



Readability Assessment of Internet-Based Patient Education Materials Related to Pituitary Tumors

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Introduction

The Internet has become a primary and ubiquitous information source for patient education material (PEM). However, the information provided may not be appropriate for the average patient to comprehend. Various national healthcare organizations have recommended that PEM be written at or below the sixth-grade level. The purpose of this study was to assess the readability of pituitary tumor-related PEMs available on the Internet.

Methods

A total of 51 PEMs on pituitary tumors were downloaded from professional society and clinical practice websites. Analysis of readability was performed using the four different readability indices: Flesch-Kincaid Grade Level (FKGL), Flesch Reading Ease Score (FRES), Simple Measure of Gobbledygook (SMOG), and Gunning Frequency Measure of Gobbledygook (Gunning FOG).

Table 1: FRES Interpretation		
FRE Score	Style Description	Estimated Reading Grade
0-30	Very difficult	College graduate
30-40	Difficult	13 th -16 th grade
40-50	Fairly difficult	10 th and 11 th grade
60-70	Standard	8 th and 9 th grade
70-80	Fairly easy	7 th grade
80-90	Easy	6 th grade
90-100	Very easy	5 th grade
FRE Scores are ranked by style description and estimated reading grade. FRES = Flesch Reading Ease Score*		
*Reprinted with permission from Wilson, M. (2009). "Readability of patient education materials used for low-income populations." Clin Nurs Spec 23(1): 8.		

Results

The average grade level of the PEMs according to the readability indices were the following: FKGL 11.71 (range 7 to 16.4); FRES 40.19 (range 17.3 to 66.5); SMOG 14.56 (range 10.76 to 18.65); and Gunning FOG 14.86 (range 3.93 to 10.87). Only 1 article (1.96%) was written at the recommended sixth-grade level. The vast majority (78.4%) was written above the tenth-grade level. In 3 of the 4 grading scales, there was no significant difference whether the PEM source came from a professional society or clinical practice website.

Table 2: Measures of Central Tendency and Readability Index Scores of Collected Articles					
Sample	Measure of Central Tendency	FKGL	FRES	SMOG GL	Gunning FOG GL
Total	Mean	11.71	40.19	14.56	14.86
	SD	2.27	11.83	1.69	2.48
	Range	7 to 16.4	17.3 to 66.5	10.76 to 18.65	3.93 to 10.87
	95% CI	.62	3.25	.46	.68
Clinical Practice Websites	Mean	12.42	35.69	14.82	15.03
	SD	2.29	11.43	1.63	2.50
	Range	6.1 to 16.4	19.6 to 66.5	12.43 to 16.68	3.93 to 10.87
	95% CI	.70	3.50	.50	.77
Professional Society websites	Mean	10.83	46.47*	14.06	14.18
	SD	2.04	12.00	1.93	2.41
	Range	7 to 13.2	30.9 to 68.4	10.76 to 16.72	5.16 to 9.82
	95% CI	1.27	7.43	1.20	1.49
Measures of central tendency (mean, SD, range, and 95% CI) and the FKGL, FRES, SMOG GL, and Gunning FOG GL were calculated for all samples collectively (Total), for individual clinics/hospitals, and for professional websites. FKGL = Flesch-Kincaid Grade Level, FRES = Flesch Reading Ease Scale, SMOG GL = Simple Measure of Gobbledygook Grade Level, Gunning FOG = Gunning Frequency of Gobbledygook, *statistically significant (P<0.05). Note that for FKGL, SMOG GL, and Gunning FOG GL, values depict actual grade levels.					

Table 3: Clinical Practice and Professional Society PEM Grade Level Summary by FKGL and SMOG				
Grade Level	Clinical Practice (n=41)		Professional Society (n=10)	
	FKGL	SMOG	FKGL	SMOG
4 th -5 th (easy to read)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
6 th -8 th (average difficulty)	2 (4.9%)	0 (0%)	2 (20%)	0 (0%)
9 th -12 th (difficult)	22 (53.7%)	5 (12.2%)	5 (50%)	3 (30%)
>12 th (very difficult)	17 (41.5%)	36 (87.8%)	3 (30%)	7 (70%)
Table 3. The number of clinical practice and professional society PEM articles falling within each grade level, as judged by FKGL and SMOG grade levels individually, are listed, with the total number of samples for each category listed in the top row. FKGL=Flesch-Kincaid Grade Level, SMOG=Simple Measure of Gobbledygook. No statistical significant (p<0.05) difference between FKGL and SMOG scores for clinical practice websites versus professional society websites.				

Conclusions

These findings suggest that online pituitary tumor-related material may be too difficult for comprehension by the majority of the targeted patient population. Keeping the reading level of PEMs at or below the sixth-grade may improve understanding of this disease and its management for pituitary tumor patients.

References

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