



Patient Health Literacy and Perception of Provider Communication: Is there a Link?

Erin Vaughn¹, Kristie Hadden² and Benjamin Doolittle^{3*}

¹Access Health Louisiana, Kenner, Los Angeles, USA

²Center for Health Literacy, University of Arkansas for Medical Sciences, Little Rock, Arkansas, USA

³Internal Medicine and Pediatrics, Yale University, New Haven, Connecticut, USA

***Corresponding author:** Benjamin R Doolittle, MD, M Div, FAAP, FACP, Associate Professor, Internal Medicine & Pediatrics, Yale University School of Medicine, Program Director, Combined Internal Medicine & Pediatrics Residency Program, Medical Director, Yale Medicine-Pediatrics Practice, New Haven, Connecticut-06510, USA, Tel: 203.785.7941, Fax: 203.785.3922, E-mail: benjamin.doolittle@yale.edu

Abstract

Inadequate health literacy is a common problem that contributes to poor patient-provider communication. Health literacy screening and specific provider communication practices may be important in clinics where patients are at high risk for inadequate health literacy. This study assessed patients' health literacy and their perception of provider communication practices in a primary care residency program clinic serving an urban multi-ethnic population. A convenience sample of 324 patients in an urban-based primary care practice was surveyed for health literacy and their perception of physician communication using validated instruments. Of the patients surveyed, 37% had inadequate health literacy. There was high internal consistency of our validated screening questions for health literacy ($p < .0001$). Overall, the patients surveyed rated the quality of their provider's communication very highly. We found no statistically significant relationship between patients' health literacy and their perception of provider communication, suggesting provider communication may be independent of patient understanding in this cohort. Effective communication from providers may compensate for lack of understanding with patients with inadequate health literacy in urban primary care practices.

Keywords

Health literacy, Provider communication, Patient communication, Residency clinics

Introduction

During a typical clinic visit, primary care physicians are faced with the daunting task of juggling patients' acute concerns, chronic medical problems and preventative healthcare needs. In the last decade, the average number of clinical items (diagnoses, medications or diagnostic tests) addressed at adult primary care visits has increased from 5 to 7, while the time spent on each item has decreased from 4.4 to 3.8 minutes [1]. Unfortunately, this often leads to a breakdown in physician-patient communication and poor patient recall. One major barrier to effective patient-physician communication is inadequate health literacy. Many patients are limited in their "ability to perform basic reading and numerical tasks required to function in the health

care environment" [2]. Patients with low health literacy ask fewer questions during office visits, may not understand medical terms used by their physicians, and may have difficulty understanding written health information [3]. They may also have problems taking their medications correctly and managing chronic illnesses [4]. As a result, poor health literacy contributes to poor health outcomes, including increased hospitalizations, morbidity and mortality, and use of the emergency department [5]. Diabetic patients with poor health literacy also have been shown to have poorer glycemic control [6].

In addition to patient health literacy skills, good provider-patient communication is also dependent on the communication skills of the provider and the complexity of the information presented. Recent national and international commentary and research agendas in health literacy have begun to highlight these "two sides of health literacy," the patient's skills as well as the provider's. This literature identifies the problem with health literacy as being a mismatch between these two sides, where the patient's needs and skills cannot be met by the provider's abilities and resources [7].

Different strategies have been proposed to best address this mismatch. Many physicians fail to recognize inadequate health literacy as a barrier to communication with their patients. In fact, several studies have demonstrated that physicians consistently overestimate their patients' health literacy [8,9]. Since providers may be unaware of a patient's low health literacy, and because all patients can benefit from clear communication and understandable health information, some have recommended a "universal precautions approach" to address health literacy in clinical settings [10-12]. When a universal precautions approach is used, providers employ strategies that promote understanding for all patients, regardless of their level of health literacy. Others have proposed a more targeted approach, where patients with low health literacy are identified and specific strategies (i.e. the "Teach Back Method") are used to improve patient understanding [6].

