



## Brief Communication

## Information about epilepsy on the internet: An exploratory study of Arabic websites

Jamal M. Alkhateeb\*, Muna S. Alhadidi

The University of Jordan, Amman, - Jordan

## ARTICLE INFO

## Article history:

Received 10 March 2017

Revised 9 July 2017

Accepted 9 July 2017

Available online 16 November 2017

## Keywords:

Epilepsy  
Seizures  
Convulsive disorders  
Health information  
Arab countries  
Internet

## ABSTRACT

The aim of this study was to explore information about epilepsy found on Arabic websites. The researchers collected information from the internet between November 2016 and January 2017. Information was obtained using Google and Yahoo search engines. Keywords used were the Arabic equivalent of the following two keywords: epilepsy (Al-saraa) and convulsion (Tashanoj). A total of 144 web pages addressing epilepsy in Arabic were reviewed. The majority of web pages were websites of medical institutions and general health websites, followed by informational and educational websites, others, blogs and websites of individuals, and news and media sites. Topics most commonly addressed were medical treatments for epilepsy (50% of all pages) followed by epilepsy definition (41%) and epilepsy etiology (34.7%). The results also revealed that the vast majority of web pages did not mention the source of information. Many web pages also did not provide author information. Only a small proportion of the web pages provided adequate information. Relatively few web pages provided inaccurate information or made sweeping generalizations. As a result, it is concluded that the findings of the present study suggest that development of more credible Arabic websites on epilepsy is needed. These websites need to go beyond basic information, offering more evidence-based and updated information about epilepsy.

© 2017 Elsevier Inc. All rights reserved.

## 1. Introduction

The provision of reliable and easy-to-read information about epilepsy is considered an important component of quality care [1–3]. Yet, many persons with epilepsy (PWE) are ill informed about the management of their disorder [4,5]. The internet has become an increasingly popular tool with the potential to provide useful medical and health information [6–8]. Like other people with chronic diseases, PWE as well as their families often look for information on the internet to understand epilepsy and its treatment [9–12]. Internet resources and tools can be an important way of promoting health behavior as well as adherence of PWE [13]. However, some studies have found that PWE are less likely to use the internet compared with the general public [10,13,14].

Estimates of the prevalence of epilepsy in Arab countries range from 2.3/1000 [15] to 7.5/1000 [16]. This means that more than one million individuals in these countries have epilepsy. But very little is known about information about epilepsy that is available on the internet in Arabic language. Research is an important step in understanding the information patients and their families encounter when navigating the internet. Additionally, this research can highlight a number of new avenues that could be explored in future studies. Accordingly, the objective

of this study was to survey the information related to epilepsy available on the internet in Arabic language.

## 2. Methods

Information was collected from the internet between November 2016 and January 2017. The researchers collected information using Google and Yahoo search engines which are the most commonly used search engines in Arab countries. Information was obtained using the Arabic equivalent of the following two keywords: epilepsy (Al-saraa) and convulsion (Tashanoj). Web pages were included if they provided information about any aspect of epilepsy and that information was provided in Arabic. Web pages were excluded if they could not be opened or were only in English, duplicates, or with < 100 words.

Initially, 206 web pages were retrieved and assessed for their study eligibility. After the application of inclusion and exclusion criteria, 144 web pages were downloaded and finally included in the analysis. The first researcher coded all 144 web pages using a two-step process. First, each web page was reviewed to determine its information source. Second, the content of the page was read, and answers to the following questions about that page were recorded using a data extraction form containing the following questions: (1) What were the topics presented on that page? (2) What year was the page published? (3) Were there any obvious nonvalidated information on the web page? The second researcher independently coded 30 (20%) randomly selected web pages using the same set of questions. Interrater agreement exceeded

\* Corresponding author at: Department of Counseling and Special Education, Faculty of Educational Sciences, The University of Jordan, Queen Rania Street, Amman 11942, Jordan.  
E-mail address: [jkhateeb@ju.edu.jo](mailto:jkhateeb@ju.edu.jo) (J.M. Alkhateeb).

90% in this study. Disagreements were discussed by both researchers until consensus was reached. Because the researchers did not evaluate the accuracy of information provided, no guidelines or quality standards for epilepsy management were used.

### 3. Results

The majority of web pages were health websites, followed by informational and educational websites, others (You Tube, Facebook, and community-building websites), blogs and personal websites, and news and media websites. The proportion of each source is shown in Table 1.

Table 2 shows the topics addressed in web pages surveyed. Topics most commonly addressed were medical treatments for epilepsy (50% of all pages) followed by epilepsy definition (41%) and epilepsy etiology (34.7%). The least commonly addressed topics were natural treatments for epilepsy (8.3%), epilepsy surgery (13.9%), and epilepsy complications (16.7%).

