Brief Communication

The readability of editorials in popular Indian medical journals

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ABSTRACT

Introduction: The essence of communication is to convey a message, and readability tests have been developed to quantify this aspect of language. There is limited research on the readability tests of journal contents from India. In this study, we performed readability tests on the editorials of four popular Indian medical journals. **Materials and Methods:** The readability tests (Flesch score, Flesch grade, and text statistics) were calculated from the following journals: Indian Journal of Endocrinology and Metabolism (IJEM), Journal of Association of Physicians of India (JAPI), Journal of Indian Medical Association (JIMA), and International Journal of Diabetes in Developing Countries (IJDDC). The editorials published in these journals over the last 2 tears were included in this analysis. **Results:** A total of 64 editorials (*IJEM* – 19, *JAPI* – 18, *JIMA* – 16, *IJDDC* – 11) were analyzed in this study. The mean readability score was (*IJEM* 34.8 ± 9.5; *JAPI* 31.4 ± 11.4; *JIMA* 29.6 ± 10.1; *IJDDC* 26.1 ± 17.7) not different between the journals ($P = 0.2666$). Flesch score was less variable in *IJEM* an d *JIMA* than in *JAPI* and *IJDDC* ($P = 0.0167$). The editorials from *IJEM* and *JAPI* had a lower Flesch grade than the remaining two journals ($P = 0.0253$). The readability score was directly proportional to the sentence count and inversely proportional to the words per sentence ($P < 0.0001$). **Conclusion:** Our results suggest that the editorials from all the medical journals have equal readability scores. The sentence count and words per sentence are important to achieve a high readability score while writing for a journal.

Key words: Editorial, flesch score, India, medical journals, readability test

Introduction

The readability of a document is the ease with which text can be read and understood. It is an indirect measure of the quality of written communication. High readability makes it easy to understand the meaning of the text and induces further reading.[1] Easy reading helps in easy learning, hence written content should be easy to understand. There is an increasing focus on the ease of reading and matching the text to reading skills of the audience.[2] Medical literature is growing enormously, and there is a need to formally assess the readability of the content of the journals.[3] Editors are the most important persons looking at readability indices, because a higher score increases the popularity and circulation of a journal.

Readability indices have been developed to study the ease of reading a text.[4] They are based on the syllables, sentence length, and the number of hard words. Although there are various readability tests, the commonly used ones are the Flesch readability score and Flesch grade.[5] The Flesch readability score (0-100) is based on the average number of syllables per word and words per sentence. The higher the score, easier it is to read the text. The Flesch grade level rates the text on a US school grade level. For example, a grade of 10 indicates that a tenth grader (aged 15-17 year) can understand the document. The Flesch score is inversely related to the Flesch grade level. The Simple Measure of Gobbedly Gook (SMOG) index has been recommended specifically for analyzing the medical documents considering

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their scientific and technical content.[6] The research on readability aspects from India is limited to patient information leaflets and informed consent forms.[7-9] In this study, we analyzed the readability of editorials from four popular medical journals published in India.

Materials and Methods

We selected four popular journals that cover a broad range of specialties and audience. The journals included in the study were the Indian Journal of Endocrinology and Metabolism (IJEM), Journal of Association of Physicians of India (JAPI), Journal of Indian Medical Association (JIMA), and International Journal of Diabetes in Developing Countries (IJDDC). IJEM is the flagship journal of the Endocrinology Society of India and is increasing its circulation and articles by leaps and bounds in the last 2 years.[10] *JAPI* is the official journal of the Association of Physicians of India and is the most widely circulated journal in India.[11] *JIMA* is also one of the oldest medical journals published in India, and it is the official journal of Indian Medical Association. *IJDDC* is the official journal of RSSDI, which is the largest organization of healthcare practitioners and researchers involved in the management of diabetes from Asia.[12] *JAPI* and *JIMA* are primarily meant for physicians and cover all subspecialties of medicine. *IJEM* encompasses endocrinology and diabetes articles, whereas *IJDDC* caters exclusively to all aspects of diabetes. *JAPI* and *JIMA* have been in existence for more than a few decades, whereas the remaining two are relatively new, but rapidly expanding in their popularity and subscription base.

