

Quality and Readability of Noise Induced Hearing Loss Websites in English and Spanish

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Abstract

Objective: The objective of this study was to assess the quality and readability of noise induced hearing loss (NIHL) information from both English and Spanish websites.

Design: The term "prevention of hearing loss caused by noise" was entered into four widely used search engines. We retrieved data from the top 50 English and top 50 Spanish websites. The assessment of quality was based on both the DISCERN criteria and the presence of a Health on the Net Code (HONCode) certification. Additionally, we measured readability by computing the Flesch Reading Ease Score for English and applying the Fernandez-Huerta Formula for Spanish.

Results: 36 English websites and 32 Spanish websites met the inclusion criteria. English websites had significantly lower readability (average=56.3, SD=11.2) than Spanish websites (average=61.8, SD=5.3) (p<0.05). Spanish websites (average=37, SD=8.4) were also significantly higher quality than English websites (average=25.1, SD=10.1). Just 6 of 35 English websites (17%) and 6 of 32 Spanish websites (19%) were HONCode Certified

Conclusion: English and Spanish websites offering information about NIHL tend to be written above recommended 6th-grade reading level set by the American Medical Association. Given the prevalence of NIHL the need for easily readable, quality information is critical.

Introduction

Low health literacy is associated with poorer health outcomes¹, and the internet has become a vital source of health information.² The American Medical Association recommends materials be written at a sixth-grade reading level to bridge the health literacy gap.³ Despite the popularity of online resources for NIHL education, knowledge gaps persist, necessitating accurate and accessible information.

Noise-induced hearing loss is a prevalent and preventable health concern. Accessible and reliable online health information is crucial for patients seeking guidance on NIHL prevention. However, the quality and readability of such information remain at unacceptable levels.

By comprehensively assessing the quality and readability of online information for English websites and Spanish websites about NIHL prevention, this study aims to address knowledge gaps and improve the accessibility and understanding of resources for patients wanting to prevent noise-induced hearing loss.

Methods and Materials

A search was conducted using Google, Bing, Yahoo, and DuckDuckGo to find the top 50 websites related to "noise-induced hearing loss prevention." Websites were included if they provided information about hearing loss prevention, the use of hearing protection, or obtaining hearing protection. Conversely, websites featuring forums, message boards, provider-focused content, journal articles, duplicates, and primarily photo-based content were excluded from the analysis.

To assess readability, the Flesch Reading Ease Score (FRES) was used for English websites and the Fernandez-Huerta Formula (FHF) for Spanish websites. These scoring systems involve calculating the average syllables per word and average words per sentence. FRES and FHF score ranges correspond to different reading levels (Table 1). Expert evaluation of each website was conducted using the DISCERN criteria, a validated tool for evaluating online health information quality (Figure 1). The resulting data were analyzed using the student's t-test and the Mann-Whitney U test.

Results

A total of 36 English and 32 Spanish websites met inclusion criteria. For English resources, there were twenty-two Health Information, eight Academic, four Government, and three Medical Society websites. The Spanish websites were two Academic, nineteen Health Information, two Government, and seven Clinical Practice websites.

Readability: The average FRES for English websites was 56.34 (SD=11.17), with a minimum score of 25.6, and a maximum score of 74.7. The average FHF score for Spanish websites was 61.8 (SD=5.33), with a minimum score of 51.27, and a maximum score of 71.0. The average scores corresponded to a tenth- to twelfth-grade reading level.

Quality: The average DISCERN score for the English websites was 25.1 (SD=10.11). The average DISCERN score for the Spanish websites was 37.0 (SD=8.4) (Figure 2). The Spanish websites were significantly higher quality than English websites. A total of 6 English websites (17%) and 4 Spanish websites (19%) were HONCode certified. DISCERN scores were significantly higher among non-HONCode certified sites in Spanish (Figure 3).

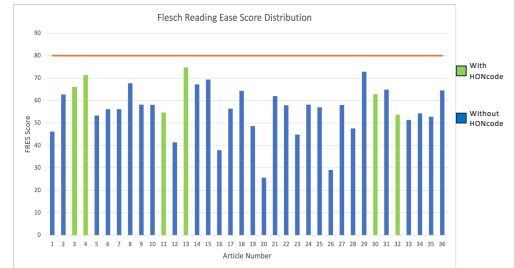


Figure 3. FRES Score Distribution for HONCode certified websites compared to non-HONCode certified websites.

Discussion

The prevalence of technology in healthcare has led patients to rely on the internet as a major source of information, including for hearing loss prevention. However, our study found that both English and Spanish websites exceeded the sixth-grade reading level recommended by the AMA, indicating complexity beyond patient comprehension. This highlights the need for access to easily understandable and comprehensive healthcare information online.

Access to insurance remains a barrier to obtaining preventive hearing healthcare advice⁴, thus patients require reliable online information to make informed decisions. The deficiencies in the evaluated websites emphasize the importance of providing evidence-based information with comprehensive coverage of risks and benefits regarding hearing protection. Future research should explore patient perceptions and establish a multilingual database of reliable noise induced hearing loss prevention information for patients.

In conclusion, it is crucial to provide patients with accessible and accurate information, written at appropriate reading levels, to improve their understanding and decision-making in preventative healthcare.

Conclusions

This study revealed that the English and Spanish websites examined were written at a significantly higher reading level than the recommended sixth-grade standard set by the AMA for healthcare resources, as indicated by the FRES and FHF scores exceeding 80. This suggests that the commonly accessible online resources may not be easily comprehensible to the general population. Additionally, the lack of consistent quality among these resources hinders patients' ability to make informed decisions about their hearing healthcare. These results emphasize the significance of delivering informative, accurate, and readable materials to patients who increasingly rely on online resources for healthcare information.

Score	Grade Level
90-100	5th grade
80-90	6th grade
70-80	7th grade
60-70	8th and 9th grade
50-60	10th-12th grade
40-50	College
30-40	College graduate
20-30	Professional degree

Table 1. Flesch Reading Score and Fernandez Huerta Formula Correlation to Reading Grade-Level

Question	What is investigated?
1	Are the aims clear?
2	Does it achieve its aims?
3	Is it relevant?
4	Is it clear what sources of information were used to compile the publication (other than the author or producer)?
5	Is it clear when the information used or reported in the publication was produced?
6	Is it balanced and unbiased?
7	Does it provide details of additional sources of support and information?
8	Does it refer to areas of uncertainty?
9	Question 9: Does it describe how each treatment works?
10	Question 10: Does it describe the benefits of each treatment?
11	Does it describe the risks of each treatment?
12	Does it describe what would happen if no treatment is used?
13	Does it describe how the treatment choices affect overall quality of life?
14	Is it clear that there may be more than one possible treatment choice?
15	Does it provide support for shared decision-making?
16	Based on the answers to all of the above questions, rate the overall quality of the publication as a source of information about treatment choices?

Figure 1. DISCERN Criteria.

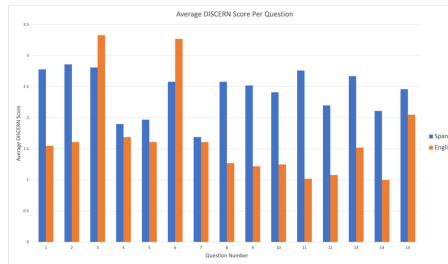


Figure 2. Average DISCERN Score Per Question.

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Disclosures

None

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