rizi *et al*.[17] about websites related to addiction. It seems that websites about addiction pay more attention to the standards regarding links to other websites.

Findings about the user friendliness of Persian nutrition and diet therapy websites showed that most of the websites had mediocre and some had acceptable scores. In this dimension the factors of trustworthiness, confidentiality and customization had acceptable and the factors of usefulness and being interactive had mediocre scores. Findings regarding the confidentiality of websites are similar to those reported by Smith *et al*.[21]

Findings regarding the factor of being interactive are different from those reported in a study by Borzekowski *et al*.[19] about websites related to eating disorders. It appears that non-Persian websites consider themselves to be a way of communication and information sharing and thus are usually more interactive.

Findings about general quality of Persian nutrition and diet therapy websites showed that these websites have mediocre overall quality. These findings are similar to those reported by Lam *et al*.[22] about websites on osteosarcoma in adolescents. Also studies by Ashrafi-rizi *et al*.[17] and Parvizrad and Mirzaee[14] showed that health related websites had overall poor quality scores.

Conclusion

With the increase in the number of health related websites specially those concerning nutrition and diet therapy and since many people use the internet to acquire their nutrition information[24] it has become important to evaluate the quality of these websites. Results of this study showed that although Persian websites about nutrition and diet therapy had higher scores in the dimension of design compared to other dimensions, but failed to meet all necessary criteria even in this dimension. Overall quality of most of these websites was mediocre and still not at an acceptable level. Also these websites failed to receive acceptable scores in all factors and the score of some of the factors such as begin up to date was poor. Being up to date is among the most important characteristics of high quality websites. Also due to the important effect of nutritional information in society's health situation, the availability of up to date information becomes even more important which requires the authors of these websites to pay special attention to updating their information. Also the quality of websites is an important factor when evaluating their usefulness. Many tools exist for evaluating the quality of websites which can overlap in some areas and differ in others. Therefore, using different tools of evaluation can lead to slightly different results but the overall goal of all these tools is to evaluate the quality of websites.

In today's world, the importance of health information for the society has caused widespread increase of health related websites and since accessing these websites is easily possible using internet, many people use internet as the main source of health related information.[25] However increase in the quantity of health related websites does not necessarily guarantee an increase in their quality as well. Unlike printed sources, internet sources can be published without any limit which leads to a wide quality range being present in these sources. This means that evaluation of the quality of health related websites is of outmost importance. Due to the increase

[Downloaded free from http://www.jehp.net on Monday, January 23, 2023, IP: 93.110.213.184]

in the number of health related websites and their numerous users using specific criteria and standards in the design of these websites had become increasingly important. This means that the managers and designers of these websites must always pay attention to quality criteria and increase their effect on their users by increasing the quality of their websites.

