



## The Quality of Websites Related to Hypertension in Iranian Internet Space

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### Abstract

**Background:** Today physicians and other health-related service providers are trying to provide information and training through cyberspace to their patients. The aim of the present study was to determine the quality of the Persian websites related to hypertension.

**Methods:** To identify Persian hypertension related websites in a descriptive cross-sectional study, we started our search in cyberspace using the key words. The keywords that were used are the same as the words that patients or their families use to obtain information about hypertension. The First 50 Google and Yahoo search results, all related links and related websites are listed in the Ministry of Health and Medical Education were examined. Then, the quality of these sites were evaluated based on the scale of Discern and Silberg instruments.

**Results:** As a result, a total of 281 websites were retrieved. Analysis revealed that 62(22%) of these unique websites contained information relevant to hypertension. Seventy nine percent of health related websites had academic or governmental origin, however, only 9% of these websites contained information relevant to hypertension. "Heart center belonging to Tehran University of Medical Sciences" was ranked first based on the Silberg and DISCERN instruments, with scores 7 (from total 9) and 55 (from total 80), respectively.

**Conclusion:** This study showed that, according to the data collected and analyzed via Silberg and DISCERN instruments, the quality of Persian websites related to HTN is "low". According to evidence-based medicine, despite so many barriers to the internet information reaching its necessary to expand health-related Web sites.

**Keywords:** Hypertension, Website, Iran, Assessment.

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## Introduction

Today, use of information and communication technologies has expanded rapidly in medical education. Thousands of users visit to the Internet to obtain health-related information, daily.<sup>1</sup>

Rapid progress and comprehensive use of computer networks and the Internet have changed the information and its quality in medical sciences.<sup>2</sup> The use of technology and new communication equipment, especially computers and the internet has an ascending rate. Due to an increase in volume and capacity of resources and databases, their evaluation is very important, especially authoritative and specialized resources. These resources are one of the most important tools for achieving human knowledge. Although concerns about the quality and characteristics of these sources and databases information are increasing, it is necessary to simplify process to obtain the resources according to need.<sup>3</sup>

According to accomplished studies and statistics collected in America, at least 109 million users, regularly refer to health-related Websites in order to obtain information and family and self-health management.<sup>4</sup> Statistics compiled in Iran in 2010 showed that 52.05% of people use the Internet. Also from 2000 to 2010, there were 13.189 present increases in users. As well as in our country along with growth technology and Internet access, using it, widely became inclusive in order to increase access to information about public health and diseases treatment. Therefore, it is necessary to be studied the quality Internet resources in this area.<sup>5</sup>

Blood pressure is the force of blood against the arteries wall to circulate blood throughout the body and its normal level in a healthy person is 140/90 mmHg.<sup>6</sup> Hypertension is a common chronic disease in which blood pressure (140.90 mmHg) is higher than normal level, leading to damage to the vital organs of the body.<sup>7</sup>

According to statistics provided by the America Heart Association HTN directly cause the death of 40-thousand Americans each year. According to the same report of every four American adults, one person has high blood pressure, then it is estimated about 80 million U.S. adults have high blood pressure. About 77 percent of those are using antihypertensive medication, but only 54 of those have their condition controlled.<sup>7</sup>

In Iran, from every hundred Iranian adults, 20 people have hypertension, but only half of them are aware of their condition. On the other side, only five of this 10 patients treated and 75% of patients with hypertension remain untreated. This issue is visible not only on Iran, but also in many other parts of the world.<sup>8</sup>

Hypertension control reduces the risk of heart disease as the most prevalent non communicable disease and it is important to reduce mortality of HTN. This fact shows the necessity of prevention, early diagnosis and treatment of HTN. Prevention of hypertension includes prevention from progress of the disease and its complications. Population awareness about hypertension disease and its predisposing modifiable factors has important role in prevention and control of this disease.<sup>9</sup> Given the importance of the disease and the need for a website to inform to patients about the prevention and treatment of the HTN, as well as providing up to date information about that, the structure and content of these sites is very important.

Data and its management and transfer are the most essential component of healthcare that today is reflected in professional standards. Despite the growing importance of health systems in

providing treatment, especially about the hypertension and cardiovascular disease, their integrity and quality are not appropriate and there has been less attention and review for them. It can be clearly noted that health services and for example HTN disease, to provide Internet services, will not be on the agenda ever.<sup>10</sup>

Because of the lack of widespread use of electronic tools and websites about health, especially for HTN in Iran so far has not been sufficient study in this field. In the present study we want to identify websites and databases associated with blood pressure in the national internet space and check these websites with an emphasis on structure and content standards, and their quality and services based on standard criterions.

