ORIGINAL RESEARCH PAPER

Ophthalomology

ANALYSIS OF RELEVANCE AND ACCURACY OF OPHTHALMOLOGY PATIENT INFORMATION MATERIALS AVAILABLE ONLINE

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ABSTRACT

Background: Patients rely on online materials to learn about their health conditions. It is important that the material provided in the website gives them the correct knowledge. **Methods:** Seventy three items of online patient education materials related to ophthalmology were analysed using the CRAAP (Currency, Relevance, Authority, Accuracy, Purpose) test. **Results:** Mean CRAAP total score of the videos was 8.65 out of a total possible score of 15, which indicates a good quality source of information. However they are not up to the mark to provide patient guidance. **Conclusion:** Most patient education materials are reliable but difficult for the patient to understand. A patient oriented website providing patient information for a range of ophthalmology subspecialties should be written at a level which a common person can understand.

BACKGROUND

It is common that patients use the internet to obtain health related information. They are increasingly relying on online information for medical information. It is found that health related information was accessed online by eight out of ten internet users.[1]

There are many conditions in ophthalmology for which the patient may seek online information. This may happen before consulting the ophthalmologist or after consulting and learning about their eye condition. When a patient searches certain information online, what he understands depends mostly on the quality of information provided by the source. It is important that these materials are from reliable websites.

We conducted this study with an aim to analyse the relevance and accuracy of ophthalmology patient information materials available online.

METHODS

This is a cross sectional study. This study does not involve any ethical issues pertaining to human participants as it only includes online information in public domain. A thorough literature search was done about patient information materials in ophthalmology online. Google was accessed in May 2023 on the Google Chrome browser using search phrases. We used incognito mode so that the search we did was almost similar to patient seeking ophthalmology related information on Google. First hundred items were screened. Only information in English language was considered. Duplicates were removed. Websites intended to teach medical professionals were removed. After applying the exclusion criteria, a total of seventy three items were selected for analysis.

The information were analysed using the CRAAP test. The CRAAP (Currency, Relevance, Authority, Accuracy, and Purpose) test was developed by Sarah Blakeslee and team of librarians at California State University.[2] It is used to measure the reliability of the online content. The CRAAP test is mainly used in academic settings and to evaluate data sources in various studies for research. However it can also be used to check whether the patient education materials are from reliable sources. Each of the five components of the CRAAP test (currency, relevance, authority, accuracy, and purpose), carry a score of 0-3 points. The maximum total score is 15 points. A total score of 0 - 3 points indicate a questionable source of information and is likely to be not reliable. A total score of 4 - 7 points indicates that the information may be reliable, but caution should be used. A score of 8 - 11 indicates a good source of information. A score 12 - 15 points indicate an excellent source of information.

RESULTS

A total of seventy three items related to various ophthalmology conditions were analysed by two investigators. Various topics included cataract, glaucoma, refractive errors, diabetic retinopathy, age related macular degeneration, corneal ulcer and so on. Scoring was done using the CRAAP test. The scores are as shown in table 1. Mean CRAPP total score of the videos was 8.65 out of a total possible score of 15, which indicates a good quality source of information. However they are not up to the mark to provide patient guidance. For example the website provided the information on cataract surgery however the patient would be unable to decide which intra ocular lens he should choose.

Table 1 Currency, Relevance, Authority, Accuracy And Purpose (CRAAP) Test Scoring

Criteria	Mean Score
Currency	1.96
Relevance,	1.41
Authority	1.68
Accuracy	1.43
Purpose	1.81
Total	8.65

DISCUSSION

The demands of patient education materials must match the literacy capacities of the patients who are reading it. Then only health literacy can be promoted. Fortuna et al conducted a study to evaluate the readability (grade level) and suitability (appropriateness) of online information for patients with age related macular degeneration.[3] They sourced 100 items from websites of national organizations providing patient education materials. They used the Flesch-Kincaid Grade Level formula and the Suitability Assessment of Materials instrument to assess the readability and suitability of materials. They found that the mean readability level was 9.3 (range 5.0–16.6). The mean suitability score was 53% (range 18–78%). Only six (6%) achieved the recommended guidelines for readability level and suitability score. So they concluded that the majority of information written was above the recommended readability level, and below the suggested suitability score.

