

Readability and Quality of Internet Resources for Hearing Aid Services Across Canada

Kristen Baker, Tori Erickson and Abbigail Goguen

Supervisor: Dr. Rachel Caissie



INTRODUCTION

- Many people use internet-based resources when looking for answers to health-related questions. This leads to an importance for these resources and websites to be of high quality and able to be read and understood by those who access them (Manchaiah et al., 2019).
- Health literacy:
 - Degree to which an individual has the capacity to obtain, communicate, process, and understand basic health information
 - Affected by education level and socioeconomic status
 - Important to consider when making content for health-related internet resources (Sax et al., 2019)
- Research conducted on readability assessments suggest that grade levels of healthcare information are above average reading levels. The average adult reads at a 7th or 8th grade reading level (Azios et al., 2019).
- It is recommended that health material be written at a 5th or 6th grade reading level. This ensures that the material can be understood by a wider or more general audience (Azios et al., 2019; Dueppen et al., 2019).
- With more people using internet-based resources to research hearing aids, it is very important that these materials are of appropriate readability and quality for the targeted audience.

PURPOSE

The purpose of this study was to assess the readability and quality of Internet resources for hearing aid services across Canada.

MATERIALS AND METHODS

Website Evaluation:

- Using the search engine DuckDuckGo, the term, "hearing aids in city, province" was searched for in Halifax, Toronto, and Vancouver.
- Data collection was conducted on August 14, 2020.
- The first 17 websites from each city were sampled. Websites were excluded if they were: hearing directories, news articles, social media pages, ads, Yellow Pages, and Better Business Bureau.
- When the same clinic website was found for different cities, only one occurrence was used.
- As a result, 46 websites from across Canada were evaluated in terms of readability and quality.

Evaluation Tools:

- Similar to previous research, the following 3 measures were used to assess readability: the Flesch Kincaid Grade Level (FKGL), the Flesch Reading Ease Score (FRE), and the Simple Measure of Gobbledygook (SMOG index).
- To assess quality, the Patient Education Materials Assessment Tool (PEMAT) was used.
- The PEMAT evaluates the quality of online materials on two different scales: understandability and actionability (i.e., is the reader provided with ways in which to take action?).
- The PEMAT guide states that it should only be used for printable online materials, but during a preliminary trial, it was found to be effective and relevant to this study.
- Each website was analyzed for its accessibility for aging adults with dexterity issues, such as hand tremors, and visual impairments. The websites were examined for the following design features:
 - Large links or icons are used (larger than the cursor).
 - Drop-down menus are absent.
 - "I'm not a robot" is not required for those websites that offer the option to directly "Book appointment".

Evaluation Procedure:

- Websites were evaluated using the personal laptops of 3 student raters.
- Each website was evaluated independently by 2 raters.
- When scoring the PEMAT and determining accessibility for aging adults, any discrepancies were discussed and agreed upon by both raters.
- An online readability generator (<https://www.webfx.com/tools/read-able/>) was used to measure the FKGL, FRE, and SMOG index for each entire website.
- Interrater agreement was 90.5%.

RESULTS

- Out of the total number of websites, 39 of 46 were clinics that provide hearing aids. Others fell under categories of directories, provincially run health authorities or universities providing audiologic services.
- 3 websites from the original set collected were not included as they were not compatible with the online readability generator used.
- The mean Flesch Reading Ease score was 62.3, with a range from 46.8 - 77.6. This is equivalent to a predicted 8th to 9th grade reading level.
- PEMAT scoring: a mean of 77.8% for understandability, and a mean of 90% for actionability.
- The proportion of websites that are accessible to aging adults with tremors or visual impairments ranged from 34.8% to 97.8%, depending on the website design feature.

PEMAT Scores

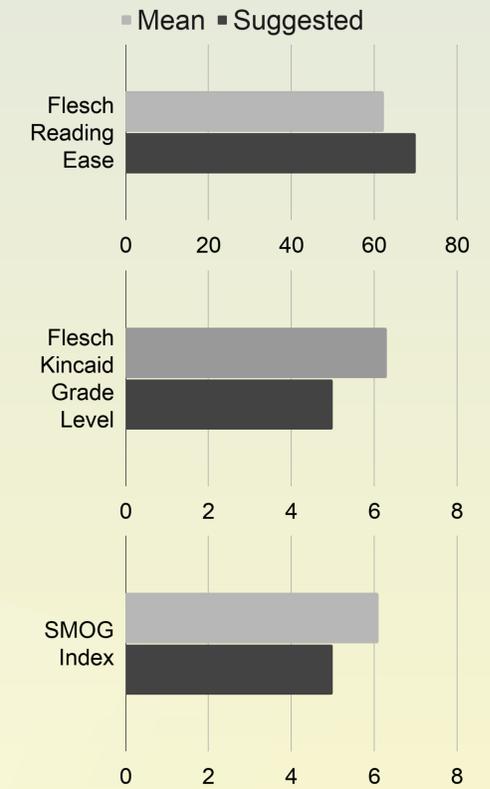
PEMAT Measure	Mean	Range	Standard Deviation
Understandability	77.7%	20-93.75%	12.397
Actionability	90%	40-100%	17.764

Readability Measure Scores

Readability Measure	Mean	Range	Standard Deviation
Flesch Kincaid Grade Level	6.3	3.5 - 9.3	1.295
Flesch Reading Ease	62.3	46.8 - 77.6	7.837
SMOG index	6.1	3.9 - 9.1	1.125

Website accessibility for aging adults

Presence of large links or icons	45/46	97.8%
Absence of drop-down menus	16/46	34.8%
"Book appointment" option available	31/46	67.4%
Absence of 'I am not a robot' feature to book an appointment	22/31	80.0%



DISCUSSION

- FKGL, FRE and SMOG index scores indicate that the readability of the online materials evaluated is above the recommended reading level of Grade 5 to 6.
 - This is consistent with existing literature on the readability of health-related websites.
- Hearing aid manufacturer websites were not included in this study. Previous research on the readability of these websites showed poorer readability scores than what was observed in this study. This may be because a greater amount of technical information might be included in manufacturers' websites.
- PEMAT scoring showed that the majority of websites have a fairly high level of understandability and actionability.
- While this finding is promising, these scores could be improved so that a wider audience can effectively access websites about hearing aid services.
- The majority of websites use large buttons and did not include the 'I am not a robot' feature, however, improvements could be made in accessibility features as most websites use drop-down menus which is not very accessible for adults with hand tremors.
- It is suggested that websites providing hearing aid services reduce the reading level, increase understandability, and improve accessibility for older adults.

Note of Appreciation

We want to thank Dr. Rachel Caissie for her continued input, guidance, and encouragement throughout this project.