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Use of Short Assessment of Health Literacy for Spanish Adults (SAHLSA-50) to Determine the Health Literacy Rate of the Spanish-speaking Population in an Urban Emergency Department

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Health literacy is defined as the ability to obtain, process, and understand health information and to use that information to make appropriate decisions about one's health and medical care (Nielsen-Bohlman, Panzer, & Kindig, 2004). It allows patients to become active participants in their healthcare, formulate informed decisions, and integrate medical information ranging from anticipatory guidance to discharge instructions. Currently, an estimated one out of three American adults has limited English health literacy, which leads to less health knowledge, worse health status, and higher healthcare costs compared to those with adequate health literacy (Weiss, 2007). An economic analysis in 2007 estimated the annual costs incurred from low health literacy to be more than $100 billion (Vernon, Trujillo, RosenBaum, & DeBuono, 2007). Medical providers are increasingly considering this societal issue as a highly cost-effective point for intervention and healthcare quality improvement initiatives.

Within the general population, Hispanics are a particularly high-risk group in regard to health literacy. In 2003, The National Adult Literacy Survey found that Hispanics had the lowest average levels of health literacy among all ethnic/racial groups surveyed (Kutner, Greenberg, Jin, & Paulsen, 2006). As the fastest-growing ethnic group with the lowest average health literacy, the Hispanic population presents the greatest opportunity in terms of potential improvements in clinical outcomes and cost reduction for interventions through assessing and improving health literacy. While there are several Agency for Healthcare Research and Quality-supported tools to assess health literacy in this population, the authors prefer the SAHLSA-50 tool (Agency for Healthcare Research and Quality, 2016).

The SAHLSA-50 tool was developed based on the Rapid Estimate of Adult Literacy in Medicine (REALM), which uses a paired word recognition test that is not available in Spanish. Unlike the REALM, the SAHLSA-50 includes a language comprehension component in addition to basic word recognition (Lee, Bender, Ruiz, & Cho, 2006). It was tested against the Test of Functional Health Literacy in Adults and found to have good internal reliability and validity as a rapid clinical screening tool for low Spanish health literacy (Lee et all, 2006).

Using this tool, we sought to evaluate the rate of Spanish health literacy in our own urban emergency department patient population to better assess the adequacy of our Spanish-language materials and health information resources. This will lead to the development of better health literacy-specific interventions for our Spanish-speaking patients.

Method

Setting

Ben Taub General Hospital lies at the center of the Texas Medical Center in Houston, Texas, serving the estimated 2.16 million residents of Houston in addition to patients from across the state and the world. The demographic composition of the city is among the most diverse in the country with 43.8% of residents identifying as Hispanic or Latino, 25.6% identifying as White and non-Hispanic alone, 23.7% identifying as Black or African American alone, and 6% identifying as Asian alone in the 2010 census (U.S. Census Bureau, 2010). Ben Taub is a level-one trauma center affiliated with Baylor College of Medicine whose emergency department cares for more than 100,000 patients each year (Harris Health System, n.d.).

Enrollment

This study was approved by the Baylor College of Medicine Institutional Review Board. A convenience sample of 300 patients who presented to a busy, high-volume, urban ED were surveyed over October and November 2012. Subjects were identified and recruited by Spanish-speaking research assistants from the waiting room or sub-critical patient care areas in the emergency department. Inclusion criteria included self-classification as primarily Spanish-speaking, above age 18, and as literate in Spanish. Exclusion criteria due to population vulnerability included pediatric, psychiatric, cognitively impaired, pregnant, or currently imprisoned patients. The purpose of the study, methodology, and explanations of patient confidentiality in accordance with the IRB protocol were presented to potential subjects in written and scripted verbal form.

Data Collection

All subjects voluntarily completed the SAHLSA-50 tool and a general demographic form with one of five Spanish-speaking research assistants. The demographic form was structured in a way that patients were able to place themselves in discrete categories with regard to age and education as opposed to giving specific individualized data (e.g., reporting age as 18 to 25 instead of 24). It was designed to bridge discrepancies between countries with regards to enumerating grades in school and to reduce potential patient discomfort with revealing an exact age. Respondents received no compensation for their participation.

The SAHLSA-50 questionnaire combines word recognition with contextual comprehension to act as a rapid clinical screening tool for Spanish health literacy. The format of the SAHLSA-50 utilized flashcards

with three words on each, a “stem” which served as the “question” and two common words: a “key” serving as the answer and a “distractor” serving as an incorrect choice (Lee et al., 2006). Each “stem” would be read aloud by a Spanish-speaking research assistant while holding the flashcard containing all three terms facing the patient (Figure 1). The patient would then be instructed to read the word that was most closely associated with the “stem” or if unsure to answer, “I don’t know.” Patients were specifically instructed not to guess as this would invalidate the study. For each question, the research assistant would record the answer as either “key,” “distractor,” or “I don’t know.”

