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Commentary

Optimising Health Literacy in the Modern Era: A Readability Approach

Tiarnán Ó Doinn*, James M. Broderick

Department of Trauma and Orthopaedics, St. James Hospital, James Street, Dublin, D08 NHY1, Ireland

STUDY DESCRIPTION

Worldwide internet use has increased more than eleven -fold over the past 20 years [1]. The increased availability of the Internet has provided patients with unprecedented access to health information and patients are increasingly turning to the internet for health education materials [2]. However, despite widespread Internet use among patients for health education, the majority of patients do not discuss this information with their healthcare provider [3]. This is concerning given that not only do patients commonly find online health information confusing, it also influences their decision regarding treatment options [4]. As a result, an increasing emphasis has been placed on health literacy. Health literacy is defined as the "capacity to obtain, interpret, and understand basic health information and services and the competence to use such information and services to enhance health [5]." Recently, it estimated that 36% of US adults [6] or roughly 90 million Americans [7] have basic or below basic health literacy.

The influence of inadequate health literacy on patient outcomes is well established. Among medical patients, inadequate health literacy has been shown to be an independent predictor of health-related quality of life [8-10] and poorer general health [11,12]. Lower health literacy is also associated with increased hospitalisations [11,13,14], a reduced understanding of one's disease [15], increased disease related complications [16] and higher mortality rates [11,12,17]. Furthermore, outpatients with reduced health literacy levels also have higher rates of treatment non-compliance [11] and missed appointments [18]. Among surgical patients, poor health literacy is also associated with non- adherence to perioperative instructions and inadequate comprehension of one's surgical procedure and discharge instructions [19].

Integral to the improvement health literacy is the ability of patients to understand the material available to them. In turn, it is essential that the readability of Patient Educational Materials (PEMs) is provided at a suitable level to convey their intended meaning. The National Cancer Institute defines readability as "the determination by systematic formulae of the reading comprehension level a person must have to understand written materials." [20] Readability formulae determine the difficulty level of a passage of text on the basis of letters per word, syllables per word and/or the number of words per sentence. The average adult in the US reads at an 8th grade reading level [21,22] and the average patient reads 5 grade levels below their reported graduation grade [23,24]. As a result, a number of expert groups including the National Work Group in Cancer and Health [25], the American Medical Association [26] and the Agency for Health Research and quality [27] have produced guidelines which advise the 6th grade level as the upper limit of readability. Additionally, the National Institute of Health has released an updated recommendation that PEMs should not exceed the 7th to 8th grade level [28].

Despite these recommendations numerous studies have consistently demonstrated that the Reading Grade Level (RGL) of PEMs frequently written at a more advanced level across a range of medical and surgical subspecialties. These investigation's typically examine the PEMs available on reputable academic institution's websites or the top search results following a key word search on popular internet search engines. The former strategy assesses the readability of the most probable websites healthcare providers are likely to refer their patients, while the latter strategy assesses websites which patients would encounter during independent online searches. In surgical fields, PEMs provided at too advanced a level have been found in plastic surgery [29,30] neurosurgery [31] pediatric surgery [29] urology [29] and otolaryngology [29,32]. Similarly, studies examining PEMs in numerous medical subspecialties, such as cardiology [33] endocrinology [34] pediatrics [35] and neurology [36] have demonstrated RGLs which are not compatible with current recommendations.

As a result, a number of best practice plain language guidelines have been produced which are designed to reduce the health literacy demands on patients when encountering PEMs. The Agency for Healthcare Research and Quality (AHRQ) [27] advocates a health literacy "universal precautions" approach when curating PEMs. This approach involves assuming that all patients and caregivers have a limited understanding of health information and should communicate in a manner that anyone can comprehend [27]. This approach can be achieved by tailoring PEM content according to the intended audience's key characteristics and literacy levels

Correspondence to: Tiarnan Ó Doinn, Department of Trauma and Orthopaedics, St. James's Hospital, James's Street, Dublin, D08 NHY1, Ireland, E-mail: tiarnanodoinn@rcsi.com

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and providing information which is likely to be most important to them [37-39]. Readability and health literacy demands can also be improved by avoiding jargon, being concise and using short sentences, using simple words and phrases, using a conversational style, avoiding hidden verbs and noun strings, careful word placement, minimising definitions and using terms consistently [37-41].

Additionally, details on text formatting and effective use of illustrations have also been produced, which aid in reading comprehension. The use of serif fonts, ample white space, effective headings and implementing bullet point lists can all also improve patient comprehension [37-41]. Finally, numerous plain language guidelines advise that a priori analysis of PEM readability should be carried out prior to publication to facilitate content revision with improved readability. This can be achieved by using field testing and readability algorithms incorporated into widely available software.

In conclusion, the modern era has heralded unprecedented access to PEMs due to widespread Internet use. Unfortunately, despite an increased awareness of health literacy in the healthcare literature, PEMs continue to be produced at a level which is too advanced for the average patient. Given the primacy of health literacy in influencing patient outcomes, there is a growing responsibility on healthcare organisations to produce PEMs at appropriate readability levels. Implementing current best practice plain language guidelines into PEMs has the potential to reduce health literacy demands and improve patient outcomes.

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