BRIEF
REPORTS

A Health Literacy Training Intervention for Physicians and Other Health Professionals

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BACKGROUND AND OBJECTIVES: Health literacy is a key factor in communication between patients and health care professionals of all kinds. Improving the training of health professionals about patients' health literacy is a national priority that remains understudied. We sought to examine the effects of a health literacy training on physicians and nonphysician health professionals.

METHODS: We used a pre-/post-intervention self-reported assessment of knowledge, perceived skills, and current and intended behaviors vis-à-vis communicating with patients who have limited health literacy to evaluate the effects of a 3.5-hour health literacy training intervention designed to improve communication with such patients for the entire staff of a single family medicine residency program clinic.

RESULTS: A total of 58 health professionals participated. Complete data were available for 45 individuals (11 physicians and 34 nonphysicians). Forty-eight percent reported having initially overestimated their pre-training understanding of health literacy issues. Mean ratings significantly improved on all 12 knowledge, perceived skill, and intended behavior items. Results varied by health profession, with physicians reporting less positive change on several items. Among physicians, the training impact varied by years of experience.

CONCLUSIONS: Health literacy training for health professionals can improve self-perceived knowledge, skills, and intended behaviors, but results may vary between physicians and nonphysician health professionals and by years of experience. More research is needed to identify ideal instructional strategies for teaching health professionals about health literacy.

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Health literacy—defined in the US Affordable Care Act of 2010 as the degree to which an individual has the capacity to obtain, communicate, process, and understand health information and services in order to make appropriate health decisions[1]—is a key factor in communication between patients and health care professionals of all kinds. Low health literacy affects about one third of US adults[2] and is associated with numerous adverse health-related outcomes.[3] Addressing low health literacy is a priority area in the United States.[4-6] It is important that all health professionals possess adequate awareness, knowledge, skills, and attitudes regarding patients with low health literacy.[6] Unfortunately, health professionals often lack these attributes,[7,8] and these deficits tend to differ by profession. For example, Schwartzberg and colleagues[9] found significant differences in the self-reported use of various health literacy-oriented communication techniques among physicians, nurses, and pharmacists. It is not known whether such differences are due to differences in professional training or individual characteristics; however, the few available studies show that only a minority of US medical schools[10] and community-based internal medicine residency programs[11] appear to be teaching about health literacy. Understanding the reasons for interprofessional differences will be important for designing effective curricula. While physicians[12-15] and nonphysician health professionals[8] have been shown to benefit from a health literacy training, no studies have compared the effectiveness of interprofessional health literacy training for physicians and nonphysicians together. We sought to determine whether staff training on health literacy can improve self-perceived knowledge, skills, and planned behavior for communicating with patients who have limited health literacy among physicians and nonphysician health professionals.

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Methods

We used a pre/post design to evaluate the effects of a health literacy training intervention for the entire staff of a single family medicine residency program clinic in a rural community in the Pacific Northwest. The clinic was closed for the purpose of a mandatory health literacy training in September 2011, when the study was conducted. Using the most conservative results from Mackert and colleagues,[8] whose survey instrument we used, we calculated the need for an estimated 10 individuals per comparison group in order to achieve 80% power at a significance level of .05. The study was approved by the Institutional Review Board of Oregon Health & Science University.

The training—led by one of the authors (CC), who has extensive experience teaching about health literacy—used instructional methods and content consistent with published recommendations for health literacy curricula.[7,16] Immediately after the pre-assessment, participants received a 70-minute didactic overview of health literacy using lecture and video, with the following stated learning objectives:

(1) Understand the wide prevalence of low health literacy.

(2) Understand why low health literacy hurts quality of care and health-related outcomes.

(3) Understand how a "universal precautions" approach to health communication can help.

(4) Know specific best practices for addressing low health literacy.

Content included information on the definition of health literacy, prevalence of low health literacy, health-related associations with low health literacy, a rationale for using a "universal precautions" approach to health communication with all patients, and selected best practices for spoken and written communication, self-management and empowerment, and use of supportive systems to help patients with low health literacy, following the organizational framework of the Health Literacy Universal Precautions Toolkit from the Agency for Healthcare Research and Quality.[17] Following this session, participants engaged in a series of 30-minute experiential workshops designed to improve awareness of different learning style preferences, recognition and avoidance of healthcare jargon, use of the "teach back" method,[18] and use of the Fry technique for assessing the readability of written materials.

Pre- and post-intervention data were collected anonymously in a large group setting immediately before and after the training, respectively, using the tool developed by Mackert and colleagues,[8] shown in Table 1. We used chi-square analyses to stratify responses by demographic groups. Group aggregate responses to matched items were compared using Student's *t* tests.