## Materials and Methods

In a descriptive-cross sectional study, in order to find Persian hypertension related websites, using defined keywords search was done. The keywords that were used are same to the words that patients or their families use them if they want to obtain information about hypertension. The keywords are: High blood pressure - hypertension - blood pressure – hypertension disease and high pressure. Persian equivalences of these keywords were used on Google and Yahoo because the Iranians are the most users of them.<sup>11</sup> In order to check all the websites and fully aware of their existence, we used ADSL (at least 1 gigabyte per second). The first 50 Google and Yahoo search results and all related links on the websites were examined, as individuals rarely examine beyond 50 sites when sourcing online information.<sup>12</sup> Related websites are listed in the Ministry of Health and Medical Education was surveyed also.

This method carried by two people that were familiar to searching databases and performed separately on the same keywords. All the websites that had the following conditions were excluded: (i) Sites that despite the differences in URL: Uniform Resource Locators were repeated, (ii) Were non-Persian language, (iii) Needed to passwords, (iv) Those were frequently Unavailable Server, (v) Were Portal - Gateway or the library, (vi) Were not about human, (vii) The sites which were just advertising and had no training materials and (viii) Abroad Internet sites.

All searched related sites, were recorded on DVD in order to be protected from any new changes in the evaluation. Due to lack of clear and specific site and according to diversity of results, before evaluation and assessment of the found web sites, they were classified in one of the four categories;

(i) Websites or blogs which were related to health and exclusively belonged to hypertension.

(ii) Websites and blogs that was related to health and nonspecifically belonged to hypertension.

(iii) Websites associated with the Ministry of Health and Medical Education or Universities of Medical Sciences.

(iv) Websites or blogs that were not health-related, and mostly had commercial and advertising aspects and only a small part of them was devoted to hypertension such as newsletters and news databases and advertising webs and etc.

After this step, the researchers evaluated the quality of these sites based on the scale of Discern and Silberg and instruments for health care web sites.

The DISCERN checklist consists of 16 questions in three sections.<sup>13</sup> Section one assesses the reliability of websites using 8 questions. Section two assesses the quality of information on treatment choices with 7 questions. The last question rates overall rating of the publication based on the answers to all of the previous questions (DISCERN). The DISCERN rating scale for each question is 1 to 5, where 1=definite NO, 3=partially and 5= definite Yes.

Silberg instrument consists of 9 questions in four sections: Authorship, attribution, disclosure, and currency (14). For each question, two answers are possible: Yes (=1) and No (=0). So, the maximum score in this instrument is 9.<sup>15</sup>

## Results

Using keywords high blood pressure, hypertension, blood pressure, hypertension disease and high pressure, search was done in Google and Yahoo search engines. Flow chart 1 shows search steps.

A total of 281 websites were retrieved, of which 62 (22%) unique websites contained information relevant to hypertension. Of the 62 individual, relevant websites identified, none of them have been created exclusively for hypertension. Seventy nine percent of health related websites had academic or governmental origin; however, only 9% of these websites contained information relevant to hypertension. Overall, 21 websites including 10 websites were academic or governmental, and 11 websites related or non-related to health but contain HTN related information were assessed by silberg and DISCERN instruments.

The results showed that “Heart center belonging to Tehran University of Medical Sciences” was ranked first based on the Silberg and DISCERN instruments. 7 points (from total 9), 55 points (from total 80). Websites of Noorvision, Webda, Golestan University of Medical Sciences and Avay salamat were second based on Silberg by 6 from total 9. Similarly, websites of Noorvision and Golestan University of Medical Sciences by 50 from total 80 got second degree, figure 2 and 3. In order to assess the quality of websites, the overall mean of Silberg score was 4.1 of maximum 9.

According to Silberg instrument, 4 main categories were calculated: Authorship, Attribution, Disclosure, and Currency. In authorship domain that study was conducted via three questions, it was found that in 17%, 51% and 3% of websites were noted to name, affiliation and qualification of authors, respectively. 13% of Web sites referred to reference of content on the site (Attribution domain). About disclosure domain, none of the nongovernmental websites did not provide disclosure, however, none of the total studied cases mention sponsorship and copyright. About 1 and 2 websites mentioned date of lunch and the last updating, respectively. The median grade of websites for Silberg, was 4. It showed that the quality of Persian websites related HTN according to Silberg criterion was low.

DISCERN instrument focuses on two main domains: Section one assesses the reliability of websites using 8 questions and section two assesses the quality of information on treatment choices with 7 questions. For DISCERN

instrument the median grade of websites was 27. It revealed that the quality of Persian websites related to HTN according to DISCERN instrument was very low.

