



A PICTURE IS WORTH A THOUSAND WORDS: PICTOGRAPHS TO IMPROVE UNDERSTANDING OF DISCHARGE INSTRUCTIONS

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CE Earn Up to 5.5 Hours. See page 594.

Contribution to Emergency Nursing Practice

- The current state of scientific knowledge on health literacy indicates that ED patients are often lacking in their ability to interpret and comply with discharge instructions, an occurrence that may lead to repeat visits or a worsening of a patient's condition.
- The main finding of this research is that parents of children seen in the emergency department of a Southern California Hospital had significant deficits in their health literacy; this was more pronounced among Hispanic patients.
- Key implications for emergency nursing practice from this research are that alternative methods of education should be used to augment discharge instruction for populations with limited health literacy.

Abstract

Introduction: Poor comprehension of ED discharge instructions has been reported. Discharge instructions often include written information. Identification of home-care practices that were different from recommended discharge instructions

among multiple clients led nurses at a community emergency department to evaluate health literacy among specific clients.

Methods: A bilingual translator administered the Newest Vital Sign—a 6-item validated scale that assesses health care literacy—to 150 English and Spanish-speaking parents of pediatric patients admitted to the fast-track area.

Results: Although mean scores for both groups indicated participants were, on average, “at risk” for health literacy problems, English speakers had a significantly higher mean total score (3.82, standard deviation [SD] = 1.60) than did Spanish speakers (2.61, SD = 1.71), indicating better literacy.

Discussion: Study findings of low levels of health literacy in many parents led to a practice change of using nurse-developed pictographs, along with discharge instructions, for specific common ED diagnoses. Postdischarge calls to parents or patients receiving the pictographs documented positive postdischarge client feedback. The pictograph strategy is transferable to other institutions.

Key words: Emergency department; Discharge planning; Patient education; Pictograph or visual aids

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Introduction

Effectively conveying essential home-care instructions is a frequent challenge in emergency departments. In fact, many ED patients are discharged with significant knowledge deficits related to their care at home.¹ Lack of comprehension, and the resulting inability to comply with important instructions, is associated with increased returns to the emergency department and higher rates of hospital admission.²⁻⁴

For ED patients, lack of understanding and poor adherence to discharge instructions have been attributed to poor quality of material content, inadequate patient

comprehension, and inappropriate educational method.^{1,2,5} Limited familiarity with providers and the noisy, typically stressful environment for emergency care can hinder patient ability to comprehend instructions.⁵ This is further complicated by individual patient factors such as advanced age, a primary language that is not English, and having less formal education: factors that are negatively associated with literacy.⁶

Results from the 2012 Program for the International Assessment of Adult Competencies (PIAAC) indicate large numbers of persons in the United States have literacy issues. Although 13% of adults ages 16 to 65 performed at the highest proficiency level on the PIAAC literacy scale, 18% scored at the lowest level.⁷ These low levels of literacy are concerning because literacy is the ability to use printed information to function in society in a meaningful way,⁸ which undoubtedly affects health literacy and the ability to understand instructions given by health care providers.

Health literacy implies the capability to retrieve, process, comprehend, and use information and services necessary to make informed health care decisions.⁹⁻¹² Patients with adequate health literacy make informed decisions and are able to seek services or assist in their own care. Of note, education, reading level, and other demographic factors affect—but may not accurately predict—health literacy.¹³

Poor health literacy is associated with reduced compliance with medical or nursing instructions and prescribed treatment, underuse of preventative services, delayed presentation and diagnosis, higher costs, and poorer health outcomes.^{3,4,14} Poor parental literacy is associated with increased nonurgent visits for pediatric patients,^{15,16} inadequate adherence to home-care instructions,¹⁷ and overall poorer health outcomes in children.¹⁵

LOCAL CONTEXT

Nurses in a combined pediatric and adult community hospital emergency department with a large number of pediatric visits for nonemergent issues noted that reported home-care practices were not congruent with routine discharge instructions given in previous interactions. Discussions ensued among ED clinical nurses regarding possible causes for the discrepancy between discharge teaching content and parental behaviors. Following a literature review, a study was proposed to assess the health literacy of English- and Spanish-speaking caregivers of ill

children prior to the development of new educational materials.

