A Patient-Centered Approach to Analyzing the Quality, Credibility, and Readability of Online Patient Educational Materials in Spanish on Pediatric Scoliosis

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INTRODUCTION:
Ethnic, racial, and socioeconomic disparities have been well-documented across multiple areas of orthopedics, including scoliosis in children and adolescents. For the Hispanic/Latino population in particular, Spanish-speaking patients and families face additional barriers to care in both physician-patient language concordance and access to linguistically and culturally appropriate patient education materials. Given the well-documented presence of a large Spanish-speaking community in the U.S. and the ongoing healthcare disparities and language barriers they face, there is a crucial need to explore the resources that these patients may readily access on the Internet. This study aims to build on the existing literature by providing an updated and extended analysis of the quality, credibility, and readability of online Spanish-language patient educational materials for scoliosis in children and adolescents. A patient-centered approach was prioritized by analyzing online sources that Spanish-speaking patients are likely to interact with when searching for information on the condition.
METHODS:
The methodology used by a previous study analyzing Spanish-language online patient educational materials for knee arthroplasty was adapted to assess the quality, credibility, and readability of online patient educational materials for pediatric scoliosis. A search for the top 50 results of “escoliosis en los niños” [scoliosis in children] was conducted across the search engines Google, Yahoo, and Bing. Sources were screened for duplicates, and two reviews were conducted. The first review assessed for inclusion/exclusion criteria, and the second evaluated for relevance to the topic. The sources were then categorized (Physician/Community Hospital, University/Academic, or Patient Blog/Other) and assessed with the Journal of American Medical Association (JAMA) Benchmark Criteria for source credibility; with the Brief DISCERN questionnaire for quality; and with the Fernández-Huerta Index for readability. Quality, credibility, and readability scores were compared among website sources using Wilcoxon rank-sum tests.
RESULTS:
A total of 61 unique websites were included. The majority of websites included were Physician/Community Hospital (64%), followed by Industry (20%) and News (8%) websites. The median readability score was 63.0, with an interquartile range of 59.8 to 66.1 (8th to 9th grade reading level). No websites achieved a <6th grade level, the recommended reading level for patient education materials. The median JAMA Benchmark score (scored out of 4) was 2 (IQR 1-3), with only 4 (7%) websites meeting all four criteria. The median Brief DISCERN score (scored out of 30) was 14 (IQR 11-18), with only 36% meeting the threshold >16 for adequate quality. When broken down by website source, there were no differences in quality, credibility, or readability scores between the two most common categories (Physician/Community Hospital and Industry, $p>0.05$).
DISCUSSION AND CONCLUSION:
The analysis of 61 online Spanish-language patient educational materials on pediatric scoliosis revealed an average readability level (Fernández-Huerta Index) between 8th and 9th grade, an average credibility score (JAMA Benchmark Criteria) of 2, and an average quality score (Brief DISCERN) of 14. Similar to existing studies, these scores indicate a lower than recommended standard, especially for patients with limited health literacy, among pediatric scoliosis resources that Spanish-speaking patients are most likely to access via online search engines. The lack of statistical significance in quality, credibility, and readability scores between sources categorized as Physician/Community Hospital and Industry also suggests a need for increased awareness among health professionals and healthcare organizations to create credible, transparent, and readable content for pediatric scoliosis in Spanish. These results highlight how using a patient-centered approach in research on health literacy is fundamental for healthcare providers to improve their understanding of gaps in educational resources Spanish-speaking patients may encounter. By collaborating with health educators or community health workers throughout the production of health education materials, health professionals and healthcare organizations can tailor these resources to better meet Spanish-speaking patients’ needs.

Table 2. Comparisons of Quality, Credibility, and Readability by Website Information Source

Variable	Physician/Community Hospital (n=39), Median (IQR)	Industry (n=12), Median (IQR)	P-Value	News (n=5), Median (IQR)	Patient Blog/Other (n=3), Median (IQR)	University/Academic (n=2), Median (IQR)
Fernández Huerta Readability Index Score	62.5 (59.7-66.8)	63.2 (60.9-64.4)	0.89	65.8 (66.1-65.7)	64.7 (64.1-71.4)	60.6 (60.0-61.2)
JAMA Benchmark Score	2 (1-2)	2 (1-3)	0.68	2 (2-2)	3 (2-3)	2 (2-3)
Brief DISCERN Score	13 (12-17)	13 (9-19)	0.95	14 (12-17)	28 (20-29)	19 (14-23)

Table 1. Sources, Quality, Credibility, and Readability of Spanish-Language Patient Education Websites

Variable	Number (%)
Website Source	
Physician/Community Hospital	39 (63.9)
Industry	12 (19.7)
News	5 (8.2)
Patient Blog/Other	3 (4.9)
University/Academic	2 (3.3)
Fernández Huerta Readability Index Score	
Total Score (Median and IQR)	**63.0 (59.8-66.1)**
7th Grade Reading Level	5 (8.2)
8th to 9th Grade reading Level	40 (65.6)
10th to 12th Grade Reading Level	14 (23.0)
College	2 (3.3)
JAMA Benchmark Total Score	
Total Score (Median and IQR)	**2 (1-2)**
Authorship (Yes)	23.5 (38.5)
Disclosure (Yes)	49 (80.3)
Attribution (Yes)	24 (39.3)
Currency (Yes)	23 (37.7)
Brief DISCERN	
Total Score (Median and IQR)	**14 (11-18)**
Source of Information (Median and IQR)	1 (1-4)
Timing of Information (Median and IQR)	3 (1-5)
Description of Treatments (Median and IQR)	3 (2-5)
Benefits of Treatments (Median and IQR)	3 (2-4)
Risks of Treatments (Median and IQR)	1 (1-1)
Effect of Treatment on Quality of Life (Median and IQR)	2 (1-4)
Good Quality (>16)	22 (36.1)