Suggestions

- Creators and designers of websites need to create a standard based on the existing criteria and characteristics of their target audience and use this standard in designing their websites in order to increase their customer satisfaction
- Creators and managers of these websites need to improve the quality of their websites in factors that have mediocre scores and have not reached acceptable quality as of yet in order to improve the quality of their websites
- Creators and designers of these websites need to improve the quality of factors that have poor quality scores and pay special attention to keeping their websites updated with the most recent information in order to improve the weaknesses of their websites.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Norouzi Y, Talkhabi M, Hafezi MA. Evaluation of information seeking behavior of Arak university faculty members in using the internet. Epistemology 2010; 3:81-91.
2. Hayati Z, Dehghan L. A survey of acquaintance and application of web information quality criteria: A case study of post-graduate students in Shiraz University. Inf Process Manag 2012; 27:1011-31.
3. Moreno JM, Del Castillo JM, Porcel C, Herrera-Viedma E. A quality evaluation methodology for health-related websites based on a 2-tuple fuzzy linguistic approach. Soft Comput 2010; 14:887-97.
4. McMullan M. Patients using the Internet to obtain health information: How this affects the patient-health professional relationship. Patient Educ Couns 2006; 63:24-8.
5. Topaloglu H, Gumussoy CA, Bayraktaroglu AE, Calisir F. The relative importance of usability and functionality factors for e-health web sites. Hum Factors Ergon Manuf Serv Ind 2012; 23:336-45.
6. Saber M. Overweight. In: Ebrahim S, Mohammadizadegan M, Yazdanpanah MM, Saber M, Khabbaz N. The role of nutrition in prevention of patients. Tehran: Kamale Danesh; 2001. p. 1-30.
7. Lahiji MR. Nutrition and Cancer. Tehran: Shahr Ab; 1996.
8. Weaver JB 3rd, Thompson NJ, Weaver SS, Hopkins GL. Healthcare non-adherence decisions and internet health information. Comput Hum Behav 2009;25:1373-80.
9. Zahedi SH. Web quality assessment criteria and tools. Manage Dev 2010; 4:5-16.
10. Kopcso D, Pipino L, Rybolt W. The Assessment of Website Quality. Proceedings of the 5th International Conference on Information Quality; 2000. p. 97-108. Available from: http://www.ssmvm030.mit.edu/ICIQ/Documents/IQ%20Conference%202000/Papers/TheAssessmentofWebsiteQuality.pdf. [Last accessed on 2013 Jun 30].
11. Heydari GH. Criteria for evaluating electronic information resources with emphasis on websites. Inf Sci 2005; 20:17-32.
12. Zhou Z. Evaluating websites using a practical quality model 2009. Available from: https://www.dora.dmu.ac.uk/bitstream/handle/2086/3422/ZihouZhou_Thesis-Final.pdf. [Last accessed on 2013 Jun 30].
13. Sutherland LA, Wildemuth B, Campbell MK, Haines PS. Unraveling the web: An evaluation of the content quality, usability, and readability of nutrition web sites. J Nutr Educ Behav 2005; 37:300-5.
14. Parvizrad P, Mirzaee S. Health related websites evaluation. Health Inf Manage 2006;3:5-11.
15. Fathifar Z, Hosseini AF, Alibeig MR. Survey of Persian medical and health websites qualification with Silberg criteria. Health Adm 2007; 10:25-30.
16. Moradi GH, Ahmadi M, Zohoor A, Ebadifardazar F, Saberi MR. Evaluating of structure and content of webites of the educational hospitals in Iran. Health Inf Manage 2007;4:175-84.
17. Ashrafi-Rizi H, Taheri B, Zahedi R, Shahrzadi L, Tazhibi M. Quality of Persian addiction websites: A survey based on Silberg, Discern and WQET instruments [research project]. Isfahan: Isfahan University of Medical Science; 2012.
18. Ahn HS, Ku BS, Lee S. Systematic evaluation on the quantitative and qualitative aspects of Korean nutrition education websites. J Korean Diet Assoc 2008; 14:218-28.
19. Borzekowski DL, Schenk S, Wilson JL, Peebles R. e-Ana and e-Mia: A content analysis of pro-eating disorder Web sites. Am J Public Health 2010; 100:1526-34.
20. Hallingbye T, Serafini M. Assessment of the quality of postherpetic neuralgia treatment information on the Internet. J Pain 2011; 12:1149-54.
21. Smith JT, Pate OL, Guss D, Lee JT, Chiodo CP, Bluman EM. Internet information quality for ten common foot and ankle diagnoses. Foot Ankle Surg 2012; 18:198-202.
22. Lam CG, Roter DL, Cohen KJ. Survey of quality, readability, and social reach of websites on osteosarcoma in adolescents. Patient Educ Couns 2013; 90:82-7.
23. Hasan L, Abuelrub E. Assessing the quality of web sites. Appl Comput Inform 2011; 9:11-29.
24. Ostry A, Young ML, Hughes M. The quality of nutritional information available on popular websites: A content analysis. Health Educ Res 2008; 23:648-55.
25. Yan YY. Online health information seeking behavior in Hong Kong: An exploratory study. J Med Syst 2010; 34:147-53.