Health literacy can be described as the degree to which individuals have the capacity to obtain, cognitively process and understand health information to make informed health related decisions. It is the best predictor of health outcomes. Readability means the level of the reading skills required to easily comprehend written material. The suitability or the

appropriateness of written information also impacts the comprehension of written health information. There is no consensus as to which formula is best to assess the readability of patient education materials.[3]

The patient may have many doubts regarding causes, imaging, and appropriate treatment choices. Lay people usually search Google seeking information from different websites. However, the content of these widely accessible websites have not be evaluated and checked for evidence based information. A study evaluated online information regarding low back ache[4] After doing a content analysis of a total of 53 websites they found that they were out dated and the treatment options mentioned did not concur with the recent clinical practice guidelines. The Online information lacks representation of the current best research. They suggested that future development of websites must include evidence driven and accurate information.[4]

Patients commonly use the internet to access health information, and it is recommended that patient information is written at an 11-year- old reading level. Crabtree and Lee assessed the readability and quality of online patient education materials for the medical management of open angle glaucoma.[5] They analysed the top 10 relevant Google searches for nine glaucoma medications and three generic searches were analysed for readability and accountability. They used Flesch Reading Ease Score, Flesch-Kincaid Grade Level, Gunning Fog Index and Simple Measure of Gobbledygook Index to assess readability. They concluded that majority of online patient education materials for the medical treatment of glaucoma are written at a level too difficult for the general population and fail to meet accountability standards.[5]

If it is complex and requires a high level of reading comprehension, then patients will find it difficult. Online ophthalmologic materials should be written at an appropriate reading level. A study conducted to assess 339 ophthalmologic online patient education materials on websites of ophthalmologic association websites and to determine whether they are above the reading level assessed level of readability using ten scales.[6] The Flesch Reading Ease test, Flesch-Kincaid Grade Level, Simple Measure of Gobbledygook test, Coleman-Liau Index, Gunning Fog Index, New Fog Count, New Dale-Chall Readability Formula, FORCAST scale, Raygor Readability Estimate Graph, and Fry Readability Graph were used. They concluded that they are written well above the recommended reading level. They recommend revision of these materials so that there will be a greater comprehension among a wider audience.[6]

Websites and social media promise to be a dynamic and cost-effective method to propagate recent scientific evidence to the masses. The health care decisions by the patients may be influenced by health professionals, family, friends, prior experiences, beliefs and online information. Many patients use the internet to search for solutions to their health problems. Erroneous information may lead to wrong decisions by the patients. Hence it is essential to check whether the websites are acting as a reliable source of information to the general public.[4]

It is recommended that patient-oriented literature be written at a fourth- to sixth-grade (9-12 years of age) reading level to assist understanding.[7] A study done to assess the readability of online literature specifically for a range of ophthalmic conditions analysed body text of the top 10 patient-oriented websites for 16 different ophthalmic diagnoses, covering the full range of ophthalmic subspecialties, for readability, source and appropriateness for sight-impaired readers. Four validated readability formulas were used: Flesch Reading Ease Score, Flesch-Kincaid Grade Level, Simple Measure of Gobbledygook and Gunning Fog Index. None of the 160

webpages had readability scores within published guidelines, with 83% assessed as being of "difficult" readability. Of all webpages evaluated, only 34% included facility to adjust text size to assist visually impaired readers.[7]

Patient education materials should be written so that they are understood even by patients with low health literacy. A review article by Williams et al on readability of ophthalmic patient education materials included 13 studies that evaluated a total of 950 educational materials.[8] Among the mean readability scores reported in these studies, the median was 11 (representing an eleventh-grade reading level). Their study revealed that ophthalmic patient education materials are consistently written at a level that is too high for many patients to understand. The ophthalmic patient education materials can be improved to suit patients with low health literacy too.[8]

Some other studies have analysed the online information available for patients in various subspecialties of medical fields using different scores and tests[9-11] Various researchers have used different tests to assess and analyse the suitability of online patient information. The CRAAP (Currency, Relevance, Authority, Accuracy, and Purpose) test was originally developed to measure the reliability of the online content for researchers to see whether they can rely on the website. However in our study we used it to check whether the patient education materials are from reliable sources.

CONCLUSION:

The CRAAP test can be an efficient tool to check the reliability and usefulness of websites providing information and patient education materials in ophthalmology. As per our study, the patient education materials are reliable but difficult for the patient to understand. A patient oriented website providing patient information for a range of ophthalmology subspecialties should be written at a level which a common person can understand. This will have positive impact on patient understanding, empowerment and compliance.

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