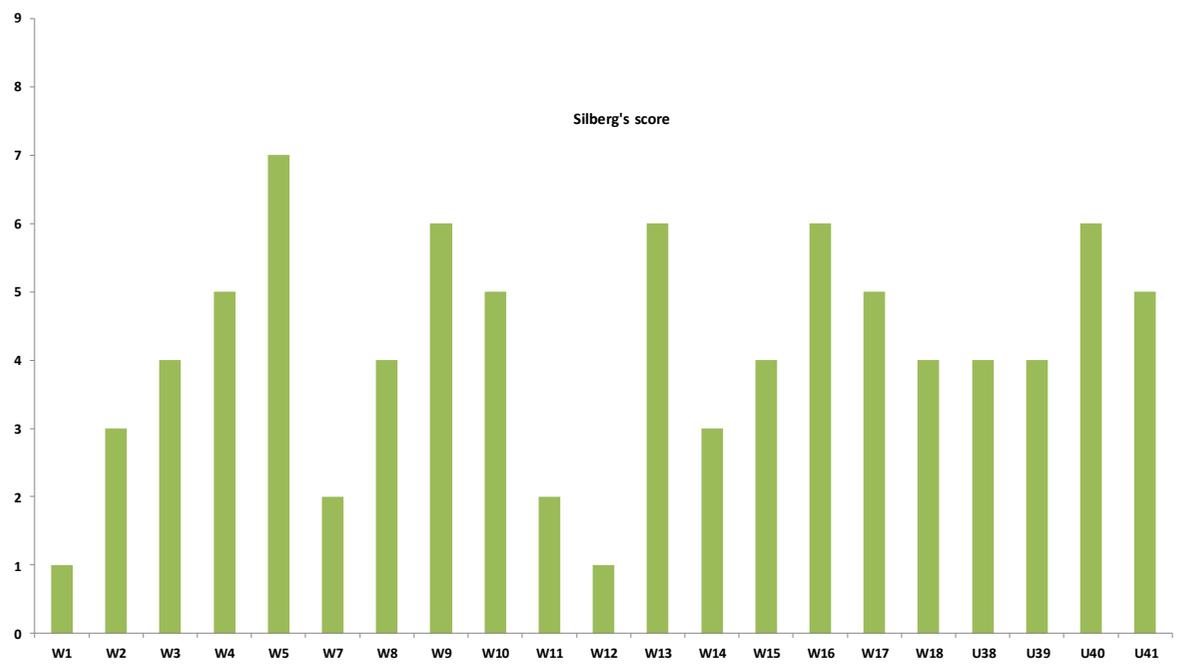


Figure 1. Stem tree illustrating website search using various keywords by Google and Yahoo search engines (W: Websites, U: University).

