Original Article

Preparation and readability assessment of patient information leaflets for diabetic foot ulcers

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ABSTRACT

Context: Patient counseling is the mainstay for prevention and management of diabetic foot ulcer. Hence, patient information leaflet (PIL) can act as an educational material for imparting patient education regarding diabetic foot care for better patient outcome. **Aim:** The objective of this study was to develop and to assess the readability of PIL for diabetic foot ulcer. **Materials and Methods:** Various online resources such as "Patient UK" and Micromedex data base were used to prepare PILs on diabetic foot ulcer. Physicians were validated the content of the leaflet. Leaflet was designed and modified according to the physician's suggestions. PILs-readability was checked online by using the website "www.readability-score.com" and calculated Flesch Reading Ease (FRE) and Flesch–Kincaid grade level (FK-GL). Layout and design features of the PILs were assessed by using Baker Able Leaflets Design (BALD) method. **Results:** Readability of the leaflet was assessed by using the FRE and FK-GL scores. After initial assessment leaflets were modified to achieve ideal readability scores. The best FRE score achieved was 69.9 and FK-GL score achieved was 7.1. The BALD score was 27. **Conclusions:** PILs prepared had ideal readability score and layout design. The leaflet's estimated FRE and FK-GL scores rate showed that it was fairly easy readable.

Key words: Diabetic foot ulcer, patient education, patient information leaflets

Introduction

Patient education is "the process by which health-care professionals and others impart information to patients that will modify their health behaviors or improve their health status."[1] It is one of the major management strategies for preventing and treating diabetic foot ulcer. Diabetic foot ulcerations and amputations have a severe impact on individual and society. This can destroy patient's ability to earn their livelihood and can also adversely affect their quality-of-life. Patient involvement is vital for the successful care of diabetic foot ulceration. The principal task of the health-care team is to give the patient awareness, boost self-confidence and provide support. Usually, patients with diabetic complications and their families provide 95% of their care themselves.[2] Hence, patient education to improve self-management care are central components of any effective treatment plan.

Various studies had suggested that diabetes complications could be reduced by good blood glucose control.[3] The glycemic control is dependent on various factors such as the patient's adherence to medications, life-style modifications and frequent monitoring of blood glucose. This is highly influenced by effective patient education and counseling. Studies had also shown a low-level of knowledge, attitude and care among patients with diabetes and complications.[4] This suggested the need for awareness program for patients to improve their knowledge regarding the disease. Therefore, each health-care professional including nurses and clinical pharmacists, being indispensable partner of the health-care squad have an inevitable responsibility for counseling these patients.

Access this article online	
Quick Response Code:	Website: www.joshd.net
	DOI: 10.4103/2321-0656.115304

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There were several studies, which had shown the positive impact of patient counseling in the management of diabetic foot ulcer.[5,6] Malone *et al*., (1989) assessed the effectiveness of diabetic foot education by randomizing 103 patients (203 limbs) (received an hour foot care education) and 100 patients (193 limbs) (received an hour of general diabetes mellitus education) for 24 months.[5] The result showed a lower incidence of foot ulcers in the group that received foot care education. Similarly, Litzelman *et al*., (1993) conducted educational sessions on foot care; and gave telephonic and postal card reminders in 191 patients and 205 patients provided with standard care to for a period of 12 months. They noted fewer serious foot lesions in the group, which received sessions on foot care; and telephone and postcard reminders.[6] Patients and their family members or care givers should understand the implications of the loss of protective sensation and the importance of daily foot examinations and proper foot care. Ultimately, patient education was the key for prevention and management of diabetic complications. Most of the time, diabetes patients were not adequately educated regarding the foot care. They need to be conscious about the risk factors of foot complications and its management for better health outcome.

The Flesch/Flesch–Kincaid readability tests were designed to show comprehension difficulty while reading a passage of academic English in contemporary style. This comprised of two tests: The Flesch Reading Ease (FRE) and the Flesch–Kincaid grade level (FK-GL). In the FRE test, higher scores indicated that the content was easier to read, whereas lower scores indicated that the content were difficult to read. The Simplified Measure of Gobbledygoop (SMOG) grade is a readability measure that estimates the years of education required to fully understand a piece of writing.

The purpose of this study was to prepare the patient information leaflet (PIL) for diabetic foot ulcer and to assess the readability.