Methods

ETHICAL CONSIDERATIONS

The study obtained exempt status following review by the Health System Institutional Review Board. Participant written consent was not required.

SAMPLE

Parents of children up to 17 years of age who were waiting for care in the ED pediatric fast track were invited to participate. All children were being seen for nonemergent issues and had assigned Emergency Severity Index (ESI) levels 4 or 5. Invitation to participate was offered only when it would not delay care.

SETTING

The study setting was a pediatric-adult emergency department of a southern California Community hospital that provided emergency care for both adult and pediatric patients. The study took place in the pediatric fast-track area between the hours of 1000 and 2200. During the study period, the ED staff treated approximately 45,000 pediatric patients annually.

INSTRUMENT

The Newest Vital Sign (NVS) (Pfizer, New York, NY)¹³ is a valid and reliable instrument designed to measure health literacy. It is available in English or Spanish.^{18,19} The NVS is formatted as an ice cream label with nutritional information; participants are instructed to refer to the label while responding to questions, which are read aloud. The 6 questions measure the prose, document, and numeracy facets of health literacy. Correct responses receive a score of 1, incorrect: 0. Points are totaled to determine the patient's health literacy level: 4 to 6 indicates adequate health literacy; 2 to 4 supports being at risk for poor health literacy; 0 to 2 is rated as poor health literacy.¹³ Administration takes 3 or fewer minutes. Although the instrument was designed for use in the primary-care setting, it has been used in various settings on populations from childhood to geriatrics, across multiple ethnicities and medical conditions.

TABLE 1
Differences in percentages of accurate responses to NVS items based upon language

NVS Item	Correct (English: n = 71)	Correct (Spanish: n = 79)	P Value
If you eat the entire container, how many calories will you eat?	62.0	42.9	0.013
If you are allowed to eat 60 grams of carbohydrate in a snack, how much ice cream could you have?	64.8	54.4	NS
Your doctor advises you to reduce the amount of saturated fat in your diet. You usually have 42 grams of saturated fat every day including one serving of ice cream. If you stopped eating the ice cream, how many grams of saturated fat would you be eating every day?	46.5	29.1	0.028
If you usually eat 2,500 calories in a day, what percentage of your daily value of calories will you be eating if you eat 1 serving?	33.8	1.1	<0.001
Pretend that you are allergic to the following substances: penicillin, peanuts, latex gloves, and bee stings. Is it safe for you to eat this ice cream?	90.1	65.8	<0.001
Pretend that you are allergic to the following substances: penicillin, peanuts, latex gloves, and bee stings. Is it safe for you to eat this ice cream? Why not?	85.9	58.2	<0.001

Analysis done using phi coefficients.

Mean total NVS scores differs significantly by language, $F(1) = 19.961$, $P < 0.0001$.

PROCEDURE

Over a 3-month period, parents of children awaiting emergency care were approached by the department translator, who explained the study. The translator was nationally certified for Spanish medical translation. After agreeing to participate in the study, parents were brought to a private area. The translator read the NVS instructions to them in their preferred language (English or Spanish). The translator then asked the questions and recorded responses. At the completion of the questions, the translator thanked participants. Scoring was not shared with the participants.

DATA ANALYSIS

Descriptive data (mean, standard deviations [SDs]) were used to describe study results for responses to the NVS. Total number of correct responses was the primary variable of

interest. Mean total scores were compared for the Spanish and English speakers using 1-way analyses of variance. Proportions of participants scoring < 4 ("possibly" having health literacy issues and < 2 , 50% "chance" of poor health literacy¹³) were calculated for the total sample and for Spanish and English speakers separately. These and differences between the groups on individual NVS items were analyzed using phi coefficients. Data analysis used SPSS version 23 (IBM, Armonk, NY); the level of significance used for the study was 0.05.

