



Brief Communication

Clearly written, easily comprehended? The readability of websites providing information on epilepsy

Francesco Brigo^{a,b,*}, Willem M. Otte^{c,d,1}, Stanley C. Igwe^{e,1}, Frediano Tezzon^b, Raffaele Nardone^{b,f}^a Department of Neurological and Movement Sciences, Section of Clinical Neurology, University of Verona, Italy^b Department of Neurology, Franz Tappeiner Hospital, Merano, Italy^c Department of Pediatric Neurology, Brain Center Rudolf Magnus, University Medical Center Utrecht, The Netherlands^d Biomedical MR Imaging and Spectroscopy Group, Image Sciences Institute, University Medical Center Utrecht, The Netherlands^e Department of Neuro-Psychiatry, Federal Teaching Hospital, Abakaliki, Ebonyi State, Nigeria^f Department of Neurology, Christian Doppler Klinik, Paracelsus Medical University, Salzburg, Austria

ARTICLE INFO

Article history:

Received 21 November 2014

Revised 17 December 2014

Accepted 18 December 2014

Available online 16 January 2015

Keywords:

Epilepsy
Health literacy
Internet
Readability
Wikipedia

ABSTRACT

There is a general need for high-quality, easily accessible, and comprehensive health-care information on epilepsy to better inform the general population about this highly stigmatized neurological disorder. The aim of this study was to evaluate the health literacy level of eight popular English-written websites that provide information on epilepsy in quantitative terms of readability. Educational epilepsy material on these websites, including 41 Wikipedia articles, were analyzed for their overall level of readability and the corresponding academic grade level needed to comprehend the published texts on the first reading. The Flesch Reading Ease (FRE) was used to assess ease of comprehension while the Gunning Fog Index, Coleman–Liau Index, Flesch–Kincaid Grade Level, Automated Readability Index, and Simple Measure of Gobbledygook scales estimated the corresponding academic grade level needed for comprehension. The average readability of websites yielded results indicative of a difficult-to-fairly-difficult readability level (FRE results: 44.0 ± 8.2), with text readability corresponding to an 11th academic grade level (11.3 ± 1.9). The average FRE score of the Wikipedia articles was indicative of a difficult readability level (25.6 ± 9.5), with the other readability scales yielding results corresponding to a 14th grade level (14.3 ± 1.7). Popular websites providing information on epilepsy, including Wikipedia, often demonstrate a low level of readability. This can be ameliorated by increasing access to clear and concise online information on epilepsy and health in general. Short “basic” summaries targeted to patients and nonmedical users should be added to articles published in specialist websites and Wikipedia to ease readability.

© 2014 Elsevier Inc. All rights reserved.

1. Introduction

The need for high-quality free and easily accessible health-care information on epilepsy to better inform individuals with epilepsy, their families, and the general population is essential as this neurological disorder is highly associated with stigma and misunderstandings.

Millions of people use the Internet daily as a source of health information. They search for information about a recent diagnosis, the adverse effects of treatments, or the details of diagnostic procedures [1–3]. In a recent survey conducted among men with epilepsy, the Internet was reported as the most important source of health information on their neurological condition [4]. The second and third places for information retrieval were taken by the general practitioner and neurologist. Another

study found that 57% of clinic-based patients with epilepsy seek online information to guide self-management of their disorder [5].

Since its launch in 2001, the free online encyclopedia Wikipedia has become the most popular general reference site on the Internet, and it is a popular source of health-care information. Wikipedia contains approximately thirty million articles, which are available in up to 287 languages including over 4.6 million English articles. With eighteen billion page views and nearly five hundred million unique visitors a month, the English Wikipedia ranks in the fifth place in the list of most visited websites globally [6]. Interestingly, the Wikipedia article on epilepsy ranks first on the list of results in a Google search for “epilepsy” [7]. Hence, this article is likely to be among the “most immediate” sources of online information on epilepsy for millions of English-speaking Internet users worldwide. Besides the Wikipedia articles, much epilepsy information is provided on websites such as www.epilepsy.com, www.familydoctor.org, and patient.co.uk.

Health information on epilepsy as such is not sufficient to effectively inform people about epilepsy. It also needs to be adequately comprehended. This requires readers to have adequate health literacy,

* Corresponding author at: Department of Neurological and Movement Sciences, Section of Clinical Neurology, University of Verona, Piazzale L.A. Scuro, 10, 37134 Verona, Italy. Tel.: +39 0458124174; fax: +39 0458124873.

E-mail address: dr.francescobrigo@gmail.com (F. Brigo).

¹ These authors contributed equally.

which is defined as “a constellation of skills, including the ability to perform basic reading and numerical tasks required to function in the health care environment” [8]. Unfortunately, the average health literacy in the general population is low. A 2004 report has estimated that ninety million people in the U.S. have limited literacy levels [9], whereas a 2003 U.S. survey showed that 34% of adults have difficulty reading and understanding written material [10]. Similarly, a national survey conducted in 2011 showed that in England, the percentage of people with low literacy skills is 14.9% [11]. Low literacy level affects patient–physician communication [12]. It is also associated with poor treatment compliance, lower understanding about medical conditions and treatment, and increased risk of hospitalization [8,13,14]. People with epilepsy are at risk of having inadequate health literacy, as several population studies have shown that they have lower educational levels, lower incomes, and poorer health status than subjects without epilepsy [15–17]. To inform people about epilepsy despite their low or moderate literacy levels requires the information on the subject to have a high level of readability especially in frequently consulted sources.

