

Carpal Tunnel Surgery: Can Patients Read, Understand, and Act on Online Educational Resources?

Burke Gao¹, Mary K Skalitzky, Alan G Shamrock², Joseph A Buckwalter³

¹University of Iowa, ²Hospital For Special Surgery, ³University of Iowa Hospital

INTRODUCTION: Patients often access online resources to educate themselves prior to undergoing elective surgery such as carpal tunnel release (CTR). In order to be fully understood by the average adult American, online health information must be written at an elementary school reading level. It was hypothesized that currently available online resources regarding CTR would score poorly on objective measures of readability (syntax reading grade-level), understandability (ability to process key messages), and actionability (providing actions the reader may take).

METHODS: Patient education materials were identified using two independent online searches (Google.com) using the term Carpal Tunnel Surgery. From the top 50 search results, articles regarding patient information were included if directed at educating patients regarding CTR. News articles, non-text material (video), research manuscripts, industry websites, and articles not related to CTR were excluded. The readability of included articles was quantified using the Flesch-Kincaid Grade Level Index (Table 1). The Patient Education Materials Assessment Tool (PEMAT) was used to assess actionability and understandability using a 0-100% scale for both measures of interest (Figure 1). Spearman's correlation coefficient was utilized to examine the relationship between a website's average Google search rank (from first to last) and its readability, understandability, and actionability. Statistical significance was defined as $p < 0.05$.

RESULTS: Thirty-nine websites met study inclusion criteria. The mean Flesch-Kincaid reading ease converted grade level was 9.84 ± 2.54 , with no websites $\leq 6^{\text{th}}$ grade reading level (Table 1). Readability was not associated with Google search rank order (lowest $p=0.25$). Mean understandability and actionability scores were $58.57\% \pm 14.88$ and $25.64\% \pm 24.31$, respectively. Among understandability scoring criteria, no articles included information summaries and only 11 (28.2%) utilized visual aids. Among actionability categories, 22 websites (56.4%) identified at least one action to be taken for readers, but only 8 (36.4%) provided explicit, easy to understand steps. Neither understandability scores ($\rho: -0.215$; $p=0.189$) or actionability scores ($\rho: -0.088$; $p=0.596$) were associated with Google search rank.

DISCUSSION AND CONCLUSION:

CTR online education materials scored poorly with respect to readability, understandability, and actionability. There was also no association between readability, understandability, and actionability with Google search rank order. In the era of shared decision making, future efforts should be made by hand specialists to improve the readability of online patient resources.

Flesch-Kincaid Grade Level Index			
Score	School Level	Interpretation	Number of Websites
100-90	5th Grade	Easy to read and understand	0
90-80	6th Grade	Easy for conversational English consumers	0
80-70	7th Grade	Fairly easy to read	2
70-60	8th/9th Grade	Understood by most 13-15-year-old age range	7
60-50	10th/12th Grade	Fairly difficult to read	17
50-30	College	Difficult to read	10
30-0	College Graduate	Very difficult to read (University graduate level)	0