Evaluation of the Implementation of Health Literate Organization Toolbox Guidelines

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ABSTRACT

About one-third of the United States population, roughly 90 million people, have difficulty understanding, processing, and applying health information. The purpose of this project is to study the association between health literacy and the readability and understandability of UCLA School of Dentistry's resources including the clinic website and the patient education written materials. The extent to which health literacy scores, as provided forth by REALM-D, will also be determined to see if there is a correlation with the website and written materials. 100 English speaking adults were surveyed and their oral health literacy was assessed through pronunciation of 38 medical/dental health words from the REALM-D 20 and List 3, ranging from one syllable to multi-syllables. Utilizing SMOG and Flesch-Kincade readability formulas, the UCLA website and written materials were at the same level as a ninth or tenth grader, which is inconsistent with the IOM attributes for readability and understandability which tends to revolve around a seventh grade reading level. Although there was no significance between education level and visiting the website, there was significance between ethnicity and whether or not the patient accessed the UCLA School of Dentistry website. The majority of the subjects with an education background of some college and beyond were able to answer all three questions about the written form correctly, as was initially predicted. There was a significant relationship between REALM-D List 3 and REALM -D 20 with Dental knowledge score and web score.

BACKGROUND

In 2012, the Institute of Medicine released a report that described 10 attributes of a health literate organization. Two of the attributes describes *"providing easy access to health information and services and navigation assistance"* and *"designs and distributes print, audiovisual, and social media content that is easy to understand and act on"*. Health literate organizations should produce materials whether it is written or web-based that is easy to understand and navigate, so that patients can obtain all relevant information about their healthcare provider, understand medical and dental advice and treatment directions, evaluate treatment options, show up for follow-up appointments, and make appropriate health decisions.

STUDY OBJECTIVES

1) **Compare and contrast the UCLA School of Dentistry clinic website and written patient education materials in terms of readability and understandability for patients of all levels of health literacy.**
2) Examine the association between Rapid Estimate of Adult Literacy in Medicine and Dentistry (REALM-D20 + List 3) scores and patient variables.
3) **Examine the association between subjects' education level and response to dental knowledge, website and pediatric form questions.**
4) Determine whether oral health literacy (Realm D20+ list 3 and oral health knowledge) is associated with the patient's ability to read and understand information of the UCLA School of Dentistry Website and UCLA Pediatric written material.

VARIABLES

Dependent variables:

1) Readability and understandability of UCLA General Clinic's website and patient educational written materials
2) Ease of navigation of the website
3) Access to information
4) Dental health knowledge
5) REALM-D scores

Independent variables:

1) Age 2) Ethnicity 3) Gender 4) Highest education received

DATA SOURCE AND METHODS

Qualitative:

- In order to assess the readability and understandability of the UCLA School of Dentistry website and the UCLA pediatric dentistry written educational materials will be using two assessment tools: SMOG and Flesch-Kincaid Grade Level.
- To calculate SMOG: Count the number of sentences, then count the number of polysyllables and plug in values into the following formula:
- To calculate Flesch-Kincaid: Count the number of total words and syllables and plug in values into the following formula:

Quantitative Cross Sectional Study- Face to Face Survey

Study Subjects:

- Target population: English-speaking adults whom are seeking care for themselves or for their children at UCLA School of Dentistry.
- 22 question survey including but not limited to questions about oral health knowledge, UCLA School of Dentistry website usage, comprehension of written and website materials, and health literacy. Patients are examined for their oral health literacy through REALM D-20 assessment. For the REALM D-20 and List 3 assessment we will be using 38 medical/oral heath words ranging from one syllable to multi-syllables.

RESULTS

Table 1: SMOG and Flesch-Kincaid Grade Level Assessment Scores

	SMOG*	Flesch-Kincaid*
WEBSITE		
Home Page	9.9	11
Billing	7.7	9.4
FAQs	8.3	8.9
Information for Patients	10.4	11.8
Directions	8.8	9.9
AVERAGE:	9.02	10.2

	SMOG*	Flesch-Kincaid*
WRITTEN MATERIALS		
Pediatric Information	9	10.2
AVERAGE:	9	10.2

*numbers represents grade level

- With the SMOG Readability Index, our materials indicated a reading level similar to that of a ninth grader.
- With the Flesch-Kincaid Readability Index, our materials indicated a reading level similar to that of a tenth grader.