In this preliminary report, we studied the editorials only as they represent the essence of the journal and emerge right from the pen of the editor. The procedure adopted in obtaining the readability indices was as follows: First, a search was undertaken of the online database of each journal's website for all the editorials published between 2011 and 2013. The original research articles, reviews, case reports, and letters to the editor were excluded from the study. Second, these editorials were pasted individually in the html format into the online version of the readability calculator (www.readability-score.com). The references were not included in the copied material and any minor errors resulting from downloading were removed. Third, the Flesch score, Flesch grade, SMOG index, and text characteristics were noted from the results display panel. Fourth, the readability test results were analyzed for further comparison between all four journals.

The primary objective of the study was to assess the Flesch readability score and the secondary objectives were to study the Flesch grade and the correlation between the text characteristics and the Flesch score. Summary data are presented as mean ± standard deviation and a comparison between the groups was done using one-way analysis of variance (ANOVA) test. Spearman's test was used for correlation analyses between Flesch score and text characteristics. *P* values were reported for all statistical tests, and a value of less than 0.05 was considered significant.

Results

A total of 64 editorials were used for final analysis from the four journals (*IJEM* – 19, *JAPI* – 18, *JIMA* – 16, *IJDDC* – 11). The overall mean Flesch score was 31.03 ± 12, Flesch grade was 14.13 ± 2.16, and SMOG index was 12.83 ± 2.1. The details of all the readability tests and the scores is given in Table 1. The observed Flesch scores were not different between the journals ($P = 0.2666$). Flesch score was less variable in *IJEM* and *JIMA* than in *JAPI* and *IJDDC* ($P = 0.0167$). The editorials from *IJEM* and *JAPI* had a lower Flesch grade than the remaining two journals ($P = 0.0253$). The Flesch readability score showed no correlation with character count and word count [Figure 1]. The readability score was directly proportional to the sentence count and inversely proportional to the words per sentence count [Figure 1].

Discussion

Our study showed that the mean Flesch score of all editorials was around 30 in the selected medical journals. This is almost similar to the previous analysis of articles published in reputed journals like British Medical Journal and Annals of Internal Medicine.[13-15] The ideal score should be between 60 and 70, which is very far from practical. The more realistic and achievable target is between 30 and 40 for all medical articles. Our data showed that the Flesch scores were not different between the four journals ($P = 0.2666$), but the Flesch grade varied significantly ($P = 0.0253$). The results between these two tests correlate inversely and text with high reading score should have a lower grade level. The correlation analysis between the Flesch score and Flesch grade level in our data also showed a similar result ($r^2 = -0.9379$, $P < 0.0001$). The tests use the same measures (word length and sentence length), but have different weighing factors, which explains the variation in the observed result.

The Flesch scores range between 0 to 100, and texts with scores >80 were considered easily understandable to children aged up to 12 years. Older students could comprehend passages with a score of around 50, and text with Flesch score up to 30 was best understood by graduates

Table 1: Readability test results of the editorials from the journals including their text characteristics

		IJEM *n*=19	JAPI *n*=18	JIMA *n*=16	IJDDC *n*=11	*P* value
Flesch score	Number	34.8 (9.5)	31.4 (11.4)	29.6 (10.1)	26.1 (17.7)	0.2666
Δ score*	Number	34.4	50.4	36.6	50.4	0.0167
Flesch grade level	Number	13 (2)	13.6 (2.3)	15.2 (2.4)	15.5 (4)	0.0253
SMOG index	Number	12.3 (1.9)	12.3 (1.7)	13.3 (1.6)	13.9 (3.1)	0.0845
Character count	Number	6829 (2018)	4905 (1578)	5148 (1524)	6055 (2152)	0.0087
Word count	Number	1335 (386.7)	944.2 (324.8)	982.1 (299.1)	1172 (403)	0.0050
Sentence count	Number	71.8 (17.9)	53.4 (23.4)	41.4 (13.4)	55.7 (27.1)	0.0006
Words per sentence	Number	18.6 (3)	18.8 (3.7)	24.4 (6.2)	23.6 (6.9)	0.0008