The results revealed that a very small proportion of web pages claimed to provide information from credible sources, while the vast majority did not mention the source of information. Many web pages also did not provide author information. Only a small proportion of the web pages provided adequate information. Relatively few web pages provided nonscientific information. For example, several personal web pages claimed that epilepsy is caused by some evil spirit, demons (jinn), or evil eye and magic. These websites claimed that the condition could be cured by a religious healer. Several web pages advocate managing seizures by spiritual or natural treatments. This finding is consistent with previous studies that have demonstrated a tendency among PWE and their families in Arab countries [17–20] as well as other developing countries [21–24] to view spiritual treatments as complementary to epilepsy medications.

Few health and informational websites also provided overgeneralizations such as the following: epilepsy is a mental illness, epilepsy can be cured, epilepsy is a disease that causes intellectual impairment, epilepsy is a hereditary disease, all seizures cause unconsciousness, and seizures are usually 5–10 min in duration. Some websites also recommend using nonvalidated treatments for epilepsy like garlic, onion, chick peas, coconut oil, and apple juice.

More accurate information was provided by websites of medical institutions and general health websites than by other websites. Finally, little information was provided on several aspects of epilepsy and seizures such as seizure precipitants and ways to guard against seizures, side effects of epilepsy medications, epilepsy and daily life activities, and epilepsy comorbidities.

### 4. Discussion

This study surveyed information provided in Arabic on the internet about epilepsy. While searching for information about epilepsy on the internet is convenient, some of this information may be unreliable, inadequate, or inaccurate [12]. Such obvious misinformation about epilepsy may prevent PWE from getting needed care and can ultimately negatively affect the quality of life of these persons and their families [12,25]. The researchers found that nearly half of the Arab countries

**Table 1**

Sources of online information about epilepsy in Arabic.

Source	Number	Percentage
Websites of medical institutions and general health websites	59	41.0
Informational and educational websites	33	22.9
Others	23	15.9
Blogs and websites of individuals	21	14.6
News and media sites	08	5.6

**Table 2**

Web pages containing topics related to epilepsy in Arabic.

Topic	Number	Percentage
Medical treatments for epilepsy	72	50.0
Definition of epilepsy	59	41.0
Epilepsy etiology	50	34.7
Epilepsy classification	44	30.6
Epilepsy symptoms	41	28.5
Others (history, prevalence, driving, menstrual period, contraceptives, employment, pregnancy, religion)	41	28.5
Epilepsy diagnosis	35	24.3
Seizure management	35	24.3
Epilepsy complications	24	16.7
Epilepsy surgery	20	13.9
Natural treatments for epilepsy	12	8.3

have established national chapters of the International League Against Epilepsy (ILAE). However, most of these chapters do not have websites and are mainly targeted to professionals and use the English language. Only two chapters (Iraqi and Egyptian chapters) use Arabic but do not provide public educational materials. There are also five local epilepsy associations in Arab countries. Those which have websites provide very little, if any, educational materials in Arabic. Some web sites provided information that has not been updated in years.

This study, being of an exploratory nature, raises a number of opportunities for future research. First, Arab patients' use of the internet to obtain information about epilepsy needs to be examined. Second, research should evaluate how these patients and others perceive the quality and usefulness of information available about epilepsy in Arabic on the internet. Third, research is needed to examine the content of web pages against international guidelines or quality standards for epilepsy management such as the ILAE epilepsy clinical care guidelines [26].

The study also has at least two implications for practice. First, when using the internet as a source of medical information, Arab PWE and their families should recognize that information may be inaccurate and outdated. Second, physicians should guide patients using the internet for epilepsy information to reliable websites.

Finally, this study has two limitations that need to be taken into account. First, we only used two popular search engines to evaluate the information on Arabic web pages; therefore, these results may not be representative of other search engines, and caution should be used in generalizing the results of this review. Second, because current researchers are not medical specialists, the study did not attempt to evaluate the extent to which the information provided about epilepsy treatment is accurate, standard, or recent. Evaluating the quality and credibility of information about epilepsy diagnosis and treatment requires further studies by medical specialists.

### 5. Conclusion

This study revealed that different sources provide information about epilepsy in Arabic on the internet. While most of this information is accurate and helpful, websites rarely provide detailed and updated information about epilepsy. Relatively few web pages contained inaccurate information or sweeping generalizations. Further research on the credibility of information presented in Arabic on the internet is needed, and guidance by specialists should be provided for internet users to reliable websites presenting information about epilepsy.

### Source of funding

None.