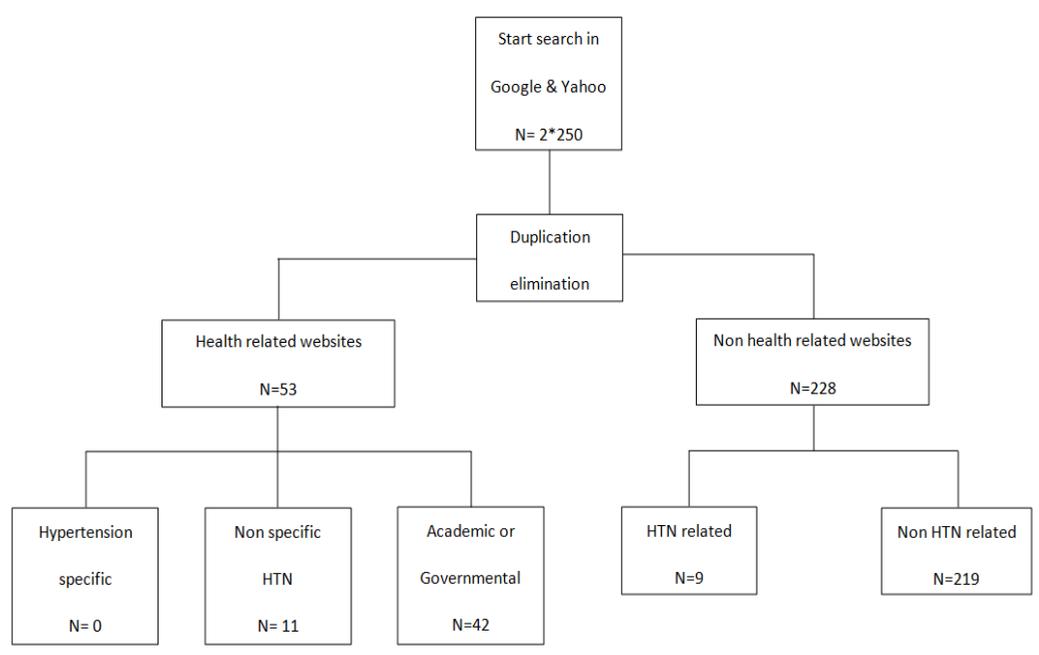


Figure 2. Silberg scores of Persian websites related to HTN

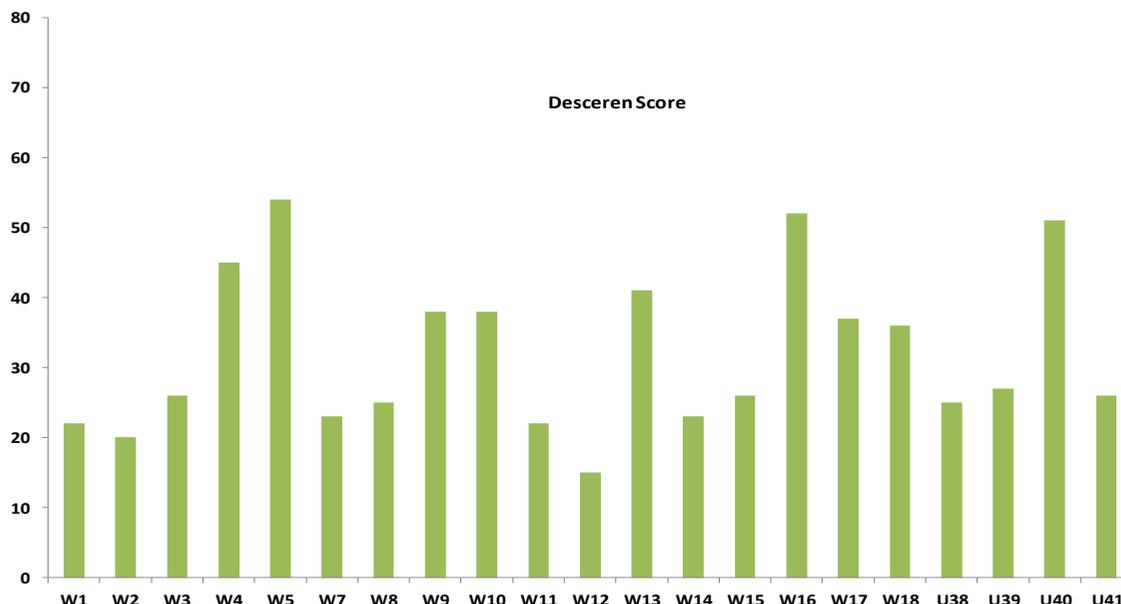


Figure 3. Scores of Persian websites related to HTN based on DISCERN instrument (W: Websites, U: University).

## Discussion

Based on the results taken from these instruments Heart center belonging to Tehran University of Medical Sciences was ranked first based on the Silberg and DISCERN instruments. The mean Silberg score for 21 unique websites in the present study was 4.1, that is similar this score in medical and health Persian websites 4.61.<sup>16</sup>

Based on DISCERN instrument, the quality of information about treatment choices in 21 Persian websites related to HTN was under half of total score. These findings suggest that more attention is needed on the design of websites. Also, the mean DISCERN score was 32, while this mean for other websites was 55.9.<sup>17</sup>

Recent studies suggest that although hypertension is one of the widespread and pandemic diseases in Iran and the world, there is no specific website or database about it in national internet space. Also, in searched cases, hypertension non-specific related websites had inappropriate nature and quality. This weakness particularly, in the websites related to the Ministry of Health and Medical Education is quite evident. Recent finding is similar to results of Parviz Radand colleague's research.<sup>18</sup>

In the most optimistic case, the maximum score from the structure and content of HTN non-specific websites, classified weak. This result corresponded by Rigby et al study.<sup>19</sup>

According to the results of this study it can be inferred that despite the high importance and extent of hypertension and also despite enormous progress in the field of Internet technology is now applying this system in the field of control, prevention and

treatment of hypertension, in the public or the private sectors in IRAN is inadequate. This study and similar abroad studies suggest that we should use the technology in national field in healthcare services, to apply information and communication technology, especially in the area of web and databases.

According to the lack of a dedicated website and database to hypertension, in first step, it seems necessary to design and implement at least one comprehensive website related to HTN in national Internet Space. In the next step, to evaluate of websites related to diseases such as HTN we can set specific protocols and criteria for evaluating the quality of these websites. Continuous monitoring of governmental web sites related to HTN is beneficial for the implementation and promotion the use of electronic technology in health care system.

After that, to promote applying the technology, using the incentive and attractive approaches for website users, especially those with HTN or who have relatives with high blood pressure, can provide information about the latest medications, treatments, advices and all other information related to disease. The same mechanism is also beneficial for physicians.

Finally, it is necessary to inform to internet users about the structure and quality of the information content of the sites according to specialized criteria of quality measurement.

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## Conflict of interest

The authors declare that they have no conflict of interest.

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