BRIEF
REPORTS

Readability of American Academy of Family Physicians Patient Education Materials

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BACKGROUND AND OBJECTIVES: Unfortunately, it is not uncommon for the reading demands of patient education materials (PEMs) to exceed the actual literacy abilities of the typical American adult. The purposes of this study were to (1) assess reading demands of English and Spanish language American Academy of Family Physicians (AAFP) PEMs and (2) examine whether reading demands of English language AAFP PEMs varied from 2004 to 2012.

METHODS: In December 2012, matched English and Spanish language AAFP PEMs, available via http://www.familydoctor.org, were downloaded and printed in their entirety (n=200). Reading demands of PEMs were assessed using the Lexile® analyzer, an Internet-based program that uses a combination of sentence length and word frequency to determine text comprehension difficulty.

RESULTS: Lexile scores of English language PEMs averaged 906.0±80.2 (range=700–1,080), while mean Lexile scores of Spanish language PEMs was 874.2±63.9 (range=700–1,060). Overall, reading demands of Spanish language PEMs were significantly lower than PEMs written in English (t=3.1, P<.01). In 2012, 59% of English language PEMs were written ≤6th grade reading level, whereas in 2004 only 5% of PEMs were written ≤6th grade reading level.

CONCLUSIONS: The majority of currently available AAFP PEMS, in both English and Spanish, were written ≤6th grade reading level. Since 2004, reading demands of AAFP PEMs have decreased substantially with the majority meeting recommended low-literacy guidelines. Future efforts should be used to revise and reformat all English and Spanish language AAFP PEMs to meet the established ≤6th grade reading level.

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More than one third of American adults have rudimentary health literacy (HL).[1] As compared to adults with adequate HL, those with limited HL tend to be less knowledgeable regarding their health,[2] struggle to understand medication instructions,[3-4] experience poorer health-related outcomes,[5] and are more likely to be hospitalized.[6] While a plethora of patient education materials (PEMs) are readily available, unfortunately it is not uncommon for the reading demands of PEMs to exceed the actual literacy abilities of the typical American adult.[7-9] The purposes of this study were to (1) assess reading demands of English and Spanish language American Academy of Family Physicians (AAFP) PEMs and (2) examine whether reading demands of English language AAFP PEMs varied from 2004 to 2012.

Methods

Materials and Procedures

On October 15, 2012, complete lists of English and Spanish AAFP health-related topics were downloaded at http://familydoctor.org.[10] A total of 346 health-related topics were available in both English and Spanish. English language health-related topics were then numbered, from 1 to 346, in alphabetical order. Next, using an on-line random number generator (http://www.randomizer.org),[11] 100 health-related topics were selected for inclusion and subsequent review. Finally, during the second week of December 2012, matched English and Spanish language PEMs (for example, arrhythmia and arritmia) were downloaded and printed in their entirety (n=200). PEMs encompassed a wide range of health-related topics such as acne, celiac disease, and pneumonia. This study protocol was deemed exempt from review by The Ohio State University Institutional Review Board because these data are publicly available.

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Assessment of Reading Demands

Reading demands of PEMs were assessed using the Lexile® analyzer (http://www.lexile.com), an Internet-based program that uses a combination of sentence length and word frequency to determine text comprehension difficulty in both English and Spanish.[12]

While there are a great number of analysis formulas available to assess reading demands of English language text, a Spanish language equivalent does not exist for most of these formulas. Therefore, because the Lexile® analyzer can calculate reading demands of both English and Spanish text, we selected this formula to calculate readability demands of all AAFP PEMs reviewed in this study. Lexile scores range from 0 to 2,000, with a score of 900 corresponding to an approximate sixth-grade reading level. To allow for accurate Lexile score generation, all incomplete sentences, section headings, Internet links, and phonetic pronunciation guides were removed from individual PEMs. Individual PEMs were uploaded to the Lexile® analyzer where reading demand scores were retrieved.

Estimation of reading grade level of English language AAFP PEMs was evaluated, nearly a decade ago,[13] using McLauglin's Simplified Measure of Gobbledygoop (SMOG) formula.[14]

To allow for comparison of reading demands of 2004 and 2012 AAFP PEMs, a MetaMetrics table was used to approximate reading grade level based on Lexile scores.[15]

Data Analyses

The Statistical Package for the Social Sciences (SPSS+, Chicago, IL), Windows Version 20.0, was used for all analyses. Descriptive statistics were calculated to describe reading demands of English and Spanish language AAFP PEMs. An independent *t* test was conducted to assess differences in reading demands of 2012 AAFP PEMs as a function of language (English versus Spanish). Statistical significance was set at <0.05 *a priori*.

Results

Figure 1 depicts Lexile scores of 2012 English and Spanish language AAFP PEMs. Lexile scores of English language PEMs averaged 906.0±80.2 (range=700–1,080), while mean Lexile scores of Spanish language PEMs was 874.2±63.9 (range=700–1,060). Overall, reading demands of Spanish language PEMs were significantly lower than PEMs written in English (t=3.1, P<.01).

