Brief Report

Assessing patient activation and health literacy in the ED^{☆,☆☆,★}

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ABSTRACT

Background: Low health literacy and patient activation are linked to unmet health needs, excess emergency department (ED) use, and hospital admission. However, most studies have assessed these measures in non-ED populations.
Objective: The objective of the study is to assess health literacy and patient activation in the ED.
Methods: A cross-sectional study in adults older than 18 years presenting to an ED were selected using systematic sampling. Demographic data and reason for ED visit were collected. Health literacy was assessed using Rapid Estimate of Adult Literacy in Medicine (REALM). Patient activation was assessed using Patient Activation Measure. Kruskal-Wallis tests compared groups. Spearman rank correlations compared numeric variables.
Results: A total of 140 patients were approached, and 108 enrolled. Average age was 51 years. Most were unemployed (71%), were unmarried (80%), had a primary physician (62%), were male (60%), were African American (63%), and were on public insurance (58%). Most had an activation level of 3 or 4. The mean REALM score was 52. Patients with higher REALM scores had higher activation levels ($r_s = 0.30$; $P = .0017$), although, when adjusted for age, this association was no longer significant. Sex, education, insurance status, and race were not significantly associated with REALM or activation levels. Activation levels decreased with increasing age ($r_s = -0.24$; $P = .01$). Low activation levels and limited health literacy were significantly associated with admission (odds ratio, 4.4; 95% confidence interval, 1.5-12.6; $P = .0061$).
Conclusions: This is the first study to assess Patient Activation Measure in the ED. Low activation levels and limited REALM scores assessed in the ED population were significantly associated with hospital admission. Assessing activation levels of ED patients could lead to better education and tailored discharge planning by ED clinicians potentially reducing ED revisits.

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1. Introduction

Patient activation, assessed via the Patient Activation Measure Short Form survey (PAM) (Figure), describes the knowledge, skills, and confidence patients need to manage their health [1]. Patient activation is a potentially modifiable risk factor for reducing repeat emergency department (ED) visits [1]. Patients with low activation levels tend to use the ED nearly twice as many times in the month after their hospital discharge [2]. Improving a patient's ability to manage their health care may decrease ED visits and hospitalizations [1]. Health literacy, assessed via the Rapid Estimate of Adult Literacy in Medicine (REALM) survey, represents the ability to obtain and understand health information to

make informed health decisions [3]. Limited health literacy is associated with a lower likelihood of receiving preventive care. Those with low activation and limited health literacy often have less knowledge about their overall health care and the appropriate ways to manage acute problems outside of the hospital. As a result, these patients tend to use the ED more frequently [2,4-6].

This study aimed to measure the activation levels of patients seen in an urban ED and hypothesized a correlation between patient activation and health literacy. It also examined the relationship between patient activation and hospitalizations in the previous 6 months, race, education level, age, and insurance status. To our knowledge, this is the first study to assess both of these factors in the ED. Knowing the activation levels of patients could lead to better education and discharge planning by ED clinicians potentially reducing unnecessary ED visits.

2. Methods

This was an institutional review board–approved pilot study using a prospective observational, cross-sectional study design. Patients were

Figure. Schematic showing the characteristics and relationship of PAM levels.

a proactive patient engaged in a number of healthy behaviors. The REALM scores are placed in reading levels by school grades. A score of less than 61 (eighth grade or lower reading level) is a limited health literacy score and greater than 61 (ninth grade or above reading level) is adequate health literacy. Additional data not related to either PAM or the REALM surveys, such as age, sex, education, insurance status, and reason for visiting the ED, [11], were also collected. Appendix A lists all the responses participants could choose from when reporting their reason for visiting the ED. Patients self-reported ED, primary care physician and hospital admissions in the prior 6 months.

Patient characteristics and summary scores for REALM and PAM were described using frequencies and percentages for categorical variables and means and SDs for numeric variables. Kruskal-Wallis tests compared the distributions of REALM and activation scores among categorical patient characteristics. Spearman rank correlations (denoted r_s) were computed for associations between REALM scores and activation levels and between these values and ordinal and numeric patient characteristics. Two regression analyses were also performed. First, REALM score and age were fit in a 2-variable model to determine if age was a potential confounder for the association between REALM and PAM scores. Second, logistic regression models were fit to determine if REALM scores or activation levels were predictors of the likelihood of hospital admission. Age was also added to these models to determine potential confounding. All analyses were performed using SAS version 9.3 for Windows.

3. Results

A total of 140 patients were approached for participation, 31 declined, and 1 withdrew. The Table displays the demographics for the 108 participants included in analysis. Most patients had an activation level of 3 or 4 (mean, 63.9; SD, 16.8). The mean REALM score was 52 (SD, 16) indicating a seventh to eighth grade reading level. Patients with higher REALM scores were more likely to have higher activation levels ($r_s = 0.30$; $P = .0017$). Those with low activation levels tended to rate their overall health as very good to excellent ($r_s = -0.31$; $P < .001$). Activation levels decreased with increasing age ($r_s = -0.24$; $P = .01$). Education levels correlated with REALM scores ($r_s = 0.50$; $P \leq .0001$) and with activation levels ($r_s = 0.31$; $P = .0012$). Sex, insurance status, and race were not significantly associated with REALM scores or activation levels.

The REALM score was a significant predictor of PAM score (coefficient, 0.249; SE, 0.098; $P = .013$). However, in a 2-variable model that also included age, REALM score was no longer significant ($P = .056$),

recruited by systematic sampling to reduce bias at an urban ED between October 2011 and January 2012. Inclusion criteria included English speakers older than 18 years. Exclusion criteria included severely impaired vision or hearing, police custody, or critical illness.

Recruitment times mirrored time, day, and mode of arrival as the previous month ED statistics. A systematic sampling approach was used after an initial patient was selected by random, and every sixth patient was approached thereafter within an 8-hour interval. Consented patients were asked to complete the PAM and REALM surveys. The PAM survey has been translated and validated in several languages and in diverse populations, including patients with limited health literacy [7,8]. The REALM relies on word recognition/pronunciation from patient education materials and has been validated in diverse populations (eg, racial/ethnic groups) [9] and older adults in the English language [10].

There are 13 questions on PAM-Short Form survey and 66 words on the REALM in ascending order of difficulty. The PAM scores are placed into 4 different levels (Figure). The lowest scores suggest a person may not understand their role in health care, whereas the highest reflect

Table
Demographics

	n = 108
Mean age (y) (SD)	51 (16)
Unmarried (%)	80%
Unemployed	71%
Health rating good-excellent	50%
Primary care physician	62%
Male sex	60%
Race	
White	34%
African American	63%
Other	3%
Education	
<High school	30%
High school	35%
>High school	35%
Insurance	
Public (Medicare/Medicaid)	58%
Private	17%
None	25%
Admission rate	28%