

Evaluating the Readability, Quality, and Reliability of Online Patient Education Materials on Peripheral Nerve Blocks

Nivetha Srinivasan MD, Alejandro Hallo-Carrasco MD, Aditi Master MD, Jean D. Eloy MD

Rutgers New Jersey Medical School

INTRODUCTION

- The American Medical Association (AMA) recommends readability of patient education materials (PEMs) should not exceed a 6th-grade reading level
- GOALS:**
 - Assess the readability, quality, and reliability of online PEMs on peripheral nerve blocks (PNBs)
 - Compare PEMs produced by academic versus private institutions.

METHODS

PEM SELECTION

- 55 websites were identified from the top 5 pages of Google and Bing for the term “peripheral nerve block.”
- Exclusion Criteria:** Insurance-related documents or journal articles aimed at healthcare professionals

ASSESSMENT TOOLS

- Readability:** Gunning Fog (GFOG), Flesch–Kincaid Grade Level (FKGL), Flesch Reading Ease Score (FRES), and Simple Measure of Gobbledygook (SMOG)
- Quality:** DISCERN tool
- Reliability:** Journal of the American Medical Association (JAMA) benchmark criteria (Table 1).

STATISTICS

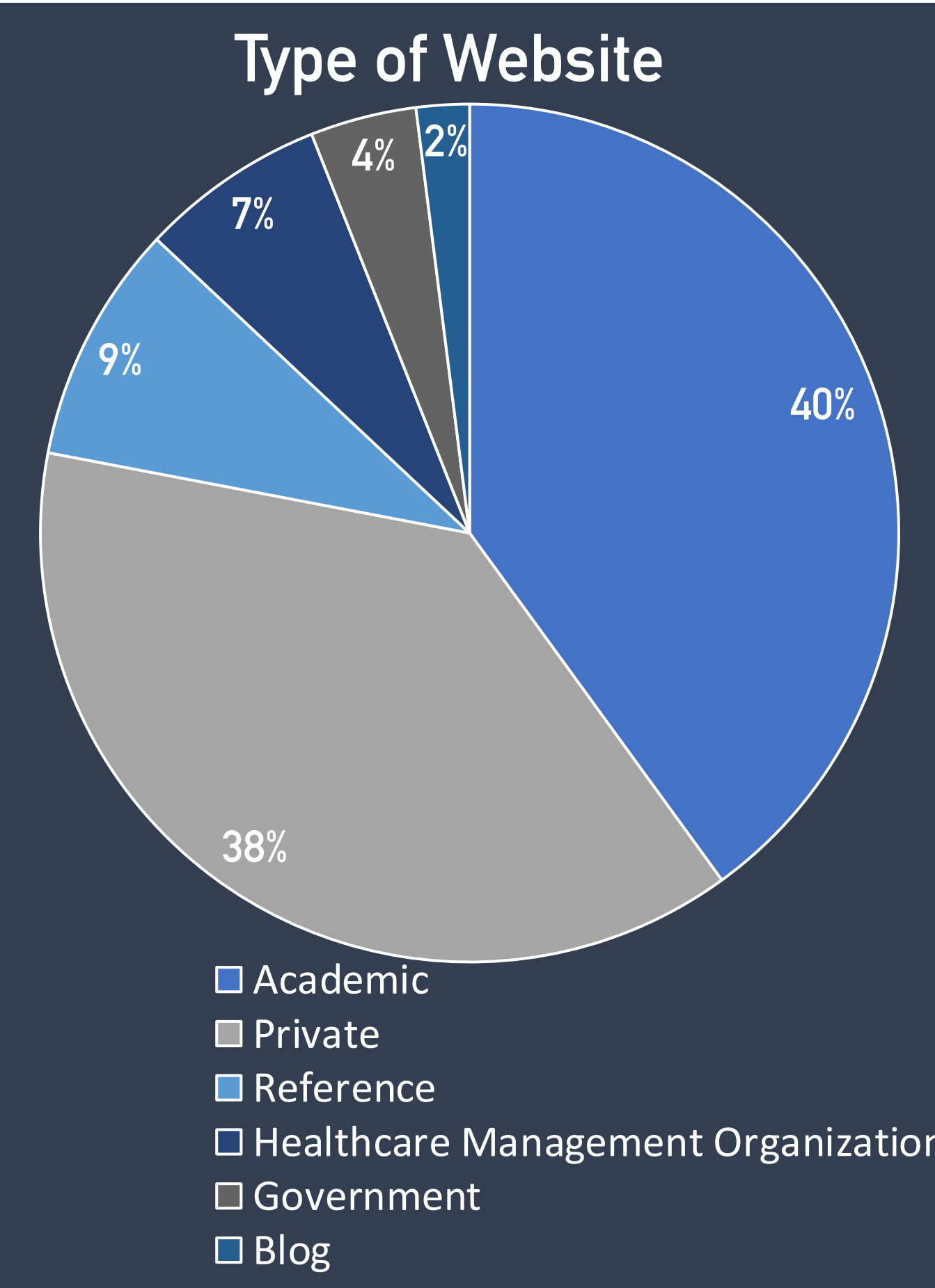
- Mann-Whitney U** for readability, quality, and reliability scores
- Chi-Square** to compare PEMs from academic and private institutions regarding mention of general risks, local anesthetic systemic toxicity (LAST), types of PNBs, duration of block, and video inclusion

Table 1. DISCERN and JAMA Benchmark Score Interpretation			
DISCERN Score	Interpretation	JAMA Benchmark Score	Interpretation
64-80	Excellent Quality	4	High Reliability
52-63	Good Quality	3	Moderate Reliability
41-51	Fair Quality	2	Moderate Reliability
30-40	Poor Quality	1	Low Reliability
16-29	Very Poor Quality	0	Low Reliability

Table 2. Readability, Quality, and Reliability of Online PEMs from Academic and Private Institutions				
Assessment		Academic	Private	p-value
Readability	Gunning Fog	9.83 ± 1.48	12.56 ± 2.22	< 0.01
	Flesch Kincaid Grade Level	7.39 ± 1.85	10.23 ± 2.49	< 0.01
	Flesch Kincaid Reading Ease	66.91 ± 10.04	49.90 ± 12.43	< 0.01
	Simple Measure of Gobbledygook	7.98 ± 1.43	10.16 ± 2.05	< 0.01
Quality	DISCERN	52.41 ± 9.20	48.57 ± 8.27	0.21
Reliability	JAMA	1.86 ± 0.99	0.86 ± 1.01	< 0.01

Table 3. Topics Covered by Online PEMs				
Topics	Overall N(%)	Academic N(%)	Private N(%)	Academic vs. Private Institutions p-value
General Risks	42 (76%)	20 (91%)	11 (52%)	< 0.01
LAST	7 (13%)	3 (14%)	0 (0%)	0.08
Types of Blocks	27 (49%)	4 (18%)	10 (48%)	0.08
Duration of Blocks	26 (47%)	13 (59%)	8 (38%)	0.17
Videos	9 (16%)	4 (18%)	1 (5%)	0.17

ON AVERAGE, ONLINE PATIENT EDUCATION MATERIALS ON PERIPHERAL NERVE BLOCKS EXCEED THE RECOMMENDED 6TH GRADE READING LEVEL BY THE AMA AND DEMONSTRATE LOW RELIABILITY.



RESULTS

- Mean SMOG and FKGL were 9.39 ± 2.74 and 9.32 ± 3.83 , representing a **9th-grade reading level**
- Mean FRES and GFOG were 57 ± 16.56 and 11.49 ± 2.80 , suggesting **fairly difficult reading at the 11th grade level**.
- Mean DISCERN score was 51.47 ± 8.99 , indicating **fair to good quality of PEMs**
- Mean JAMA benchmark score was 1.56 ± 1.26 , indicating **low reliability** (Table 1).
- 10 websites had the same standardized information created by a singular healthcare education organization.
 - Readability: 8th-grade level as per SMOG and FKGL and fairly easy reading as per FRES and GFOG
 - Quality: Fair
 - Reliability: Moderate
- Online PEMs from **private institutions had significantly lower reliability and higher reading levels than PEMs from academic institutions** ($p < 0.01$, Table 2).
- There was a significantly higher number of online PEMs from academic institutions that mentioned risks than from private institutions (Table 3).

DISCUSSION

- On average, online PEMs about PNBs, especially those by private institutions, have a readability level that exceeds the 6th-grade level recommended by the AMA [4].
- Overall, PEMs demonstrated low reliability and fair quality, with room for improvement by inclusion of references, authorship, and dates of recent updates.
- Websites addressing PNBs should create content that is reliable and tailored to the public’s educational level to address gaps in patient knowledge.

REFERENCES
Kumar G, Howard SK, Kou A, Kim TE, Butwick AJ, Mariano ER. Availability and Readability of Online Patient Education Materials Regarding Regional Anesthesia Techniques for Perioperative Pain Management. Pain Med. 2017 Oct 1;18(10):2027-2032. doi: 10.1093/pm/pnw179.
Gunduz ME, Matis GK, Ozduran E, Hanci V. Evaluating the Readability, Quality, and Reliability of Online Patient Education Materials on Spinal Cord Stimulation. Turk Neurosurg. 2024;34(4):588-599. doi: 10.5137/1019-5149.JTN.42973-22.3.
Miller T, Hosseinzadeh A, Thordarson T, Kalimullina T, Samejima S, Shackleton C, Malik R, Calderón-Juárez M, Sachdeva R, Krassioukov A. Web-Based Information on Spinal Cord Stimulation: Qualitative Assessment of Publicly Accessible Online Resources. Jmir Public Health Surveill. 2024 Feb 23;10:e50031. doi: 10.2196/50031.
Weiss BD. 2003. Health Literacy: A Manual for Clinicians. Chicago, IL: American Medical Association Foundation.