While the Institute of Medicine (IOM) and other leaders in health care are promoting approaches to quality care that include both sides of health literacy [13-15], scientific research has not yet caught up

Health Literacy Screening Questions

“How often does someone help you read things your doctor gives you?”	Always*	Often*	Sometimes	Never
“How often is it hard to understand written information about your medical problems?”	Always*	Often*	Sometimes	Never
“How easy or hard is it to fill out medical forms by yourself?”	Very Hard*	Somewhat Hard*	Easy	Very Easy

Figure 1: Screening questions for health literacy Chew et al. [16].

*Denotes a response indicating inadequate health literacy.

About your Doctor

1. How often do you feel that your (child's) doctor cares about your child as a person?
How often does your (child's) doctor...
2. Listen carefully to you?
3. Explain things in a way that is easy to understand?
4. Give you easy to understand instructions about taking care of your (child's) health problems?
5. Seem to know the important information about your (child's) medical history?
6. Show respect for what you have to say?
7. Spend enough time with you?
8. Use medical words that you do not understand?
9. Talk too fast when talking with you?
10. Use pictures or drawings or models to explain things to you?
11. Give you easy to understand instructions about how to take your (child's) medicines?
12. Explain the possible side effects of your (child's) medicines?
13. Explain medication side effects in a way that is easy to understand?
14. Suggest ways to help you remember to take your (child's) medicines?
15. Explain the results of your (child's) blood test, X-ray, or other tests in a way that is easy to understand?

Figure 2: Provider communication questions (adapted from CAHPS Health Literacy Item Set).

with these recommendations. The relationship between providers' communication skills and individual patient health literacy is not fully understood. The purpose of this study was to evaluate patient health literacy and perceptions of provider communication in an urban primary care, faculty-resident clinic. Since health literacy represents a complex relationship between a patient's skills, the health information given and the provider's communication skills, we hypothesized that patients with inadequate health literacy would also perceive that their providers have poor communication skills. Our study should measure a "gap" between the medical information communicated by the provider and the patient's ability to process and understand that information. Further, we speculated that certain aspects of physician communication may be more strongly associated with inadequate patient health literacy, such as explaining medication dosing or side effects. Providers may be able to improve communication through interventions focused on that particular skill. However, if there is no difference between the adequate and inadequate health literacy groups, it would suggest that patient health literacy skills and provider communication skills are independent of each other, supporting the universal precautions approach to address the needs of all patients through the same type of effective communication.

Methods

A questionnaire was administered to a convenience sample of both

English-speaking adult patients and caregivers of pediatric patients in an internal medicine/pediatrics primary care clinic in Waterbury, CT from July 2011 to April 2012. Patients requiring a translator were not included in the study. Participation was voluntary and anonymous. Only participants who fully completed the study instruments were included in the final data analysis. The study design and materials were reviewed and approved by the Institutional Review Boards of Yale New Haven Hospital and St. Mary's Hospital, an affiliate of the Yale University Medical School.

The written surveys asked for basic demographic information including age, sex, ethnicity, and education level. Also included were 3 validated screening questions for inadequate health literacy (Figure 1). A concerning response (e.g., "I always need someone to help me read things my doctor gives me") to these questions has been shown to detect inadequate health literacy (as measured by the S-TOFHLA) with 83-93% sensitivity [16,17].

Finally, 15 questions adapted from the consumer assessment of healthcare providers and systems (CAHPS) health literacy item set were used to assess our practice's activities to address health literacy (Figure 2). The CAHPS health literacy item set is a validated tool that was developed to assess patient perception of provider communication about medicines, tests, and medical conditions

Table 1: Demographics.

