

Regular Articles

Readability Evaluations of Veterinary Client Handouts and Implications for Patient Care

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Health literacy and readability are important considerations for veterinary medicine, as veterinarians commonly distribute brochures, leaflets and info-graphics to explain health related issues to pet owners. Educational materials that are poorly comprehended by the intended audience could result in negative, unintended consequences. Thus, the National Institutes of Health (NIH) and the American Medical Association (AMA) have recommended readability levels for text on health information be targeted between the fourth and sixth grade levels to accommodate a highly diverse public. In the context of veterinary medicine, an increased awareness among veterinary professionals and educators regarding readability scores and the tools available to generate “easy-to-read” text would likely benefit client adherence with veterinary recommendations, client satisfaction with their veterinarian, and ultimately, pet health.

Therefore, the goal of this study was to evaluate the readability levels of a sample of popular client handout materials prepared expressly for veterinarians to download and distribute to their pet-owning clients. Results indicate that 9 of 10 client brochures were written above the recommended sixth grade reading level. Recommendations for improving readability are provided.

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Introduction

The Internet is the most popular resource for educational material among members of the general public,^{1,2} with 59%-80% of adults using the Internet to search for health information.³ Although much of the information available can be quite helpful, there remains a risk that information may be misinterpreted due to technical jargon and readability levels that exceed readers' understanding. Educational materials that are poorly comprehended by the intended audience could result in negative, unintended consequences to patient health. To help ensure that health information in Internet resources are understood by the general public, the National Institutes of Health (NIH) and the American Medical Association (AMA) have issued guidelines for ways to create “easy-to-read” text.⁴ Despite these recommendations, health professionals continue to struggle with generating materials at the recommended readability levels.⁵⁻¹²

Readability typically is defined as the ease of comprehension of written material.¹³ Researchers have identified readability level as a key indicator of whether or not target populations will grasp the intended message of written materials. Health literacy, defined as “the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions,”¹⁴ further complicates the issue of readability. A national study on health literacy conducted by the National Assessment of Adult Literacy (NAAL)¹⁴ determined that nearly one-third of Americans have only basic literacy skills, and 14% have less than basic literacy skills. A study by the Partnership for Clear Health Communication highlighted the fact that individuals with low health literacy come from all ages, races, incomes and education levels. This study also reported that Americans from all occupations and lifestyles tend to read at least three grades below the last grade they finished in school.

Because of these realities, the National Institutes and Health (NIH) and the American Medical Association (AMA) have recommended readability levels for text on health information be targeted between the fourth and sixth grade levels to accommodate a highly diverse public.¹⁵⁻¹⁷ Of note, even those individuals with higher health literacy skills still tend to prefer short and simple text.^{18,19}

Health literacy and readability are also important considerations for veterinary medicine, since veterinarians commonly distribute brochures, leaflets and info-graphics to explain health-related issues to pet owners. Some of these flyers are generated “in-house” by individual veterinary professionals, and others are available online for veterinarians to download.^{20,21} Despite the common use of these written materials in veterinary medicine, there has been minimal research published on the issue of readability scores²² and the American Veterinary Medical Association (AVMA) offers no specific, published guidelines for how veterinarians should prepare written client materials.

Although the AVMA does not currently provide guidance on the issues of health literacy and readability, there has been some progress made on these issues in the veterinary education curriculum. In 2011, the North American Veterinary Consortium recognized communication as a core competency in veterinary medicine, resulting in the inclusion of some form of communication instruction and practice at most veterinary schools in North America.²³ Since that time, communication education and training has been incorporated into the curriculum of most veterinary schools in North America. Unfortunately, the time devoted to written communication training for veterinary students is extremely limited. One study revealed veterinary specialists training today's students report difficulty with assessing reading grade level of written text, likely because it was not a part of their training.²² This limitation in the veterinary curriculum is

