Can Patient-Reported Screening Questions Identify Limited Health Literacy in Spine Patients?

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INTRODUCTION: Health literacy directly impacts patient care and affects treatment outcomes. Patients with limited health literacy have worse self-reported health and utilize health care more frequently. Identifying patients with limited health literacy may be important to mitigate these concerns, as clinicians can then take specific steps to ensure these patients adequately comprehend their condition and treatment options. A screening questionnaire is one method used to identify patients with limited health literacy. However, self-reported measures that identify individuals at risk for limited health literacy may over- or underestimate within certain patient populations. Specifically, the generalizability of health literacy instruments has not been demonstrated in a spine population. Therefore, the purpose of this study was to ask 1) what is the reliability of self-reported health literacy screening in spine patients? and 2) does inclusion of demographic variables improve the predictive accuracy of screening questions?

METHODS: Between December 2021 and February 2022, all English-speaking patients over the age of 18 presenting as new to an urban, hospital-based outpatient clinic were approached for participation. A sociodemographic survey, the 4-question Brief Health Literacy Screening Instrument (BRIEF), and the Newest Vital Sign (NVS) Health Literacy Assessment Tool were verbally administered. BRIEF scores were categorized into self-reported limited (4-12), marginal (13-16), and adequate (17-20) health literacy. The objective NVS scores were categorized into limited (0-3) and adequate (4-6) health literacy. Simple and multivariable logistic regression were utilized to determine the accuracy of each BRIEF question individually, and collectively, at predicting limited health literacy as defined by the NVS. Further regression analysis was conducted with the inclusion of demographic variables. Results were reported using receiver operating characteristic (ROC) curves, accuracy, sensitivity, specificity, and area under ROC (AUROC) with 95% confidence intervals. Odds ratios with 95% confidence intervals were calculated to determine which demographic characteristics were associated with limited health literacy.

RESULTS: Overall, 262 patients (mean age, 57 $\pm$ 17) were included in this study (Table 1). One-hundred-thirty-four (51%) were male, 223 (85%) were White, and 151 (58%) were married. Patient BRIEF scores were as follows: 23 (8.8%) limited, 43 (16%) marginal, and 196 (75%) adequate (Figure 1). When utilizing the NVS scores, 87 (33%) and 175 (67%) had limited and adequate health literacy, respectively (Figure 2). The BRIEF items collectively demonstrated fair accuracy in predicting limited health literacy (AUROC, 0.76; 95% CI, 0.70-0.82 [Table 2]). Individually, the fourth BRIEF item ("How confident are you in filling out medical forms by yourself?") most accurately predicted limited health literacy (AUROC, 0.67; 95% CI, 0.60-0.73). Accuracy of prediction increased with the inclusion of demographics within the logistic regression across all BRIEF items, individually and collectively (Table 3). Specific characteristics associated with increased odds of limited health literacy included self-identified Black race, being retired or disabled, being single or divorced, having only a high school degree, and self-reporting one's health as "poor" (Table 4).

DISCUSSION AND CONCLUSION: Our results show that self-reported screening items with the inclusion of demographic factors can offer quick assessments of health literacy in a population of spine patients. Accurately identifying patients with limited health literacy offers opportunities for interventions to maximize treatment outcomes, as clinicians can provide additional resources or follow-up calls to ensure their patients understand all aspects of their care. Future studies should aim to assess the feasibility of incorporating screening questions into orthopaedic clinical care, as well as how their inclusion impacts patient-provider communication.

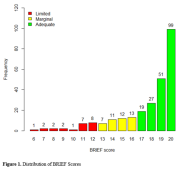

Figure 1. Distribution of BRIEF Scores

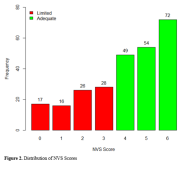

Figure 2. Distribution of NVS Scores

Table 1: Patient Characteristics and Health Literacy Skills (n=262)

Parameter:	Number:
Total	262
Mean age, in years (range)	57 ± 17.0 (18-95)
Male	134 (51)
Race	
White	223 (85)
African American	14 (5.3)
Asian	15 (5.7)
Hispanic or Latino	5 (1.9)
Other or Declined	5 (1.9)
Ethnicity	
Not Hispanic or Latino	250 (95)
Hispanic or Latino	12 (4.6)
Mean body mass index (range)	28.4 ± 6.2 (18.5-56.0)
Highest degree obtained	
Did Not Finish High School	4 (1.5)
High School or GED	34 (13)
Some College/Associates Degree	53 (20)
College Bachelors	86 (33)
Graduate, Post Graduate	85 (32)
Employment status	
Employed	149 (57)
Unemployed	14 (5.3)
Retired	76 (29)
Disabled	17 (6.5)
Student	6 (2.3)
Marital status	
Single	72 (27)
Married or Living with Partner	151 (58)
Divorced or Legally Seperated	24 (9.2)
Widowed	15 (5.7)
Type of insurance	
Public	121 (46)
Private	140 (53)
No insurance	1 (0.38)
Annual household income	
≥ $75,000	143 (55)
< $75,000	56 (21)
Declined	63 (24)
Self-reported health	
Excellent	23 (8.8)
Very Good	69 (26)
Good	90 (34)
Fair	53 (20)
Poor	27 (10)
BRIEF scores	
Limited (4-12)	23 (8.8)
Marginal (13-16)	43 (16)
Adequate (17-20)	196 (75)
NVS scores	
Limited (0-3)	87 (33)
Adequate (4-6)	175 (67)