Table 2: Description of Sample

Characteristics	Number (n)
GENDER	
Male	56
Female	44
AGE	
18-30	17
31-50	47
51-65	26
66 or over	10
RACE	
African American/ Other	15
Asian	19
White/Caucasian	42
Hispanic	24
EDUCATION	
Secondary School	3
High School or GED	24
Some College	44
Completed College	16
Graduate Education	13
TOTAL (per category)	100

Table 3: Descriptions of Types of Information Seeking

TYPES OF INFORMATION:	NUMBER OF TIMES CHOSEN BY 50 SUBJECTS WHO VISITED WEBSITE	NUMBER OF TIMES CHOSEN: DID NOT VISIT WEBSITE, N=50
WHO TO CONTACT FOR INFORMATION	23	9
DIRECTIONS TO THE CLINICS	31	15
HOURS OF OPERATION	26	6
BILLING/INSURANCE INFORMATION	21	14
INFORMATION ABOUT A DENTAL PROBLEM	20	9
ASKING FOR PATIENT RECORDS	6	1
REGISTRATION FORMS TO COME TO THE DENTAL CLINIC	37	13
TYPE OF DENTAL SERVICES THE CLINIC OFFERS	22	8
OTHER	6	9

"eligibility to become a patient", "general information to become a patient of the clinic", "services available for disabled individuals and information about Ryan White programs", "the new patient process is missing", " are appointments first come first serve?", "becoming a patient and getting needs met", "gum problem", "how to find the parking lot and general clinic", "confusion about different dental clinics, "insurance"

- Our sample size was 56 male, 44 female.
- About 73% of our population were between the ages of 31 to 65.
- The majority of our population were White/Caucasian (42%), followed by Hispanic (24%).
- 73% of our subject population had some college education and above.
- Among the 50 subjects who visited the website, the majority of people looked for directions to the clinic and registration forms, followed by hours of operation.
- Among the 50 subjects who didn't visit the website, the majority of people had questions about directions to the clinic as well as billing/insurance information and registration forms.

Table 4a: Comparing education with whether or not patient accessed the website

EDUCATION	NO	YES	TOTAL:
	#	#	#
Secondary school and High School	15	12	27
At Least some College and beyond	35	38	73
Total	50	50	100

*Pearson's Chi-Square Value: p=0.642, df=4 (Not significant at p>0.05)

- Subjects with an education level of some college and above almost equally visited and did not visit the website.

Table 4b: Comparing Ethnicity with whether or not patient accessed the UCLA School of Dentistry website

RACE	NO	YES	TOTAL:
	#	#	#
African American/Other	9	6	15
White/Caucasian	15	27	42
Hispanic	12	12	24
Asian	14	5	19
Total	50	50	100

*Pearson's Chi-Square Value: p=0.040, df=3 (significant at p<0.05)

- There is a significant relationship between ethnicity and whether or not the patient accessed the website.
- Among the African American and Asians, majority of the subjects did not visit the website.

Table 5: Correlations

		Q18	Q19	Dental Knowledge Score Q20Q21Q22	Web Score Q11Q12Q13	Pediatric Form Score Q14Q15Q16	REALM-D LIST 3	REALM-D 20
Age	P.Corr.	0.120	0.012	0.096	-0.131	-0.184	0.023	-0.001
	Sig.	0.234	0.906	0.342	0.192	0.067	0.820	0.994
Educ	P.Corr.	0.014	0.172	0.141	0.213	-0.118	0.305	0.336
	Sig.	0.893	0.091	0.163	0.060	0.244	**0.002**	**0.001**
Gender	P.Corr.	-0.120	-0.087	-0.010	-0.146	-0.143	-0.021	-0.026
	Sig.	0.234	0.395	0.924	0.147	0.157	0.835	0.796
Race	P.Corr.	0.050	0.051	0.160	0.020	0.088	0.110	0.112
	Sig.	0.619	0.618	0.112	0.840	0.384	0.275	0.267

