



School of Medicine

# Readability of Patient Educational Materials in Otolaryngology

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## ABSTRACT

**Objectives:** According to the United States Department of Health and Human Services (USDHHS), 15-62% of patients used the Internet as a source of health information in 2003; this number has likely grown with increasing reliance on computers in our society. Studies consistently show that the average American adult reads at a 6<sup>th</sup>-8<sup>th</sup> grade reading level; this should be considered when patient materials are developed. The American Academy of Otolaryngology – Head and Neck Surgery (AAO-HNS) provides a wealth of health literature intended to educate and inform patients. This study evaluates the readability of patient educational materials provided by the AAO-HNS.

**Study Design:** Comparative descriptive educational study

**Methods:** Otolaryngology patient educational materials on the "Patient Health Information" section of the AAO-HNS website in all subspecialties, English only, were assessed for readability using the Flesch Reading Ease Scale (FRES) and Flesch-Kincaid Grade Level (FKGL).

**Results:** The AAO-HNS website provides 114 unique pages of patient educational materials. These materials have an average FRES 47.9 (SD 10.8) and average FKGL 10.7 (SD 1.93). Overall 79% fell at a 9<sup>th</sup> grade level or higher while only 21% of the materials provided were in the desired range of a 6<sup>th</sup>-8<sup>th</sup> grade reading level. A one-way ANOVA found no difference between different subspecialties for FRES or FKGL (p>0.05).

**Conclusions:** The majority of patient materials supplied by the AAO-HNS is written above reading levels recommended by the USDHHS. Improving readability to meet USDHHS recommendations would enhance patient comprehension and may increase patient use of these resources.

## INTRODUCTION

As physicians, we have a responsibility to our patients to educate them about their disease process. We must provide them with enough understanding of treatment options to make decisions and provide informed consent. It is our duty to teach them to care for themselves on a daily basis, whether for the duration of a post operative course or while undergoing medical or conservative management.

While physicians are educators during office visits, the internet serves as a supplemental resource after hours. The American Academy of Otolaryngology – Head and Neck Surgery (AAO-HNS) provides a wealth of health literature covering common otolaryngology health tips, conditions, treatments and procedures.

Studies consistently show that the average adult in the United States reads at a 6<sup>th</sup> to 8<sup>th</sup> grade reading level. Therefore, provided educational materials should reflect the reading comprehension of this population. This study is designed to determine the readability level of patient educational materials provided by the AAO-HNS. It is our hope that the results of this study would contribute to the revision and improvement of patient educational literature.

## METHODS AND MATERIALS

Otolaryngology patient educational materials were identified on the AAO-HNS patient health information website (<http://www.entnet.org/content/patient-health>). Website content was copied and pasted into Microsoft Word for analysis. Only written educational materials in English were included in this study. Visual aids were not included.

Two standardized scoring systems used in education to assess the reading level and accessibility of materials were used to analyze information sheets.

### The Flesch Reading Ease Score (FRES)

$$206.835 - 1.015 \left( \frac{\text{Words}}{\text{Sentences}} \right) - 84.6 \left( \frac{\text{Syllables}}{\text{Words}} \right)$$

Scores range from 0 to 120, with 0 being the most difficult to read. Conversational English for consumers is 80-90.

### The Flesch-Kincaid Grade Level (FKGL)

$$0.39 \left( \frac{\text{Words}}{\text{Sentences}} \right) + 11.8 \left( \frac{\text{Syllables}}{\text{Words}} \right) - 15.59$$

Scores are presented as a United States Grade Level corresponding to years of education.

## RESULTS

114 articles categorized into seven subspecialties of ENT were analyzed for FRES and FKGL levels as a measure of readability. This resulted in an overall average FRES score of  $47.9 \pm 10.8$  and overall average FKGL of  $10.7 \pm 1.93$  (Table 1). 79% of educational materials scored at a 9<sup>th</sup> grade level or higher while only 21% of the materials were in the desired range of a 6<sup>th</sup>-8<sup>th</sup> grade reading level (Figure 1).

### AAO-HNS Patient Material Readability

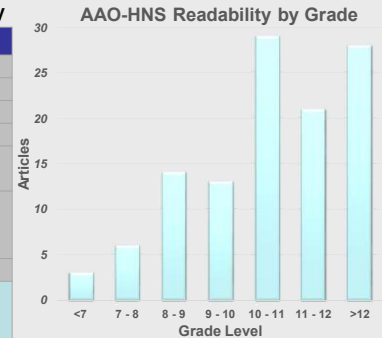
Subject (Articles)	FRES	FKGL
Ears (39)	47.5	10.8
Nose and Mouth (35)	45.3	11.0
Throat (26)	48.1	10.7
Head and Neck (12)	51.5	10.2
Thyroid and Parathyroid (2)	47.9	11.0
Snoring, Sleep Disordered Breathing and Sleep Apnea (6)	40.3	12.0
Kids ENT Health (27)	48.0	10.9
<b>Overall Average</b>	<b>47.9</b>	<b>10.4</b>
<b>± STD</b>	<b>±10.8</b>	<b>±1.50</b>

**Table 1. FRES and FKGL scores of AAO-HNS patient education materials**

Seven subjects with a total of 114 unique articles were analyzed.

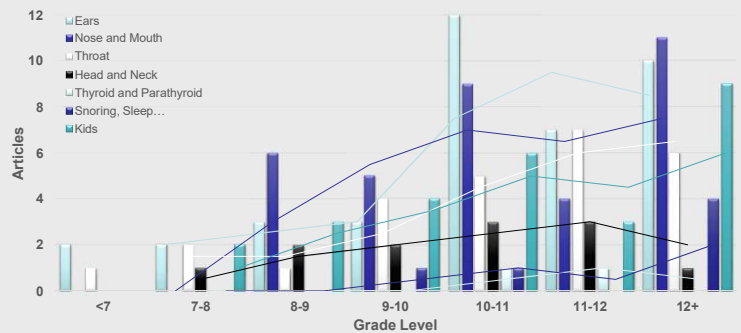
Comparison of readability across subspecialties was performed. A one-way ANOVA found no difference between different subspecialties for FRES or FKGL (p>0.05) (Figure 2).

### AAO-HNS Readability by Grade



**Figure 1. Stratification of AAO-HNS educational materials by grade level**  
21% of educational materials were provided at the 6<sup>th</sup>-8<sup>th</sup> grade reading level.

### AAO-HNS Readability by Subject



**Figure 2. Stratification of AAO-HNS Educational Materials by Grade Level and subspecialty with two period average trend lines demonstrating a subtle difference among specialties which was not statistically significant.**

Within each subspecialty, articles were categorized according to point of care: 1) Health Tips & Prevention; 2) Vaccines; 3) Conditions; 4) Treatment & Procedures; 5) Other. The first four categories were compared. Articles from the Kids Health section were excluded from Pediatrics category due to redundancy. A one-way ANOVA was performed and found these four categories to be different (p<0.05). On post-hoc analysis, Health Tips & Prevention had an increased ease of readability than both Treatment & Procedures and Pediatrics (p<0.05). All other groupings were not statistically significant.

## DISCUSSION

1. The majority of AAO-HNS patient educational materials were written above the recommended reading level of adults in the United States.
2. Readability issues affect educational materials in all subspecialties of ENT.
3. Educational materials in the Health Tips & Prevention section were more accessible than those of the Treatment & Procedures or Pediatrics sections.
4. Visual aids (diagrams and videos) were not evaluated. Visual aids may provide an alternative method to ease the understanding of complex topics.

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