The aim of this study was to quantitatively evaluate the health literacy level of eight popular English-written websites providing information on epilepsy, with a special focus on Wikipedia.

2. Methods

On 7th November 2014, the educational material of the following popular English-written websites providing information on epilepsy was downloaded into Microsoft Word: patient.co.uk, UpToDate®, American Academy of Family Physicians, U.S. Department of Veteran Affairs, U.S. National Institute of Neurological Disorders and Stroke, and Mayo Clinic (web addresses are provided in Supplementary Table 1).

Furthermore, we selected 41 Wikipedia articles related to epilepsy or antiepileptic drugs and downloaded the content into Microsoft Word.

2.1. Quantitative readability analysis

Copyright information, references, and images were removed from all text. Websites and Wikipedia articles were analyzed for their overall level of readability with six different quantitative readability scales by using the online software program “SMOG Readability Calculator” [18]. The readability scales obtained through this program included the following:

- i) the Flesch Reading Ease [19],
- ii) the Gunning Fog Index [20],
- iii) the Coleman–Liau Index [21],
- iv) the Flesch–Kincaid Grade Level [22],
- v) the Automated Readability Index [23], and
- vi) the Simple Measure of Gobbledygook [24].

Readability calculations are made based on sentence length, number of sentences, and the number of syllables or characters per word. In general, these calculations penalize polysyllabic words and long, complex sentences. Details on the used scales are provided in Supplementary Table 2.

The Flesch Reading Ease readability index reports readability scores from zero to one hundred, with higher scores indicating more readable text. Text with a score of seventy is appropriate for most adults, text with a score between thirty and fifty is considered difficult to read, and text with a score between fifty and sixty is fairly difficult [25]. More details on these readability scales can be found elsewhere [26].

The other six readability indexes report a number that corresponds to an academic grade level (i.e., to the number of years of education that a person needs to be able to understand the text easily on the first reading).

3. Results

Reading level assessments of each website analyzed are reported in Table 1. We did not analyze each subsection of all the 8 websites because some of them were too short to adequately assess their readability.

The average readability of the eight websites measured with the Flesch Reading Ease yielded results indicative of a difficult-to-fairly-difficult readability level: 44.0 ± 8.2 . The other readability scales indicate text readability corresponding to an 11th grade level (11.3 ± 1.9) and to 12.3 ± 2.0 years of formal education required to easily understand the text on the first reading.

The reading level assessments of the individual and averaged 41 Wikipedia articles are reported in Tables 2 and 3. The average Flesch Reading Ease score was indicative of a difficult readability level, namely 25.6 ± 9.5 . The other readability scales for these Wikipedia articles correspond to a 14th academic grade level (14.3 ± 1.7) and to 16.4 ± 2.0 years of formal education required to easily understand the text on the first reading.

The reading level assessment of 23 Wikipedia articles related to epilepsy, epileptic syndromes, seizure types, or diagnosis is reported in Table 2. The average Flesch Reading Ease score was indicative of a difficult readability level, namely 30.2 ± 8.1 . The other readability scales for these Wikipedia articles correspond to a 14th academic grade level (13.8 ± 1.8) and to 15.4 ± 2.0 years of formal education required to easily understand the text on the first reading.

The readability level of 18 Wikipedia articles related to antiepileptic drugs had a low average Flesch Reading Ease score: 19.6 ± 7.6 (Table 3). This is indicative of a more difficult readability level compared with those on epilepsy, epileptic syndromes, or seizures (independent t-test p-value: 0.0001). The other readability scales for these Wikipedia articles correspond to a 15th academic grade level (15.1 ± 1.3) and to 17.5 ± 1.5 years of formal education required to easily understand the text on the first reading.

4. Discussion

Some of the most popular websites providing information on epilepsy in the English language have a low level of readability. This might reduce their educational efficacy to increase the knowledge and attitudes of the general population towards epilepsy. With the exception of the educational material “The Basics” provided by UpToDate®, all other websites failed to meet the U.S. National Institutes of Health guidelines recommending a 7th grade level of readability [27] and the 6th to 8th reading level suggested by the Institute of Medicine and the U.S. Department of Education [28]. This finding held true regardless of the readability scale used. Furthermore, the readability assessment scales determined that most of the educational material required a 10th grade level needed (i.e., high school level) to comprehend the text. A similar low level of readability was found for Wikipedia articles related to epilepsy and antiepileptic drugs.

A U.S. national survey showed that Wikipedia is far more popular among the well-educated and college-aged users than it is among those with lower education levels. Hence, Wikipedia is more likely to be read and comprehended by people with high academic grade levels [29]. Several reasons might, however, explain the high popularity of Wikipedia despite its relatively low readability levels [29]. First, Wikipedia is available for free, and it is easily accessible. Second, Wikipedia is very exhaustive as it covers an extensive amount of material. Third, many keyword queries on search engines redirect to Wikipedia's related articles; for instance, Wikipedia receives over half of its traffic from Google's search page [29]. Finally, Wikipedia is felt to be very convenient for those users who use the Internet to find information quickly. This convenience of using sites is likely to represent a major determinant of online searches for scientific information. Results of a U.S. national survey showed that “convenience mattered to 71% of those

Download English Version:

<https://daneshyari.com/en/article/6011550>

Download Persian Version:

<https://daneshyari.com/article/6011550>

[Daneshyari.com](https://daneshyari.com)