Readability Analysis of Indian Diabetic Association Website and Other Health Related Websites on Information Related to Diabetic Diet

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Abstract

Patients use the Internet to educate themselves about health related topics. Endocrinologists and diabetologists in India and worldwide are more concerned about educating their patients regarding diabetic diet. Hence in particular diabetic patients give lot of preference for diet related articles in media. The usefulness of health related education materials on the internet depends largely on their Readability, Comprehensibility and Understandability. According to International Diabetes Federation (IDF) [1] Diabetic Atlas, **382 million** people had diabetes with in the year 2013 and this number is estimated to rise to **592 million** by the year 2035.Due to its many complications and available treatments, it is one of the most common diseases for which health care providers and patients seek education and guidance. This study done to evaluate Readability of patient education materials related to diabetic diet from the Indian Diabetic Association website www.diabetesindia.com and compare the similar topics from five most popular health information providing sites. www.nlm.nih.gov, www.webmd.com, www.msn.com, www.about.com, www.medicinenet.com .
Tools used for Readability of selected website data are: Gunning Fog index (GFI), Coleman–Liau index (CLI), The Flesch-Kincaid Grade Level (FKGL), Automated Readability Index (ARI), Simple Measure of Gobbledygook index (SMOG) and The Flesch Reading Ease (FRE).It was found that Indian website is good at readability when compared to other popular health information providing websites. Patient education materials provided on Indian Diabetic Association website written at recommended reading grade levels and ensures Readable and Comprehensible to their audience.

Introduction

Patients use the Internet to educate themselves about health related topics. Endocrinologists and diabetologists in India and worldwide are more concerned about educating their patients regarding diabetic diet. Hence in particular Diabetic patients give lot of preference for diet related articles in media. The usefulness of health related education materials on the internet depends largely on their Readability, Comprehensibility and Understandability. According to International Diabetes Federation (IDF) [1] Diabetic Atlas **382 million** people had diabetes with in the year 2013 and this number is estimated to rise to **592 million** by the year 2035.Due to its many complications and available treatments, it is one of the most common diseases for which health care providers and patients seek education and guidance.

Materials and methods

Readability of patient education materials related to Diabetic diet is considered from the Indian Diabetic Association website www.diabetesindia.com   and similar topics from five popular health information providing sites [2]. www.nlm.nih.gov , www.webmd.com , www.msn.com , www.about.com , www.medicinenet.com.
Tools used to know the Readability of selected website data are:
 1. Gunning Fog index (GFI), 2. Coleman–Liau index (CLI), 3. The Flesch-Kincaid Grade Level (FKGL), 4.Automated Readability Index (ARI), 5. Simple Measure of Gobbledygook index (SMOG). The Lower the value of 1-5 indices, the better is Readability.
6. The Flesch Reading Ease (FRE). The higher the value for FRE the better is the Readability.

1. Gunning fog index measures the readability of English writing. This index estimates the number of years of formal education needed to understand the text on a first reading.
2. Coleman–Liau index is calculated with the following formula: $CLI = 0.0588L - 0.296S - 15.8$
L is the average number of letters per 100 words and S is the average number of sentences per 100 words.
Flesch–Kincaid Grade Level: It can also mean the number of years of education generally required to understand text, relevant when formula leads in a number greater than 10.

The Automated Readability Index (ARI) is a readability test designed to gauge the understandability of a text.

The SMOG grade is a measure of readability, which estimates the years of education needed to understand a piece of writing.

The Flesch Reading Ease (FRE) is to indicate comprehension difficulty when reading a passage of contemporary academic English The higher the value the better is the Readability. In the Flesch Reading Ease test, higher scores indicate that, matter is easier to read; lower numbers indicate that are more difficult to read.

First of all, Indian diabetic association website is opened and searched for diabetic diet and all the indices are calculated. Similarly same has been done in all top five health information providing websites. All the indices are calculated and charted out. For better calculation of indices, an Analysis website is used [3].
http://www.online-utility.org/english/readability_test_and_improve.jsp

Figure:

Screenshot of Indian Diabetes Association Website with information on Diabetic diet.

Results and discussion

Data analyzed for the Diabetic diet from Indian Diabetic Association website targeted to the consumers are: GFI-12.61, CLI-13.37, FKGL-10.72, ARI-11.56, SMOG-12.15, FRE-47.43.Similarly all the indices are obtained, Indian website is considerably good at Readability.

Similar study by Dr Arvind V Athavale [4], titled "Usability evaluation of two websites providing information on Diabetes" quoted Readability of Indian Diabetes Association website when compared to Canadian website concluded that Indian site is good at Readability with indices Flesch-Kincaid Grade Level of 11.95 and Flesch reading ease of 49.69. Present study also has similar indices when searched for Topic on Diabetic Diet.

Another study titled "Readability of ASPS and ASAPS Educational Websites: An Analysis of Consumer Impact" by Dr Oluseyi Aliu, and Kevin C. Chung MD [5] using same indices but not on Information on Indian Website.

It was found that Indian website is good at readability when compared to other popular health information providing websites. Patient education materials provided on Indian Diabetic Association website written at recommended reading grade levels and ensures Readable and Comprehensible to their audience.