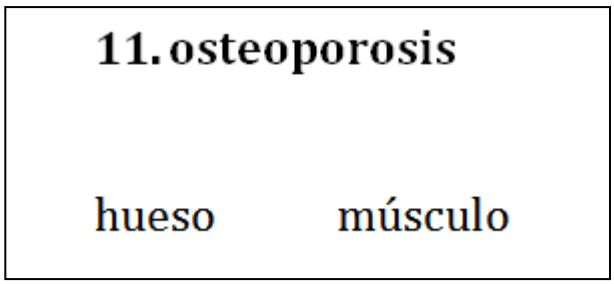

Figure 1. Example of SAHLSA-50 flashcard.

Statistical Analyses

Rates of health literacy were reported and compared between genders and across the pre-determined age ranges and educational levels against the total study population using the two-tailed student t-test.

Results

A total of 300 patients were enrolled in this study. Major demographic findings are summarized in Table 1. As defined by SAHLSA-50, a score of above 37/50 correct responses was used to determine health literacy. Overall, 83.0% of respondents had adequate health literacy. There was no statistical significance in health literacy between genders (82.7% males vs. 83.2% females; p=0.92). Increased rates of education were associated with increasing rates of health literacy (Table 2). Patients with fewer than 1 to 3 years of education recorded statistically significant health literacy rates below 40%, and patients with greater than 7 years of education demonstrated statistically significant literacy rates >95%. With regard to age, patients between the ages of 18 and 65 demonstrated similar rates of health literacy; however, there was a significant reduction in health literacy among patients over the age of 65 (p=0.007). Patients 18-65 had an average education of 7 to 9 years while patients older than 65 averaged 4

to 6 years of education. Last, Table 3 shows the common words that were most frequently missed by participants.

Table 1

Demographics

		Male		Female		Total	
		n	%	n	%	n	%
Study Population		110	36.7	190	63.3	300	-
Age (years)	18-25	7	2.3	16	5.3	23	7.7
	26-40	51	17.0	76	25.3	127	42.3
	41-65	50	16.7	84	28.0	134	44.7
	> 65	2	0.7	14	4.7	16	5.3
Education (years)	0	6	2.0	5	1.7	11	3.7
	1-3	4	1.3	19	6.3	23	7.7
	4-6	36	12.0	54	18.0	90	30.0
	7-9	26	8.7	48	16.0	74	24.7
	10-12	21	7.0	44	14.7	65	21.7
	> 13	17	5.7	20	6.7	37	12.3

Table 2

Health Literacy Rates

		# literate	% literate	p-value
Age (years)	18-25	20	87.0	0.63
	26-40	111	87.4	0.25
	41-65	109	81.3	0.68
	> 65	9	56.3	0.007
Education (years)	0	3	27.3	< 0.005
	1-3	9	39.1	< 0.005
	4-6	67	74.4	0.07
	7-9	71	95.9	<0.005
	10-12	63	96.9	<0.005
	> 13	36	97.3	0.02

Table 3

Commonly Missed Words

(< 80% correct in order of most to least errors)
Impetigo
Icterus
Potassium
Syphilis
Gallbadder
Prostate
Testicle
Rectal
Incest
Colitis
Hepatitis
Herpes

Discussion

Across all demographics, our study found an overall adequate health literacy rate of 83.0%. It is important to note that unlike many prior studies, the patients enrolled in our analysis all self-identified as literate; thus, this figure represents the health literacy among patients who are functionally literate. The authors expected that the overall Spanish health literacy rate for our patient population would be lower. For comparison, of the 201 Spanish-speaking respondents in the original study on ambulatory patients that developed and validated SAHLSA-50, 75.8% had adequate health literacy (Lee et al., 2006), which was similar to our study. However, significant variation has been observed across different studies including recorded health literacy rates. In one particular study conducted with 200 primary care patients from clinics along the U.S.-Mexico border (Penaranda, Diaz, Noriega, & Shokar, 2012), there was a rate of 98.5%. The rate was 54.6% in a study based on self-report that further divided patient based on English proficiency (Sentell & Braun, 2012). These studies emphasize the point that the results of the SAHLSA-50 can depend greatly on the variation within the Spanish-speaking population studied. In the case of the Penaranda et al. study, patients enrolled had a much lower rate of

foreign birth (26.6%) compared with the national average (40.0%) (Penaranda et al., 2012). Conversely, Sentell and Braun noted significant differences in health literacy correlating with the degree of English proficiency, which can be seen as a proxy for education and acculturation (Sentell & Braun, 2012). Based on these findings, further studies would be advised to account for nation of origin and degree of English proficiency when assessing Spanish health literacy and evaluating the efficacy of the SAHLSA-50 among different Spanish-speaking populations in the United States.

Within the Spanish health literacy literature, there is a scarcity of studies that have calculated the health literacy rate of their emergency medicine patients. The authors were surprised to find such a high literacy rate in our population considering the overall low number of school years completed by patients. Studies in similar settings have reported significantly lower rates of health literacy among Spanish speakers compared to English speakers in the emergency department setting (7% vs. 74%) (Brice et al., 2008). However, these variations in findings may be readily explained by the selection of patients. Brice et al. excluded bilingual patients who were primary Spanish speakers, had comparatively low enrollment, and reported a high rate of recent immigrants in their study (Brice et al., 2008).