Results

Mean total NVS scores differed significantly by language, $F(1) = 19.961$, $P < 0.0001$. Although the mean scores for both groups indicated that these patients are, on average, "at risk" for health literacy problems, English speakers had

TABLE 2
Differences in percentages of participants at risk of health literacy issues by language

Risk	Total Sample (n = 150)	English (n = 71)	Spanish (n = 79)	P Value
Scored < 4 ("possible" risk)	72.6	62.0	82.2	0.005
Scored < 2 (50% chance of poor health literacy)	34.0	22.5	44.3	0.005

Analysis across language done using phi coefficients.

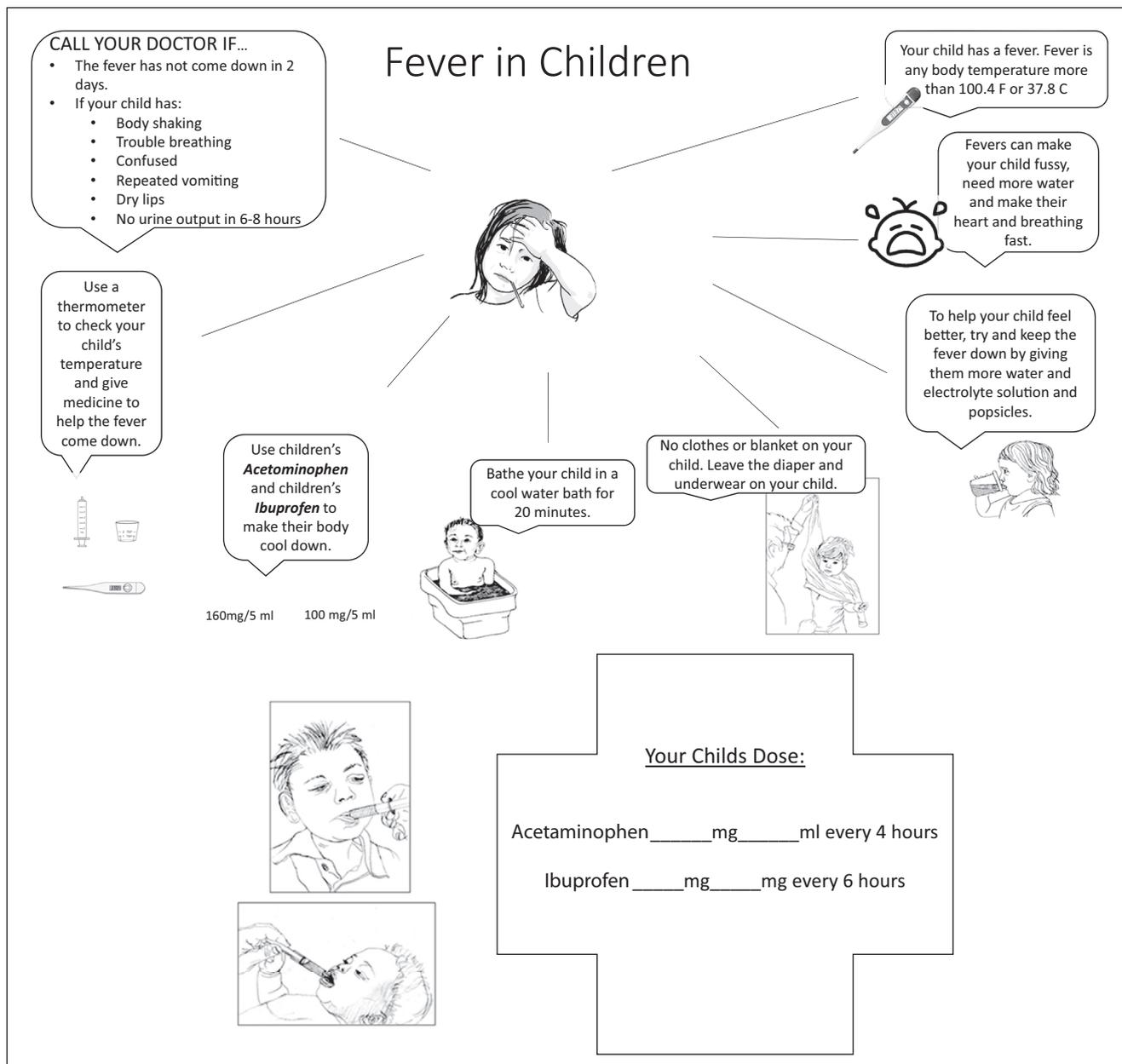


FIGURE 1
Pictograph of fever instructions (children).

a significantly higher mean total score (3.82, SD = 1.60) than did Spanish speakers (2.61, SD = 1.71).