### Conflict of interest

The authors confirm that there is no conflict of interest to be disclosed.

## Acknowledgments

None.

## References

- [1] Garnett WR. Antiepileptic drug treatment: outcomes and adherence. *Pharmacotherapy* 2000;20:191S–9S.
- [2] Long L, Montouris G. Knowledge of women's issues and epilepsy (KOWIE-II): a survey of health care professionals. *Epilepsy Behav* 2005;6:90–3.
- [3] Pugh MJ, Berlowitz DR, Montouris G, et al. What constitutes high quality of care for adults with epilepsy? *Neurology* 2007;69:2020–7.
- [4] Elliott JO, Shneker BF. A health literacy assessment of the epilepsy.com website. *Seizure* 2009;18:434–9.
- [5] Long L, Reeves AL, Moore JL, et al. An assessment of epilepsy patients' knowledge of their disorder. *Epilepsia* 2000;41:727–31.
- [6] Baker L, Wagner T, Singer S, Bundorf MK. Use of the internet & e-mail for health care information: results from a national survey. *JAMA* 2003;289:2400–6.
- [7] Diaz JA, Griffith RA, Ng JJ, Reinert SE, et al. Patients' use of the internet for medical information. *J Gen Intern Med* 2002;17:180–5.
- [8] Tonsaker T. Health information on the internet gold mine or minefield? *Can Fam Physician* 2014;60:407–8.
- [9] Amante DJ, Hogan TP, Pagoto SL, et al. Access to care and use of the internet to search for health information: results from the US national health interview survey. *J Med Internet Res* 2015;17:e106.
- [10] Escoffery C, Diiorio C, Yeager KA, McCar, et al. Use of computers and the internet for health information by patients with epilepsy. *Epilepsy Behav* 2008;12:109–14.
- [11] Koo YS, Yang KS, Seok HY, et al. Characteristics of patients with epilepsy who use a website providing healthcare information about epilepsy in South Korea. *Epilepsy Behav* 2012;25:156–61.
- [12] Liu J, Xu R, Hu Y, et al. Chinese internet searches provide inaccurate and misleading information to epilepsy patients. *Chin Med J (Engl)* 2015;128:3324–8.
- [13] Leenen LA, Wijnen BF, de Kinderen RJ, et al. Are people with epilepsy using eHealth-tools? *Epilepsy Behav* 2016;64(Pt A):268–72.
- [14] Pramuka M, Hendrickson R, Van Cott AC. Survey results of internet and computer usage in veterans with epilepsy. *Epilepsy Behav* 2010;17:366–8.
- [15] Benamer HT, Grosset DG. A systematic review of the epidemiology of epilepsy in Arab countries. *Epilepsia* 2009;50:2301–4.
- [16] Bhalla D, Lotfalinezhad E, Timalisina U, et al. A comprehensive review of epilepsy in the Arab world. *Seizure* 2016;34:54–9.
- [17] Al-Khateeb JM, Al-Khateeb AJ. Research on psychosocial aspects of epilepsy in Arab countries: a review of literature. *Epilepsy Behav* 2014;31:256–62.
- [18] Babikir MO. Managing childhood epilepsy in a resource-limited setting: a pragmatic approach. *Sudan J Paediatr* 2015;15:9–20.
- [19] Obeid T, Abulaban A, Al-Ghatani F, et al. Possession by 'Jinn' as a cause of epilepsy (Saraa): a study from Saudi Arabia. *Seizure* 2012;21:245–9.
- [20] Sidig A, Ibrahim G, Hussein A, et al. A study of knowledge, attitude, practice towards epilepsy among relatives of epileptic patients in Khartoum State. *Sudan J Public Health* 2009;4:393–8.
- [21] Ab Rahman AF. Awareness and knowledge of epilepsy among students in a Malaysian University. *Seizure* 2005;14:593–6.
- [22] Ismail H, Wright J, Rhodes P, et al. Religious beliefs about causes and treatment of epilepsy. *Br J Gen Pract* 2005;55:26–31.
- [23] Shafiq M, Tanwir M, Tariq A, et al. Epilepsy: public knowledge and attitude in a slum area of Karachi, Pakistan. *Seizure* 2007;16:330–7.
- [24] Tan CT, Lim SH. Epilepsy in South East Asia. *Neurol J S East Asia* 1997;2:11–5.
- [25] Szemere E, Jokeit H. Quality of life is social—towards an improvement of social abilities in patients with epilepsy. *Seizure* 2015;26:12–21.
- [26] Sauro KM, Wiebe S, Dunkley C, et al. The current state of epilepsy guidelines: a systematic review. *Epilepsia* 2016;57:13–23.