Throughout our study, we had a 2:1 female-to-male response rate; however, the degree of health literacy and years of school completed were statistically insignificant between genders. This population distribution is consistent with the observed makeup of the ED population in general and not thought to play any great role in health literacy. Similarly, there was no statistical difference between age and health literacy with the notable exception of patients over the age of 65, who recorded a significantly lower health literacy rate. This finding is consistent with other studies we reviewed, most notably the National Assessment of Adult Literacy from 2003, which found that 59% of the people over age 65 had basic or below-basic levels—more than any other group (Kutner et al., 2006). Interestingly, years of school completed were similar among all age groups except for the same over-65 cohort, which again had a lower average number of school years completed. These findings are also well represented in similar studies, which suggest that increased age results in lower health literacy across ethnic groups at a national level (Kutner et al., 2006; Williams et al., 1995).

As expected, the study revealed a statistically significant relation between the number of school years completed and percentage of respondents who had adequate health literacy. It is known that failure to

complete high school is a strong risk factor for limited general and health literacy (Weiss, 2007). Given the resulting data concerning health literacy and education levels in respondents over the age of 65, it is possible that decreased health literacy among the elderly can be attributed to a lower level of education. Alternative explanations include the possibility that elderly patients have a higher rate of foreign birth, a lower rate of acculturation, decreased English proficiency, and older age at immigration, all of which have been noted to contribute to lower overall health literacy (Sentell & Braun, 2012).

Throughout the study, it was repeatedly noted that specific words were commonly unknown or misunderstood. Many of the words ("prostate," "syphilis," "hepatitis," "herpes," "testicle," "incest") referred specifically to the genitourinary system or are commonly used within the context of STIs/ sexuality, raising the possibility that respondents were not as comfortable with the vocabulary in this particular area. This raises significant concerns because providing adequate, effective information to patients regarding STIs has been of particular importance in our ED. Other words such as "impetigo" and "icterus" were predominantly missed on a basis of vocabulary alone, suggesting that they are in fact uncommon words that even well-educated respondents may not find familiar. The remaining commonly missed words ("colitis," "gallbladder," "potassium," "rectal") are notable for their frequency of use in the ED and the comparatively high incidence with which these words were missed due to a lack of comprehension rather than vocabulary.

The relatively large sample size of this study exceeds many similar studies and allows for a more robust statistical analysis than most. However, the nature of the study with regard to the data collection period and sample selection process raises the possibility that the study results may not be representative of the entire ED population. In addition, the nature of the SAHLSA-50 questionnaire is such that although subjects are instructed to not guess if they do not know a word, there is no guarantee that a subject will not guess a correct or incorrect response in lieu of accurately reporting that they do not understand a word.

Future studies would do well to delve into further potentially confounding factors including age at immigration, length of residency in the U.S., first language, English proficiency, and the number of generations the patient's family has resided in the U.S. These factors may be of particular importance as emphasized by the 2003 National Assessment of Adult Literacy (Kutner et al., 2006). In addition, the wide discrepancy between reported rates of health literacy among studies emphasizes the fact that variation within groups of Spanish-speaking patients has a greater impact

on health literacy than Spanish-speaking status itself. Adequate treatment of and communication with Spanish-speaking patients must take the patients' background, education, and English proficiency into account.

Based on our study, the authors would recommend an individualized assessment of the Spanish-speaking population at each institution. Our study found that age > 65 and years of education related most directly to health literacy rates, making the immediate targets for interventions. In resource-limited settings, those patients older than 65, those self-identifying as health-illiterate, or those with less education can be screened further with the SALHSA-50 tool. While this study cannot identify a direct causal relation, understanding the most "at risk" in this high-risk population can lead to better informational tools and more use of translators, to give some examples.

Conclusions

Throughout the course of the study, 83.0% of our urban emergency department's literate, Spanish-speaking population was found to be functionally health-literate. Importantly, those with lower levels of education and elderly patients (older than 65) were more likely to have inadequate health literacy when compared to the general Spanish-speaking population. These results represent an important initial step in identifying vulnerable groups that would benefit from improvements in communication as well as assessing the efficacy of the SAHLSA-50 tool in our patient population. Further work is needed to explore these trends. With a rapidly expanding Spanish-speaking population, care must be taken to ensure that all patients receive adequate health information to ensure their participation in their healthcare decisions and adequate adherence to medical therapy. Despite the widespread use of interpreter services in addition to linguistically appropriate and culturally sensitive materials that have become available in recent years, it is critical for physicians to understand that there is more to comprehension than accurate translation. For many patients, materials written in Spanish at a sixth-grade level may prove too challenging on the pure basis of Spanish literacy (Hernandez, Cruz, & Robinson, 2011). Even among patients who are functionally literate, their overall ability to integrate health information and follow medical instructions depends on their functional health literacy. Detailed understanding of an area's Spanish-speaking population with regard to immigration history, family background, education, and English proficiency must be considered for any targeted intervention, effort to assess health literacy, or further studies.

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