Materials and Methods

Preparation of leaflet in english language for diabetic foot ulcer

PILs [Figure 1] were developed by referring various model leaflets, which were available from different online sources such as "Patient UK."[7,8] The search was also supplemented by gathering information from Micromedex database. The content of the leaflet was validated by physicians. Changes

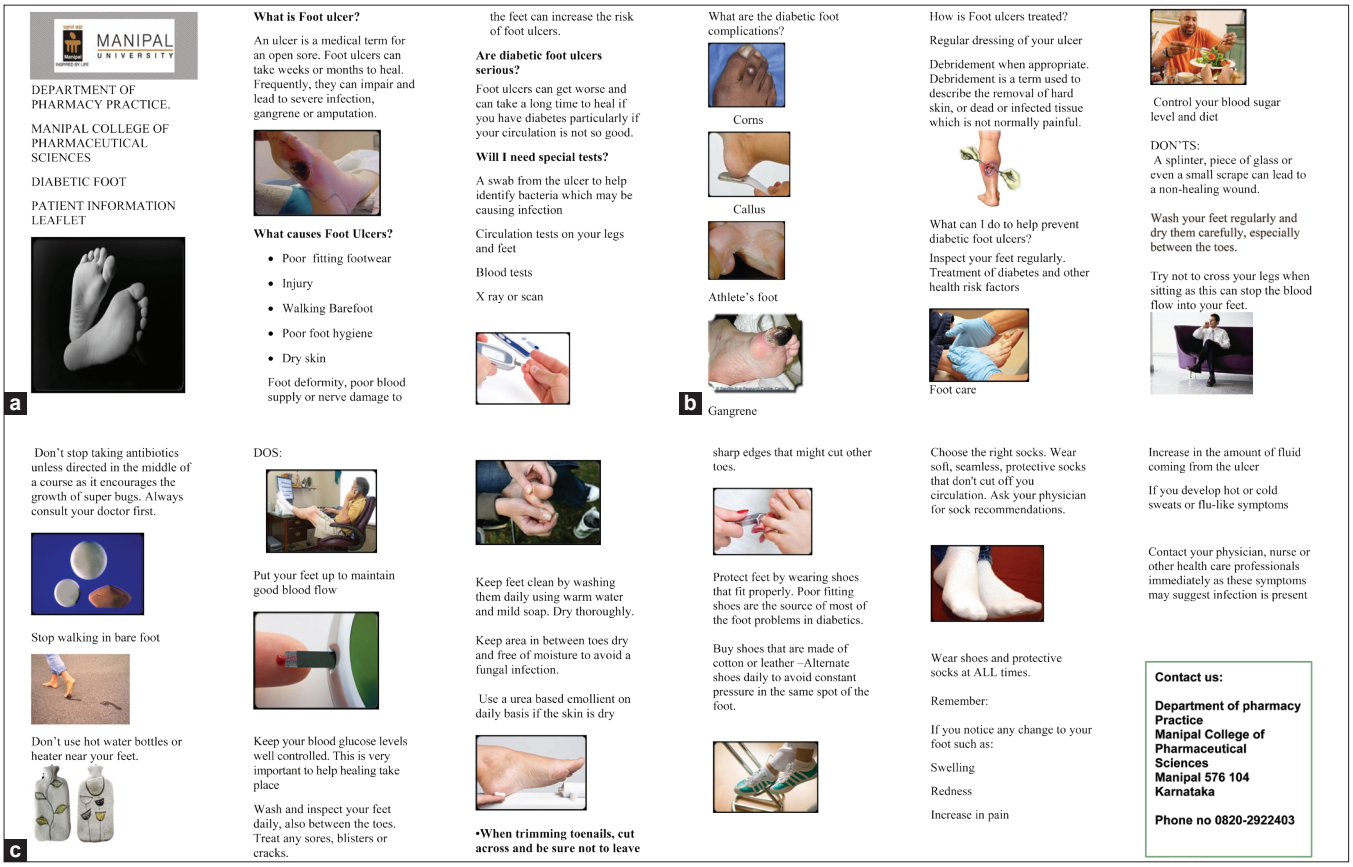

Figure 1: (a-c) Patient information leaflets for diabetic foot ulcert

Table 1: Flesch/Flesch-Kincaid readability tests score

Readability formula	Grade
Flesch–Kincaid grade level	7.1
Flesch–Kincaid reading ease	69.9
Gunning fog score	9.4
SMOG index	6.9
Automated readability index	7.4
Coleman–Liau index	11.1
Average grade level	8.4

SMOG: Simplified measure of gobbledygoop

were made as per physician's directions and leaflet was designed accordingly.