Proportions of participants scoring < 4 on the NVS ("possibly" having health literacy issues) were significantly different by language (Table 1), as were those scoring < 2 (with a 50% chance of poor health literacy), with Spanish

speakers more likely to be at higher risk in both groups. Table 2 shows differences between English and Spanish speakers on individual NVS items with all but 1 differing significantly. English speakers were more likely to get the items correct. The item that was not different related to calculation of carbohydrate grams.

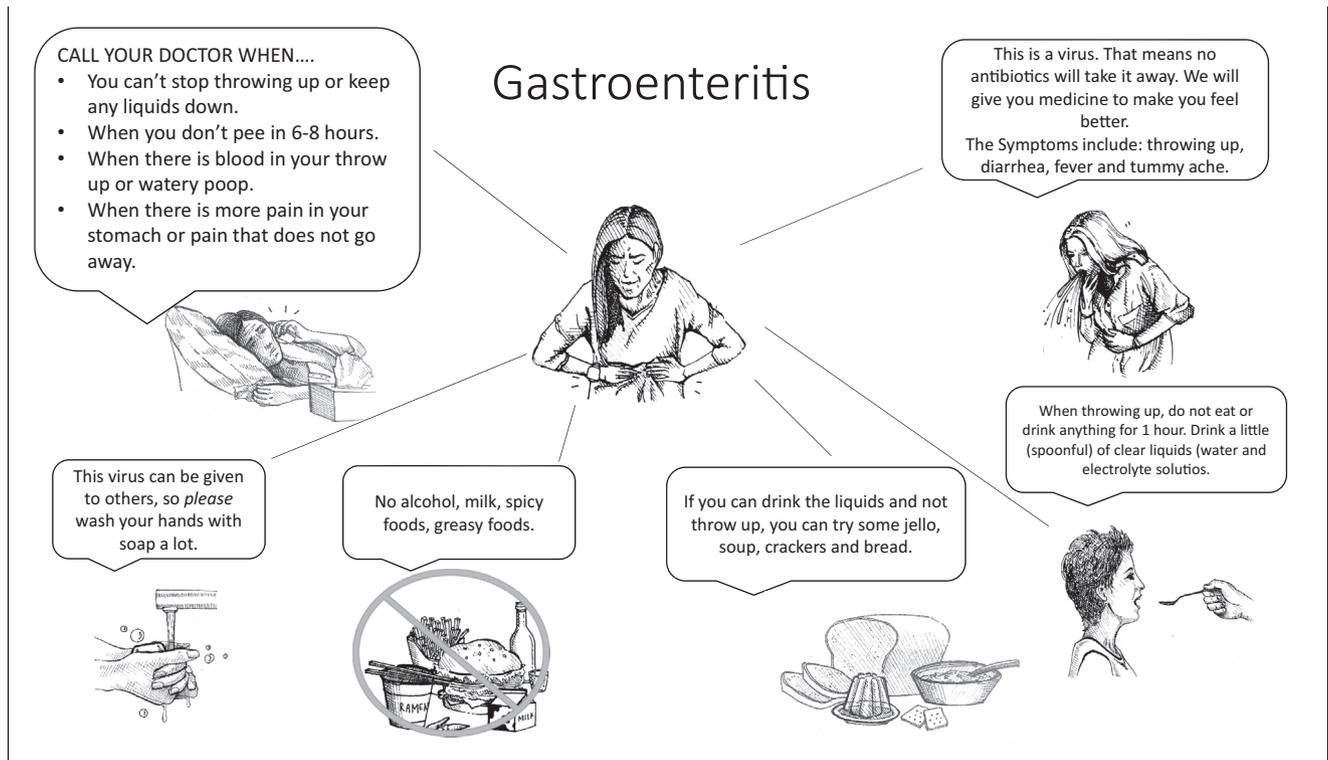


FIGURE 2
Gastroenteritis pictograph.