Variable	Adequate HL n = 205/324		Inadequate HL n = 119/324		P value
	#	%	#	%	
Age					p = 0.84
18-24	44	13.5	16	4.9	
25-34	57	17.5	35	11.0	
35-44	55	16.9	33	10.3	
45-54	31	9.6	20	6.3	
55-64	12	6.7	10	3.1	
65-74	6	2.9	4	1.3	
> 75	0	0	1	.3	
Gender					p = 0.09
Male	36	11.1	30	9.3	
Female	169	52.2	89	27.5	
Education					p = 0.65
< 8 th grade	29	8.9	13	4.0	
some high school	52	16.0	29	8.9	
HS Grad	78	24.0	50	15.4	
some college	37	11.7	19	5.9	
4yr college	7	2.2	6	1.9	
> 4yr college degree	1	0.3	2	0.6	
Ethnicity					p = 0.45
AA	38	11.7	20	6.2	
Hispanic/Latino	116	35.8	65	20.0	
White	49	15.1	30	9.3	
Other	2	0.6	4	1.2	

[18,19]. We used the four response categories standard for CAHPS (“never,” “sometimes,” “usually,” and “always”). For all but 2 of the CAHPS questions, “always” represents the most positive response, but for the questions that ask about providers using medical jargon and speaking too fast, the “never” response is the most favorable. Thus, the coding for this question was reversed in order to be consistent with the other CAHPS questions. A total score was calculated for each CAHPS survey collected, with possible scores ranging from 15 (lowest rating of provider communication) to 60 (highest possible rating of provider communication). All patient materials were written in English at a 5th grade level, determined using Flesch-Kincaid Grade Level instrument in Microsoft Word [20].

The Student t-test was used to compare the mean total CAHPS scores from completed questionnaires of responders with adequate health literacy to the mean total CAHPS scores of those with inadequate health literacy. Chi square analysis was used to determine differences among demographic categorical data. Second, the same analysis was performed to determine if there were statistically significant differences between the adequate health literacy and inadequate health literacy groups for each of the responses to the 15 CAHPS questions.

Results

A total of 324 surveys were returned with each item completed: 191 surveys were completed by adult patients, and 133 were completed by adult caregivers of pediatric patients. 16 resident physicians were involved in the study. Table 1 shows demographic information for the respondent population. We found that 37% of those completing the survey had inadequate health literacy. There were no statistically significant demographic differences between the inadequate and adequate health literacy groups. Also, there were no significant differences between adult patients and adult care-givers of pediatrics patients.

Analysis of the CAHPS health literacy scores demonstrated that patients’ health literacy and patients’ perception of their provider’s communication are two variables which do not correlate; not only were there no statistical differences in the adequate and inadequate health literacy groups in the composite perceptions scores, the means and distributions were nearly identical even for individual perception items. The three screening questions for health literacy were highly

correlated ($p < .0001$), demonstrating internal consistency between the screening questions.

For the first analysis, we sought to determine if there were any differences in the overall means of the adapted CAHPS questions composite scores between the adequate and inadequate health literacy groups. This would tell us if, overall, patients with inadequate health literacy rated their providers’ communication differently than those with adequate health literacy. We hypothesized that the group with inadequate health literacy would rate their providers as poorer communicators due to the patients’ lower health literacy skills. When examining the overall means ($\bar{x} = 53.48$ Adequate; $\bar{x} = 53.43$ Inadequate), there were no differences between the two groups. This suggests that overall, these patients rated their providers’ communication the same, regardless of their level of health literacy.

We then sought to determine if there were any differences in the means of individual CAHPS questions between the adequate and inadequate health literacy groups. While there were no overall differences in the composite means, there could be individual CAHPS questions in which the two groups responded differently, suggesting the providers could have variable communication skills in specific areas. However, as in the first analysis, no differences were found between the two groups for any of the CAHPS questions, even when controlling for demographic variables in multivariate models. With an alpha = .05 and a CAHPS standard deviation of 9, these findings are adequately powered (power = 80%).