Results

Out of 60 clinic employees, 58 (96%) participated. Thirteen people completed the post-assessment only, and demographic data are not available for them. The following analyses are limited to the 45 individuals who completed both the pre- and post-assessments (75% full participation) (Table 2).

Table 2 shows the pre- and post-training ratings of participants on self-perceived health literacy knowledge, skills, and behavior items. On all 12 items, there was a significant positive change for the entire sample. In subgroup analysis, however, compared to their nonphysician colleagues, physicians did not show improvement on likelihood of speaking slowly or using plain non-medical language with patients.

On the post-assessment, 48% of respondents agreed or strongly agreed with the statement, "I initially overestimated my knowledge about health literacy" (1=Strongly Disagree, 7=Strongly Agree).There was no difference between physicians and nonphysicians (4.7 versus 5.1, P=.5).

The physicians in the group had a median of 3.5 years of experience (we chose the median rather than the mean for this analysis, in order to reduce the potential impact of outliers). Comparing physicians with more than 3.5 years experience (n=5) to those with less than 3.5 years experience (n=6), there were no differences in responses on the pre-assessment items (data not shown). However, after the training, physicians with more experience were more likely to report improved knowledge: understanding what it means for patients to have low health literacy (6.83 versus 6.0, P=.03) and knowing the prevalence of low health literacy (6.83 versus 6.2, P=.04) and improved intended behaviors: paying attention to whether patients are understanding them (6.83 versus 6.2, P=.03) and creating a shame-free environment (6.8 versus 6.2, P=.04).

Conclusions

This is the first study to analyze health literacy training results between physicians and nonphysician health professionals. Our findings reproduce previous work showing that a modest educational intervention can positively affect health care professionals' self-perceived knowledge, skills, and planned behaviors about health literacy and that prior to training, many health professionals (48% in our study) overestimate their pre-training understanding of health literacy issues.[8] Our study is important for showing significant improvements among a professionally diverse group of health professionals, including physicians, attending a mandatory health literacy training. By studying the effects of training on the entire staff of a medical clinic, attending a mandatory training, our study is less likely to suffer from selection bias. Individuals who do not adequately recognize their educational shortcomings may be less likely to voluntarily attend a training on health literacy. Our data suggest that even individuals who may not have voluntarily chosen to attend a training on health literacy benefitted. Making health literacy trainings mandatory may be an

Table 1: Pre- and Post-Intervention Agreement on Knowledge, Skill, and Intended Behavior Items

		Mean Agreement With Statement (SD)								
		All Participants (n=45)			Non=Physicians Only (n=34)			Physicians Only (n=11)		
Perceived Knowledge	**Pre- and Post-Anchors: Strongly Disagree (1) to Strongly Agree (7)**	**Pre-**	**Post-**	***P* Value**	**Pre-**	**Post-**	***P* Value**	**Pre-**	**Post-**	***P* Value**
	I understand what it means for patients to have low health literacy	5.58 (1.23)	6.51 (0.79)	<.001	5.27 (1.28)	6.59 (0.84)	<.001	5.7 (1.6)	6.5 (0.71)	.087
	I know the prevalence of low health literacy	4.47 (1.47)	6.36 (0.7)	<.001	4.39 (1.43)	6.44 (0.76)	<.001	4.7 (1.77)	6.6 (0.52)	.003
	I know the groups that are more likely to be low health literate	4.56 (1.3)	5.95 (1.33)	<.001	4.45 (1.28)	5.81 (1.47)	<.001	4.8 (1.55)	6.6 (0.52)	.004
	I understand the health outcomes associated with low health literacy	4.67 (1.4)	6.38 (0.69)	<.001	4.52 (1.35)	6.44 (0.67)	<.001	4.9 (1.52)	6.3 (0.82)	.095
Perceived and Intended Behaviors	**Pre-anchor: Strongly Disagree (1) to Strongly Agree (7); Post-anchor: Indicate how likely you are to focus on each task, from Very Unlikely (1) to Very Likely (7)**	**Pre-**	**Post-**	***P* Value**	**Pre-**	**Post-**	***P* Value**	**Pre-**	**Post-**	***P* Value**
	Pre: I do a good job identifying low health literate patients. Post: Identifying low health literate patients	3.98 (1.36)	5.89 (1.29)	<.001	4.06 (1.37)	5.94 (1.36)	<.001	3.6 (1.35)	5.8 (1.35)	.002
	Pre: I am good at knowing whether or not my patients understand what I tell them. Post: Paying attention to whether or not my patients understand what I'm telling them	4.35 (1.40)	6.52 (0.70)	<.001	4.55 (1.41)	6.58 (0.76)	<.001	3.6 (1.26)	6.6 (0.52)	<.001
	Pre-anchor: Indicate how frequently you use each technique when working with patients, from Never (1) to Frequently (7); