ANALYZING THE READABILITY OF ONLINE UROGYNECOLOGIC PATIENT INFORMATION

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Introduction

Internet use is approaching ubiquity in American society, and patients are increasingly using the Internet as their first source of information when they have health-related questions. The Pew Research Center recently reported that 88% of Americans use the Internet and a 2015 study by Myers and colleagues reported similar numbers for a geographic subset of the urogynecology population with usage rates of 93.8% and 66.3% for patients less than and greater than age 65 years, respectively.[1,2]

Furthermore, 80% of Internet users search for health information online one in 20 Google searches are for health-related information.[3,4] Google has long dominated the search engine market processing approximately 40,000 search queries every second.[5,6]

This is a descriptive study of the most common Google search keywords with the primary aim of assessing the readability scores for queries related to pelvic organ prolapse (POP), bladder control issues (BIC), and bowel control issues (BoC). We hypothesized that online urogynecologic material generated by keyword searches would be above the eighth grade reading level regardless of keyword group (POP, BIC, BoC).

The primary outcome was readability as determined by major readability formulae compared between disease groups.

We sought to describe the readability of websites arising from the most common Google search terms related to pelvic organ prolapse, bladder control, and bowel control.

Methods

We used the free Google AdWords Keyword Planner to generate a relevant list of keywords used in Google searches. Three patient education URLs from the VoicesForPFD.org website were used as "seed" pages. Keywords and estimated monthly searches generated from these three URLs were placed in keyword groups according to the seed page that generated them: bladder control (BIC), bowel control (BoC), and pelvic organ prolapse (POP). Irrelevant keywords and those with fewer than 100 estimated searches per month were excluded (Figure 1).

We programatically searched Google for each of the keywords and saved the top 100 results of each search for analysis. Each unique search result was categorized according to its top-level domain (TLD) as com, edu, gov, net, or org.

For the top 20 results of each keyword search we extracted and analyzed the text for readability using four major readability formulae: Dale-Chall, Gunning-Fog, Simple Measure of Gobbledygook, and Flesch-Kincaid Grade Level. The scores were summarized using means and standard deviations and compared using one-way ANOVA.

For a complete list of references, summary statistics, and to review a list of top websites and search keywords in each category, visit the website below (or scan the QR code to the right using your smartphone).

http://bit.ly/fpmrs_readability

Figure 1.
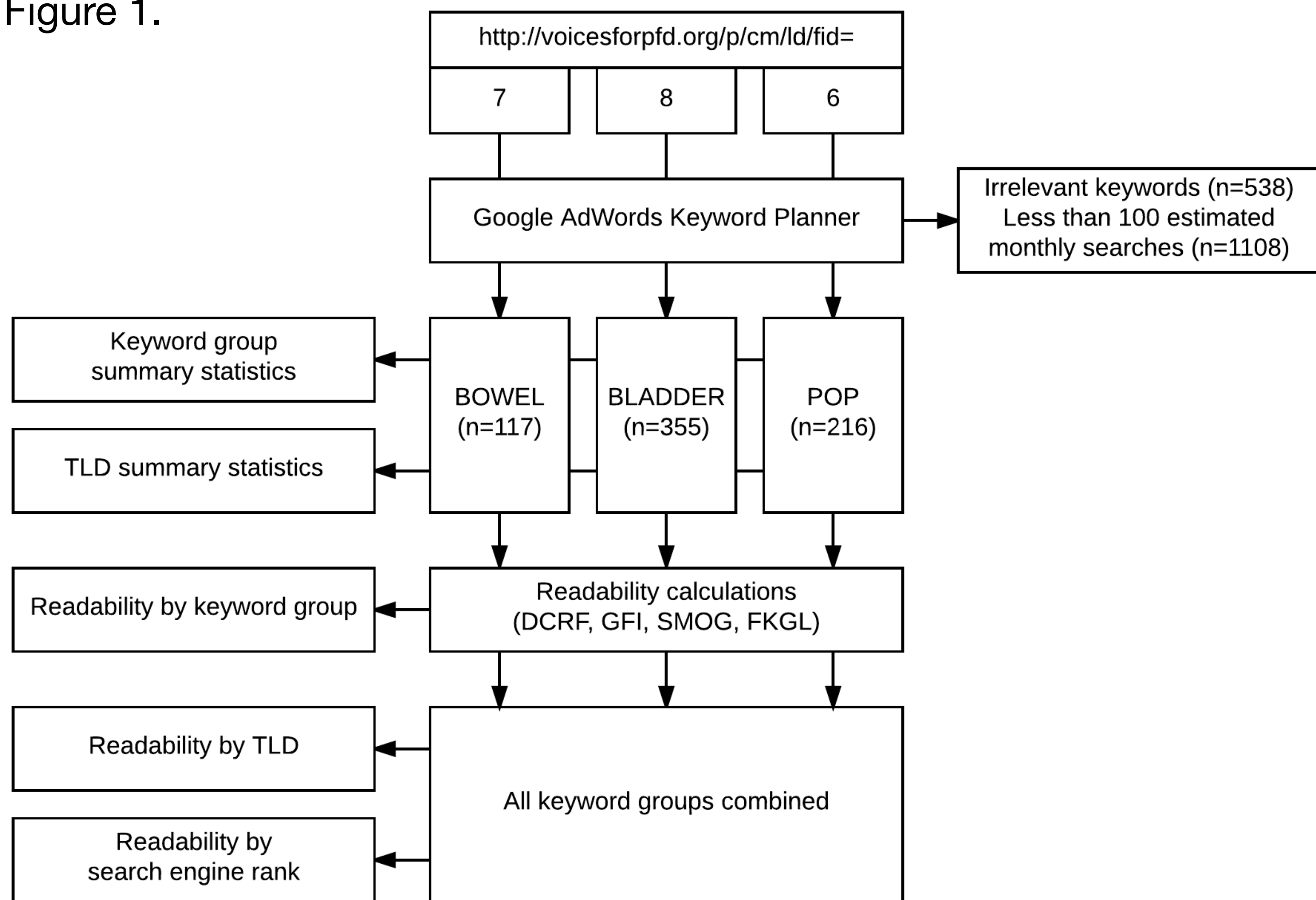
Results

A total of 688 keywords (355 Bladder, 216 POP, and 117 Bowel) were generated and resulted in an estimated 1,813,580 monthly searches (876,740 Bladder, 393,520 POP, and 543,320 Bowel).

Thirty five thousand five hundred search results produced 11,192 unique URLs (31.5%) in the BIC group, 21,600 results produced 5,238 unique URLs (24.6%) in the POP group, and 11,700 results produced 5,174 unique URLs (44.2%) in the BoC group.

Comparison of the four readability formulas using Spearman's correlation revealed the SMOG index to be the most reliable due to its high correlation with the other formulae and the lowest proportion of extreme outliers.

We evaluated 2,731 unique websites and 2,334 (85%) of these had a SMOG score at or above an eighth grade reading level. The mean SMOG score was 9.7 ± 2.1 where one point equals one grade level. Websites in the Bladder keyword group had statistically higher SMOG scores than those in the Bowel (p = 0.0253) and POP (p < 0.0001) groups with means of 9.9 ± 2.0, 9.6 ± 2.1, and 9.4 ± 2.0, respectively, though this difference is not likely clinically significant. (Figure 2). Likewise, websites ending in com and org had lower mean SMOG scores than those ending in edu, gov, and net with means of 9.8 ± 2.3, 9.4 ± 2.0, 10.0 ± 1.8, 10.2 ± 2.3, and 10.2 ± 1.4, respectively.