Estimated reading grade levels of English language AAFP PEMs, available in 2004 and 2012, are presented in Figure 2. In 2012, 59% of PEMs were written ≤sixth grade reading level, whereas in 2004 only 5% of PEMs were written ≤sixth grade reading level.

Discussion

The most important finding from our study was that the majority of currently available PEMs, in both English and Spanish, were written ≤sixth grade reading level. Over the past decade, reading demands of AAFP PEMS, available viahttp://www.familydoctor.org, have significantly decreased and now meet recommended guidelines regarding readability.[16] These findings are encouraging, as low-literacy PEMs have shown to not only improve patient understanding of medical information[17,18] but also foster enhanced patient-initiated communication with physicians.[19,20] Further, patients with adequate literacy skills also prefer easier to read PEMs.[16]

Our study also revealed that Spanish language AAFP PEMs not only adhered to established reading demand guidelines[16] but were written at significantly lower reading levels than equivalent English language PEMs. The availability of quality, low-literacy Spanish PEMs, addressing a vast array of health-related topics, is important because Hispanic adults tend to be at risk of limited HL.[1] Thus, it is essential that PEMs be provided in Spanish to help improve patient understanding and health outcomes among this vulnerable population.

Several study limitations should be considered when interpreting our results. First, there was a degree of subjectivity in editing each PEM to allow for Lexile analyses to be conducted.

Figure 1: Reading Demands, Using Lexile Scores, of 2012 English and Spanish Language American Academy of Family Physicians Patient Education Material

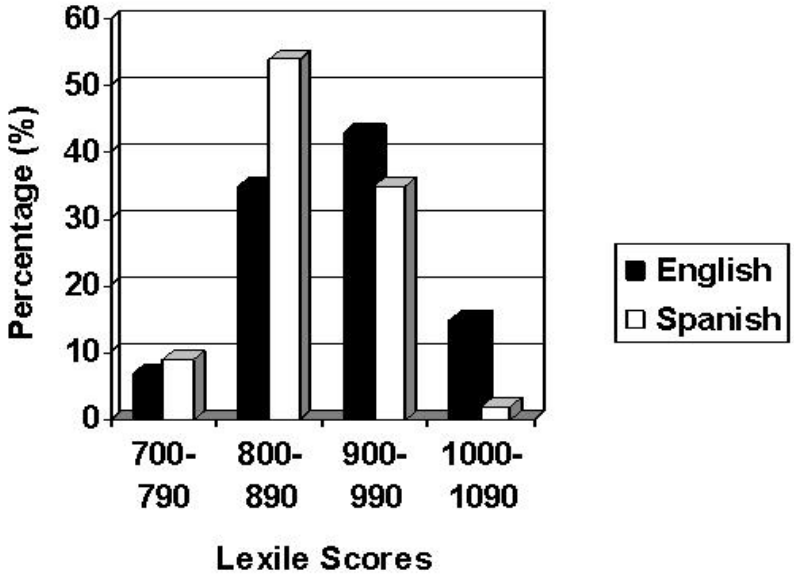
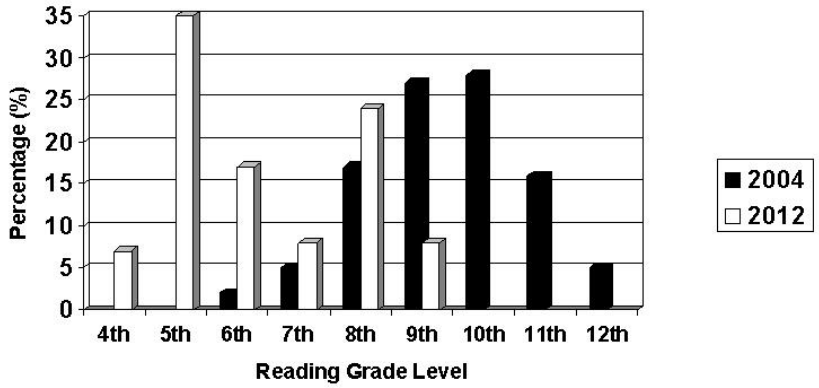


Figure 2: Estimated Reading Grade Levels of 2004 and 2012 English Language American Academy of Family Physicians Patient Education Materials



However, to reduce editing-related variability, the first author edited all PEMs with guidance from the senior author. Second, two different readability formulas (SMOG and Lexile) were used to assess PEMs in 2004 and 2012. Third, had a different formula been used to analyze reading demands of PEMs evaluated in this study, estimated reading demands could potentially have varied. However, in head-to-head comparisons, different readability formulas have shown to yield very similar results when identical text was analyzed.[21] Fourth, we did not evaluate patient comprehension or understanding of the PEMs reviewed.

Family physicians will encounter patients with limited HL regularly in their practices, making it vital that readable PEMs, in both English and Spanish, are readily available to foster understanding of health-related information. Since 2004, reading demands of AAFP PEMs have decreased substantially, with the majority meeting recommended low-literacy guidelines.[16] However, efforts should be used to revise and reformat all English and Spanish language AAFP PEMs to meet the established ≤sixth grade reading level.[16,21]

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