Formulae: Indices (GFI, CLI, FKGL, ALI, SMOG, FRE) Formulae:

Tables:

Table 1. Readability Indices of Top websites compared to Indian website

INDICIES	INDIAN	NLM	WEBMD	MSN	ABOUT	MEDICINE NET
GFI	12.61	10.12	9.81	9.77	9.30	10.93
CLI	13.37	19.38	18.80	15.20	20.31	20.14
FKGL	10.72	9.34	9.01	7.76	9.14	9.73
ARI	11.56	13.63	13.42	10.85	14.37	14.30
SMOG	12.15	9.56	10.00	9.87	9.30	10.17
FRE	47.43	40.60	46.66	57.83	42.15	39.37

Table 2. GFI, CLI, FKGL, ARI, SMOG of Top websites compared to Indian website Lesser the Score, Better is the Readability.
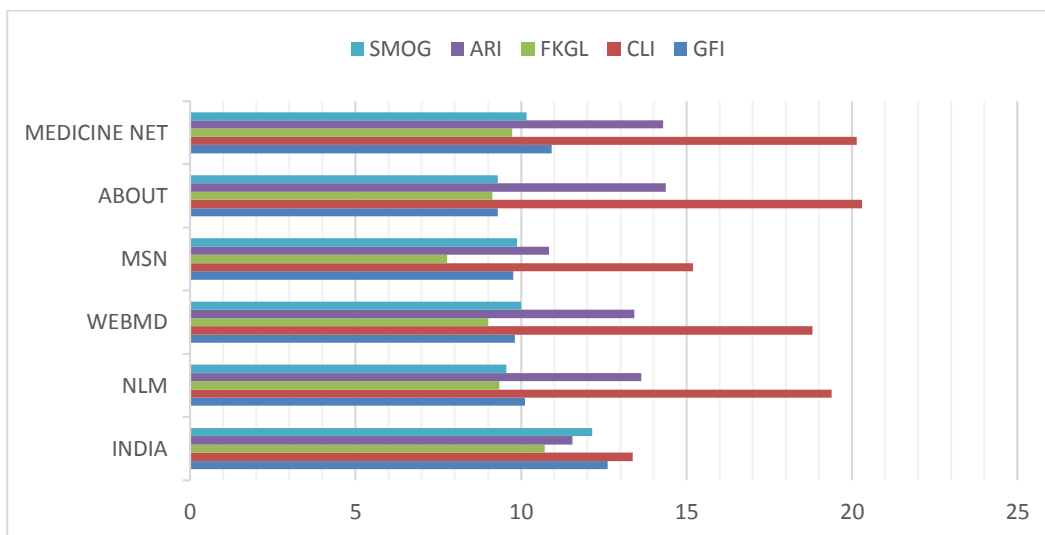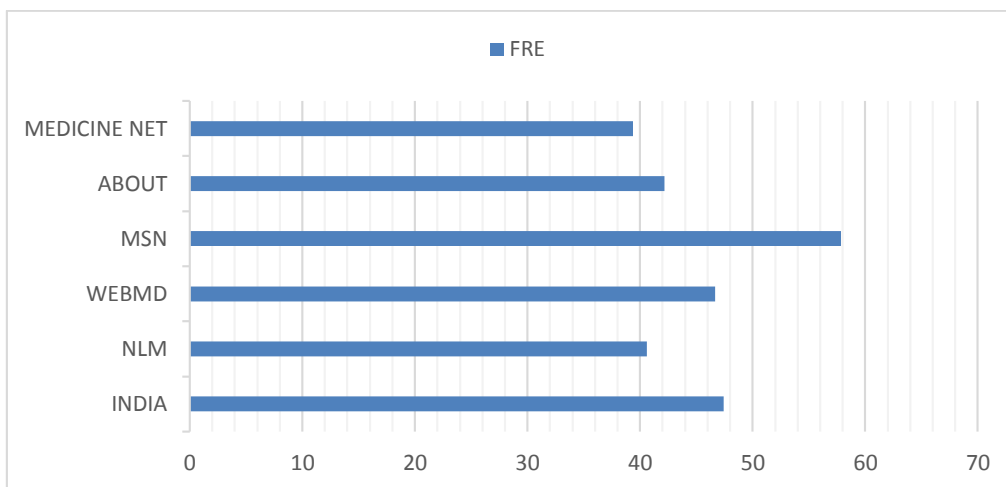

Table 3. FRE Index of Top websites compared to Indian website, Higher the Score, Better is the Readability.

Conclusion

The Internet is an increasingly popular avenue for patients to educate themselves about Health related information. Indian Website should be upgraded in view of readability on information related to diabetes.

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References

1. IDF Diabetes Atlas, 6th edition. International Diabetes Federation, Edition 2013: http://www.idf.org/sites/default/files/EN_6E_Atlas_Full_0.pdf [Accessed on 29/09/14].

2. Consumer Reports Web Watch and the Health Improvement Institute (HII) Healthratings.org Revisits 20 Most-Trafficked Health Information Sites. http://www.consumerwebwatch.org/dynamic/health-report-infosite-ratings.cfm.
3. http://www.online-utility.org/english/readability_test_and_improve.jsp [Accessed on 29/09/14].
4. Athavale, A.V. (2010). Usability evaluation of two websites providing information on Diabetes [Electronic Version]. Journal of Health Informatics in Developing Countries, 4(2), 34-52, from http://www.jhidc.org/index.php/jhidc/issue/ view/10.
5. Oluseyi Aliu, MD[1] and Kevin C. Chung, MD, MS[2] .Readability of ASPS and ASAPS Educational Websites: An Analysis of Consumer Impact, Plast Reconstr Surg. Apr 2010; 125(4): 1271–1278.

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