Figure 2.
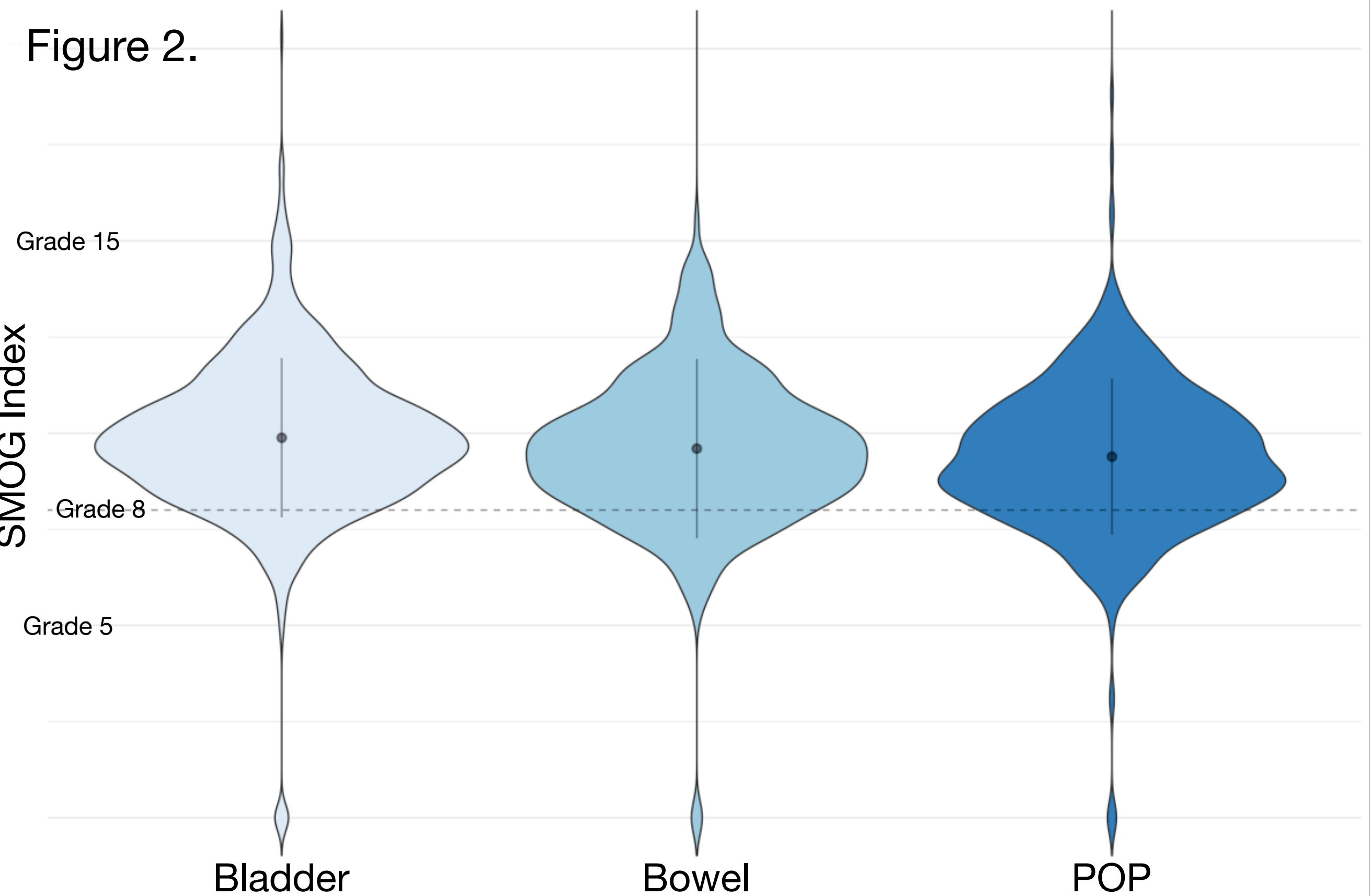
Conclusion

As clinicians increase their online presence, knowledge of readability metrics and recommendations is vital. Attention to these components of writing and content creation allows us to educate patients in order to develop the relationships required for shared decision making.