Discussion

Our study found that in a primary care clinic where 37% of adults had inadequate health literacy, provider communication was perceived as effective by those completing questions from the CAHPS health literacy item set. There was no statistical significance between patients’ health literacy and their perception of physician communication. In this physician-patient cohort, patients with low health literacy felt that their provider communicated with them adequately. Several reasons may account for these findings. First, resident physicians in this practice have received training in doctor-patient communication through several modalities: noon conferences, pre-clinic workshops and grand rounds. Second, resident physicians spend more time with their patients than in private practice. On average, resident physicians see 4-5 patients on a half-day session. Also, patients are also seen again by the faculty preceptor—a second opportunity to consolidate instructions and emphasize teaching. These are provocative findings and suggest that adequate physician-patient communication is possible, even among low health literacy patients.

In contrast to our results, several studies have found that certain aspects of provider communication were perceived as lower quality by patients with inadequate health literacy [21,22]. These studies measured different populations than ours in difference settings (i.e. hospitalized patients, patients with diabetes). Also, they used different measures of health literacy and provider communication, which may explain the difference in the results.

Several other limitations should be considered. First, this study was among patients who were primarily English speaking. We felt that studying the use of translation services introduced too many confounding variables in this pilot study. However, we recognize that some of our patients spoke English as a second language, further complicating the issue of health literacy. Second, since the study was anonymous and voluntary, patients who elected not to complete the survey were not assessed for their health literacy. We may assume that some of these patients may have had lower health literacy. Third, patients with the lowest literacy who did not opt out of the study may not have understood the survey instrument. Fourth, due to the anonymity of the study, the impact of the provider’s ethnic background upon the patient’s health literacy was not assessed. The patient population was 55.8% (182/324) Hispanic and 17.9% (58/324) African-American, while the physicians were 6.3% (1/16) Hispanic and 12.5% (2/16) African-American. Given that patients reported that their provider communicated well overall, we do not believe the ethnic identity of the providers was a significant association in our pilot study.

Patients with adequate health literacy were no more likely to rate provider communication highly, therefore a universal precautions approach is justified; meaning using effective communication strategies with all patients, regardless of their level of health literacy. Many physicians believe that the use of effective communication techniques is prohibitively time-consuming [23]. However, research has demonstrated that patients who have a clear understanding at discharge are 30 percent less likely to be readmitted or visit emergency departments than patients who do not [24]. Therefore, while effective communication may take more time at a single visit level, it can be time efficient at the patient population level. In addition, physicians may not feel adequately trained in communication. Although the Accreditation Council for Graduate Medical Education (ACGME) requires that residents receive communication training as part of their medical requirements, such training lacks standardization and is often not emphasized. For these reasons, a set of health literacy practices and competencies for health professionals has recently been developed through a consensus study [25]. These competencies cover a range of skills related to communicating with patients that emphasize the universal precautions approach.

In this cohort, where inadequate health literacy was high, physician communication was appropriate. This affirms the universal precautions approach and suggests that communication skills should have an important place in the curriculum. Further research into the complex relationship between health literacy and physician communication is merited, especially intervention trials in areas where health literacy is low and physician communication is poor.

Acknowledgements

The authors wish to thank Dr. Anne Cowell, MD, who was a Resident in Internal Medicine and Pediatrics, Yale University and Dr. Catherine Dailey Agricola, MD, who was a medical student at Yale Medical School, at the time of this study.