* P.Corr.=Pearson Correlation, Sig=Significance (2-tailed) (Significant at p<0.05)

Positive Correlations:

1) Education vs. REALM-D List 3
2) Education vs. REALM-D 20

Dental Knowledge

- Among those with secondary and high school education, about 44% answered all three dental knowledge questions correctly.
- Among those with some college education and beyond, about 61% answered all three dental knowledge questions correctly.

Web Score

- Among the 27 subjects with secondary school and high school education, only 1 subject answered all three website questions correctly.

Pediatric Form Score

- 77% of subjects, answered all three pediatric form questions correctly.

Table 6: Correlation Analysis for Oral Health Literacy vs. Dental Knowledge Score, Web Score and Pediatric Form Score

		Dental Knowledge Score Q20Q21Q22	Web Score Q11Q12Q13	Pediatric Form Score Q14Q15Q16
REALM-D List 3	P.Corr.	0.318	0.237	0.055
	Sig.	**0.001**	**0.017**	0.193
REALM-D 20	P.Corr.	0.288	0.217	0.173
	Sig.	**0.004**	**0.030**	0.055

* P.Corr.=Pearson Correlation, Sig=Significance (2-tailed) (Significant at p<0.05)

- There is a significant positive relationship between REALM-D List 3 and REALM-D 20 with Dental Knowledge Score and Web Score.

Table 7: Medical Words Compared to Dental Words

MEDICAL WORDS (26)	NUMBER OF PEOPLE ANSWERED CORRECTLY	REALM D-20	REALM-D LIST 3
FATIGUE	95	X	
JAUNDICE	86	X	
DEPRESSION	99	X	
DIRECTED	97	X	
ALLERGIC	91	X	X
MENSTRUAL	93		X
TESTICLE	95		X
COLITIS	73	X	X
EMERGENCY	94		X
MEDICATION	95		X
OCCUPATION	97		X
SEXUALLY	87		X
ALCOHOLISM	95		X
IRRITATION	96		X
CONSTIPATION	96	X	X
GONORRHEA	90		X
INFLAMMATORY	89		X
DIABETES	93		X
HEPATITIS	90		X
ANTIBIOTICS	93		X
DIAGNOSIS	88		X
POTASSIUM	97		X
ANEMIA	89	X	X
OBESITY	94		X
OSTEOPOROSIS	79	X	X
IMPETIGO	23		X
Mean of correctly pronounced medical words	23.14		
Range:	3-26		

DENTAL WORDS (12)	NUMBER OF PEOPLE ANSWERED CORRECTLY	REALM-D 20	REALM-D LIST 3
CARIES	91	X	
ABSCESS	88	X	
DENTURES	96	X	
HYGIENE	93	X	
INSURANCE	100	X	
CALCULUS	89	X	
EXTRACTION	95	X	X
AMALGAM	47	X	X
BACTERIA	97		X
GINGIVITIS	82	X	X
ANESTHETIC	85	X	X
PERIODONTITIS	30	X	X
Mean of correctly pronounced dental words:	9.93		
Range:	2-12		

MOST COMMON CORRECTLY PROUNOUNCED WORDS

BACTERIA
DEPRESSION
INSURANCE

LEAST COMMONCORRECTLY PRONOUNCED WORDS

AMALGAM
IMPETIGO
PERIODONTITIS

- **Medical Words:** The average number of correctly pronounced words were 23.14 out of 26 medical words with a range of 3-26.
- **Dental Words:** The average number of correctly pronounced words were 9.93 out of 12 dental related words with a range of 2-12.

CONCLUSION

There is an association between an individual's oral health literacy, education level, and ability to understand information about website, written education materials, and knowledge about dentistry.

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