Mean (S.D), Difference between the highest and lowest Flesch score, SMOG: Simple measure of gobbedly gook, IJEM: Indian Journal of Endocrinology and Metabolism, JAPI: Journal of Association of Physicians of India, JIMA: Journal of Indian Medical Association, IJDDC: International Journal of Diabetes in Developing Countries

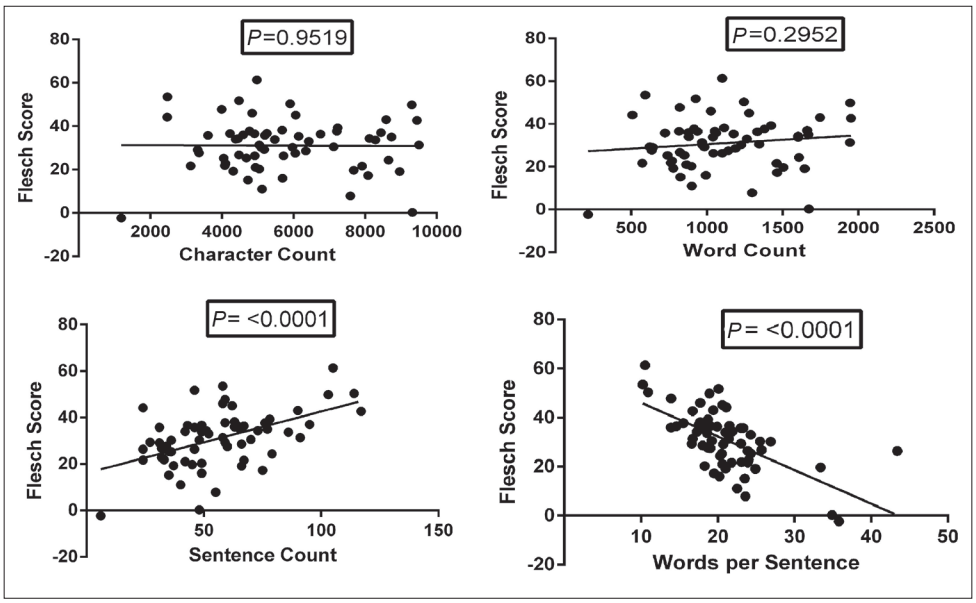

Figure 1: Correlation analyses between Flesch score and text characteristics

and above. Popular English magazines like Reader's Digest has a readability score of about 65 and Time magazine has a score of about 50.[16] Previous report about the readability of research articles from a surgical journal has a mean score of 15.[17] Our data pertain only to the editorials; hence, comparison with the same was not possible. The reassuring fact is that our journals had readability index similar to the reviews published in world famous medical journals. The other heartening observation is that *IJEM* has maintained a high readability score, despite catering to super specialty subject exclusively. Another readability indices offer advantages to the editorial processes. The papers with well-written language and high readability index have a greater chance of being accepted than poorly written paper. The readability score is not significantly improved after the manuscript revision, as shown previously.[18] This is because the editorial staff does not rewrite the entire paper to improve the readability.

Our study has certain implications for the prospective authors: First, check the readability score of the manuscript before submission. The higher the score (at least >30), the better are the chances of acceptance. Second, try to write small sentences in the manuscript. Do not give lots of information in the same sentence and restrict the words per sentence count to <20. Third, a lengthy manuscript is not an issue if all other parameters are well addressed. Our study helps in further refining the editorial processes to identify the problem areas in the text and improve the readability score of an article. The readability index is useful in the final drafting stage before an article is sent for publication. We studied the editorials only, which is a major limiting factor. Other limitations include use of only few journals and a small number of articles selected for this study.

In conclusion, editorials in the popular medical and endocrinology journals from India have a readability score of 30. There is no significant difference between the medicine and endocrinology journals in the readability scores. Appropriate sentence count and words per sentence count are important to achieve a high readability score while writing for a journal. The authors are advised to prepare the manuscripts accordingly with high readability scores.

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