Table 1
DVM360.com Top 10 Client Handouts of 2017

Rank	Title
#1	Top 10 Human Medications Poisonous to Pets
#2	4 Reasons Why Your Dog Needs a Yearly Heartworm Test
#3	"Is My Dog Playing... or Fighting?"
#4	95% of Fleas in Your House Aren't on Your Pet
#5	How to Win the Barking Dog Battle
#6	An FAQ About Those Horrible Hot Spots
#7	Before You Remove that Tick!
#8	Saying Goodbye to Your Pet: Helping Your Child Understand and Grieve
#9	Create a Tick-Free Zone in Your Backyard
#10	Ear Inflammation and Infection: 5 Facts to Fight the Fiction

significant because written communication in the form of discharge instructions and client educational materials is an extension of medical care from veterinarians to clients. In fact, clients expect to be provided written information to ensure proper patient care.²⁴ An increased awareness among veterinary professionals and educators regarding readability scores and the tools available to generate "easy-to-read" text would likely benefit client adherence with veterinary recommendations, client satisfaction with their veterinarian, and ultimately, pet health. Therefore, the goal of this study was to evaluate the readability levels of a sample of client handout materials prepared expressly for veterinarians to download and distribute to their pet-owning clients. We hypothesized that these veterinary brochures, like many human medical brochures, would be above the reading level guidelines recommended by the NIH and AMA.

Materials and Methods

DVM360.com is a world-leading information resource for veterinarians and veterinary team members with resources that reach over 100,000 veterinary professionals.²⁵ One important feature of the website involves client education, where a number of resources and materials are available for both veterinary professionals and public consumption. In recent years, the "client handout" series has been extremely popular with readers. Client handouts consist of short educational presentations typically prepared by experts in veterinary medicine. Veterinary professionals are encouraged to download the materials and share them with clients. With appealing graphics and a wealth of factual information, veterinarians view these brochures as a great "off the shelf" resource that saves both time and money and assists them with client education.

Recently, DVM360.com published an article noting the 10 most downloaded client handouts published in 2017 (Table 1).²⁰ The list

provided a natural sample of client handouts from the larger population of hundreds of handouts. First, the 10 handouts were downloaded from the site in PDF format. The text from each handout was extracted and then re-entered into a free online readability calculator²⁶ exactly as it appeared in the original handout. Seven readability formulas were used that took into account factors such as the length and number of sentences, number of words, characters and syllables used, and composition statistics including adjectives, nouns, and verb count. Each formula is well-documented in the research literature and experts agree the formulas are highly accurate. A description of each formula can be found on the website.²⁷ An overall consensus measure also was provided by the program and presented as a sum score. It should be noted, however, that the formula used to calculate the overall consensus measure was not provided by the software's owner(s).

Results

Grade level scores were produced for each of the 10 client handouts. A complete breakdown of scores is presented in Table 2. A descriptive statistical summary of scores is presented in Table 3. Of note, the Flesch reading ease score is not presented as a grade level; rather, higher scores (80-100) indicate material that is easier to read, whereas lower scores (0-50) indicate material that is more difficult to read. Results indicate that 9 of 10 client brochures were written above the recommended sixth grade reading level (Table 2).

Discussion

This research evaluated the readability scores of the 10 most downloaded client education brochures from dvm360.com in 2017. Results indicate that the writing in 9 of these brochures was at or above an eighth grade reading level, which considerably exceeds the sixth grade level recommended by the NIH and AMA.⁴ The characteristics of written text that factor into the calculation of readability include sentence length, number of sentences and number of polysyllabic words, among others. Although the weight given to these characteristics varies depending on the readability formula, these features are nonetheless key factors that health professionals should focus on when preparing text such as handouts, brochures and webpages for their target audience. General recommendations for achieving the recommended sixth grade (or below) readability level include writing sentences that are 8-10 words in length, writing paragraphs that are 3-5 sentences long, and limiting the number of polysyllabic words. It should be noted that although each readability formula is well-documented in the research literature, these formulas cannot discern if the text is

Table 2
Readability Scores for Top 10 Handouts in 2017

Handout	Flesch reading ease score	Gunning fog	Flesch-Kincaid grade level	Coleman-Liau index	SMOG index	Automated readability index	Linsear write formula	Overall consensus
#1	44.9	12	10	13	9.3	9.2	7.6	10
#2	54.4	12	9.8	12	9.1	10.7	10.8	11
#3	60.2	12.5	9.3	9	9	9	11.3	9
#4	74.6	9.4	7.5	8	5.7	8.6	9.3	8
#5	54.7	9	8.1	12	7.5	7.8	5.7	8
#6	62.1	12.4	9.2	9	8.9	9.1	11.5	10
#7	81.5	8.4	5.3	6	6	4.8	6.8	6
#8	67.2	11.7	8.7	8	8.2	9.1	11.6	9
#9	74.6	8.7	6.6	9	6.4	7.6	7.8	8
#10	64.6	11.3	7.1	10	8.2	6.4	6.7	8

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