Discussion

This study sought to identify health literacy levels among caregivers prior to developing educational materials that support an efficacious, “high quality” emergency discharge. “High-quality” ED discharges require identification and correction of factors that lead to discharge failures, which are characterized as frequent ED revisits; poor compliance with instructions; or lack of understanding, resulting in inappropriate or incomplete home care and, potentially, a worsening of patient condition.⁵ Risk factors predictive of discharge failure have included socioeconomic factors, language other than English, poor health literacy, and inadequate comprehension of discharge instructions.⁵

Our study found that all participants were “at risk” for inadequate health literacy, with significantly lower scores for the Spanish-speaking participants. This finding may not reflect the health literacy of parents in general or even in our geographic region. Reduced health literacy and the related lack of understanding of the severity of the child’s condition has been associated with the preferential selection of emergency departments instead of office/clinic visits for care of minor acute illnesses;^{16,20} this finding is congruent

with our experience. Because lower health literacy has also been associated with a decreased ability to navigate the health care system, emergency departments may also be the easiest, most expedient method of getting care for those with lower literacy.

Previous research has identified Spanish-language preference as an independent predictor of poor comprehension of, and adherence to, discharge instructions and medication dosing errors after discharge among American patients.^{6,21} This is noteworthy because half of our study participants elected to complete the Spanish version of the instrument; this proportion reflects the preferred language distribution among the department’s pediatric population.

Limitations

Socioeconomic status, parental education, and language barriers may all hinder emergency discharge, contribute to issues with health literacy, and ultimately be partly responsible for frequent returns or ineffective home care.⁵ These factors were not measured in our study. However, a significant proportion of the departments’ annual low-acuity

pediatric population received public insurance, which may have influenced findings.

Implications for Emergency Nursing

To ensure patient comprehension of discharge instructions, appropriate discharge materials are essential. Previous recommendations for persons with lower literacy levels include having verbal instructions delivered in the patient's primary language and reinforcing written instructions at lower reading levels.²² Other suggested strategies involve augmenting written instructions with visual depictions.^{22,23}

Pictorial aids have been used to augment instructions for medication administration²⁴ and rehabilitation exercises.²⁵

The research team and other nursing staff members met following analysis of study findings to determine how to adjust our discharge education to better meet the needs of our patients. A suggestion was brought forth to use pictographs—visual depictions of care instructions—supplemented by limited prose at a third-grade reading level. To meet patient needs, pictographs for our emergency department would need to be available in both English and Spanish. Following consultation with ED leaders and physician groups, it was determined that the pictograph would be used in addition to—not instead of—the normal computer-generated discharge instructions. The initial pictograph selected for development was fever in children (Figure 1). Pictograph content was determined by reviewing current discharge instructions; a literature review with synthesis of current evidence; and, in the event of a discrepancy with the computer-generated instruction, consultation with leaders and physicians. Subsequently, 8 additional pictographs have been developed; these include diagnoses of gastroenteritis (Figure 2), abdominal pain, minor orthopedic injuries, and asthma. Follow-up phone calls to patients who received pictographs revealed patient comfort and satisfaction with the content and ease of use. Although more pictographs are planned, our greatest barrier remains getting someone willing to do the drawings for the form (all drawings are original).

Conclusions

ED patients often lack the ability to interpret and comply with discharge instructions, leading to inadequate home care and a potential worsening of their condition. In many cases this is related to a deficit in health literacy. This study demonstrated that our English and Spanish-speaking patients were likely to have difficulty understanding their routine

discharge instructions. This necessitated the development of pictographs, an alternative method of conveying education that did not rely exclusively on written instruction.

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