References

1. Abbo ED, Zhang Q, Zelder M, Huang ES (2008) The increasing number of clinical items addressed during the time of adult primary care visits. *J Gen Intern Med* 23: 2058-2065.
2. Ad Hoc Committee on Health Literacy (1999) Health literacy: Report of the Council on Scientific Affairs. *JAMA* 281: 552-557.
3. Baker DW, Parker RM, Williams MV, Pitkin K, Parikh NS, et al. (1996) The health care experience of patients with low literacy. *Arch Fam Med* 5: 329-334.
4. Lee SK, Kang BY, Kim HG, Son YJ (2013) Predictors of medication adherence in elderly patients with chronic diseases using support vector machine models. *Healthc Inform Res* 19: 33-41.
5. Safeer RS, Keenan J (2005) Health literacy: the gap between physicians and patients. *Am Fam Physician* 72: 463-468.
6. Schillinger D, Piette J, Grumbach K, Wang F, Wilson C, et al. (2003) Closing the loop: Physician communication with diabetic patients who have low health literacy. *Arch Intern Med* 163: 83-90.
7. Institute of Medicine Roundtable on Health Literacy (2009) Measuring health literacy: What? So What? Now What? Measures of health literacy: Workshop summary.
8. Bass PF, III, Wilson JF, Griffith CH, Barnett DR (2002) Residents' ability to identify patients with poor literacy skills. *Acad Med* 77: 1039-1041.
9. Kelly PA, Haidet (2007) Physician overestimation of patient literacy: A potential source of health care disparities. *Patient Educ Couns* 66: 119-122.
10. Dewalt DA, Broucksou KA, Hawk V, Brach C, Hink A, et al. (2011) Developing and testing the health literacy universal precautions tool kit. *Nurs Outlook* 59: 85-94.
11. Volandes AE, Paasche-Orlow MK (2007) Health literacy, health inequality and a just healthcare system. *Am J Bioeth* 7: 5-10.
12. Brown DR, Ludwig R, Buck GA, Durham D, Shumard T, et al. (2004) Health literacy: Universal precautions needed. *J Allied Health* 33: 150-155.
13. Baker DW (2006) The meaning and the measure of health literacy. *J Gen Intern Med* 21: 878-883.
14. Rudd RE (2007) Health literacy skills of U.S. adults. *Am J Health Behav* 1: 8-18.
15. Institute of Medicine (2012) How can health care organizations become more health literate? National Academy of Sciences.
16. Chew LD, Bradley KA, Boyko EJ (2004) Brief questions to identify patients with inadequate health literacy. *Fam Med* 36: 588-594.
17. Wallace LS, Cassada DC, Rogers ES, Freeman MB, Grandas OH, et al. (2007) Can screening items identify surgery patients at risk of limited health literacy? *J Surg Res* 140: 208-213.

18. Weidmer BA, Brach C, Hays RD (2012) Development and evaluation of CAHPS survey items assessing how well healthcare providers address health literacy. *Med Care* 50: 3-11.
19. Clancy C, Brach C, Abrams M (2012) Assessing patient experiences of providers' cultural competence and health literacy practices: CAHPS Item Sets. *Med Care* 50: 1-2.
20. Microsoft Corporation (2010) Flesch-Kincaid Grade Level Instrument. Microsoft Corporation, Microsoft Word.
21. Schillinger D, Bindman A, Wang F, Stewart A, Piette J (2004) Functional health literacy and the quality of physician-patient communication among diabetes patients. *Patient Educ Couns* 52: 315-323.
22. Kripalani S, Jacobson TA, Mugalla IC, Cawthon CR, Niesner KJ, et al. (2010) Health literacy and the quality of physician-patient communication during hospitalization. *J Hosp Med* 5: 269-275.
23. Becker G, Kempf DE, Xander CJ, Momm F, Olschewski M, et al. (2010) Four minutes for a patient, twenty seconds for a relative: An observational study at a university hospital. *BMC Health Serv Res* 10: 94.
24. Jack BW, Chetty VK, Anthony D, Greenwald JL, Sanchez GM, et al. (2009) A reengineered hospital discharge program to decrease rehospitalization: A randomized trial. *Ann Intern Med* 150: 178-187.
25. Coleman CA, Hudson S, Maine LL (2013) Health literacy practices and educational competencies for health professionals: A consensus study. *J Health Commun* 1: 82-102.