A comparison of patient health literacy levels and grade level readability of electronic health record patient education materials in a resident primary care clinic

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Background
Low health literacy is associated with worse health outcomes. Health institutions may not provide patient education materials (PEM) reflecting the reading grade level of their patient population. This disparity in literacy and PEM readability renders patients vulnerable to poorer understanding of their health conditions and treatment plans, and possibly worse health outcomes. This study assessed the health literacy of the patient population in an urban resident primary care clinic and compared it to the readability of two categories of PEM provided within the electronic health record (“standard” and “easy-to-read”).

Methods
Rapid Estimate of Adult Literacy in Medicine Short Form (REALM-SF) categorizes health literacy as low (≤ 6th grade), marginal (7th-8th grade), or adequate (≥ 9th grade). Readability may be assessed by Simple Measure of Gobbledygook (SMOG), which applies a pre-set formula to a text based on polysyllabic words for evaluation of readability by grade level.

All eligible patients during a two week period were asked to participate in the survey. Consenting subjects completed a basic demographics questionnaire; subsequently health literacy was evaluated by REALM-SF. Data was analyzed using a logistic regression model in STATA. Readability assessments using SMOG were performed on PEM for the five most common health conditions in the clinic as determined by the most frequently billed clinician visits over one year.

Results
Of 213 patients, 186 patients were eligible, and 175 patients participated. There were 66 males (37.7%) and 108 females (61.7%). Racial composition was 43 white (24.6%), 96 black (54.9%), 27 Latino (15.4%), and 9 other (5.2%). For education, 54 (30.9%) did not finish high school, 70 (40%) completed high school, 25 (14.3%) attended some college, and 25 (14.3%) graduated college.

By REALM-SF, health literacy levels were ≥ 9th grade for 76 patients (43.4%), 7th-8th grade level for 66 patients (37.7%), and ≤ 6th grade for 30 patients (17.1%). There was a significant correlation for higher REALM-SF score with educational attainment (p<0.005), being a native English speaker (p=0.02), and female sex (p<0.005).

The top five most frequent clinic diagnoses were hypertension, diabetes mellitus, hyperlipidemia, back pain, and depression. Readability assessments of their respective PEM by SMOG showed that for standard PEM, average readability grade level was 9.2 (range 7-11); for easy-to-read PEM readability average grade level was 6.8 (range 6-7).

Conclusions
The majority of subjects in this study (54.8%) had low or marginal health literacy, reading at or below an 8th grade level, per the REALM-SF. The average readability grade level by SMOG of standard and easy-to-read PEM for the top five most common conditions were 9.2 and 6.8, respectively. Therefore, standard PEMs are written at an inappropriately high level for the majority of this clinic population. Selecting the “easy-to-read” option may help maximize comprehension of PEM across the clinic population. Healthcare providers should prioritize distributing PEM at a reading level that is appropriate for the patients they are serving. Targeted interventions accounting for the health literacy level in a patient population may have a positive effect on doctor-patient communication, patient satisfaction, and health outcomes.