Assessment of FRE and FK-GL scores for readability

Readability of the PIL was checked online by calculating FRE and FK-GL by using the website "www.readability-score.com".[9] Baker Able Leaflets Design (BALD) method was used to assess the layout and design characteristics of the PIL.

Results

During the preparation of leaflet, readability was assessed using FRE and FK-GL scores. After assessment leaflets were modified and readability scores were reassessed, which showed improvement after each modification [Table 1]. The best FRE score achieved was 69.9 and FK-GL score achieved was 7.1. The BALD score was 27.

Discussion

FK-GL scores translate into numerical grade. The FRE measures textual difficulty, which indicates how easy a text is to read. The FRE scale measures readability as 100 (Very easy to read), 65 (Plain English), 30 (A little hard to read) and 0 (Very hard to read). Gunning fog index calculates the years of formal education wanted to understand the text on a first reading. It is mainly used to verify whether the text can be read easily by the intended audience. Texts for a wide audience generally require fog index less than 12. SMOG index readability formula measures the years of education a person needs to fully understand a piece of writing. Automated Readability Index is a readability test used to assess the understand ability of a text. Coleman Liau Index to gauge the understand ability of a text. FK-GL score of 7.1 is equivalent to 7th grade reading level in the United States. The FRE score of 69.9 indicates that the text is fairly readable. Fog index score of 9.4 represents that it is readable and more understandable by the wide range of audience. SMOG Index score of 6.9 is equivalent to 6th or 7th grade reading level in the United States. Automated Reading level grade 7.4 corresponds to the typical reading level of a 14 year-old in the US. In Coleman Liau Index, the text is at a grade level of 11.1 or roughly appropriate for a 1st year undergraduate.

Conclusion

Developed PIL had standard readability score and good layout design. FRE and FK-GL scores rate had shown that the leaflet was fairly easily readable.

Acknowledgments

We deeply express sour profound and sincere gratitude to Manipal University and Manipal College of Pharmaceutical Sciences for the valuable guidance and encouragement.

References

1. Koongstvedt PR. The Managed Health Care Handbook. 4th ed. Philadelphia: Aspen Publishers Inc.; 2001.
2. Palaian S, Chhetri AK, Prabhu M, Rajan S, Shankar PR. Role of pharmacist on counselling diabetes patients. Internet J Pharmacol 2005;4:1-13. Available from: http://www.archive.ispub.com/journal/the-internet-journal-of-pharmacology/volume-4-number-1/role-of-pharmacist-in-counseling-diabetes-patients.html#sthash.UmAGSM70.dpuf. [Last accessed on 2013 Feb 12].
3. Genuth S, Eastman R, Kahn R, Klein R, Lachin J, Lebovitz H, *et al*. Implications of the United kingdom prospective diabetes study. Diabetes Care 2003;26 Suppl 1:S28-32.
4. Al-Maskari F, El-Sadig M, Al-Kaabi JM, Afandi B, Nagelkerke N, Yeatts KB. Knowledge, attitude and practices of diabetic patients in the United Arab Emirates. PLoS One 2013;8:e52857.
5. Malone JM, Snyder M, Anderson G, Bernhard VM, Holloway GA Jr, Bunt TJ. Prevention of amputation by diabetic education. Am J Surg 1989;158:520-3.
6. Litzelman DK, Slemenda CW, Langefeld CD, Hays LM, Welch MA, Bild DE, *et al*. Reduction of lower extremity clinical abnormalities in patients with non-insulin-dependent diabetes mellitus. A randomized, controlled trial. Ann Intern Med 1993;119:36-41.
7. Available from: http://www.patient.co.uk/health/Diabetes,-Foot-Care-and-Foot-Ulcers.htm. [Last accessed on 2013 Feb 12].
8. Available from: http://www.coloplast.com/woundandskincare/topics/woundknowledge/diabetic foot ulcers/diabetic foot ulcers leaflet. [Last accessed on 2013 Feb 20].
9. Available from: http://www.readability-score.com. [Last accessed on 2013 Feb 12].

How to cite this article: Roy RT, Sekhar MS, Rodrigues GS, Rajesh V. Preparation and readability assessment of patient information leaflets for diabetic foot ulcers. J Soc Health Diabetes 2013;1:79-81.

Source of Support: Nil. **Conflict of Interest:** None declared.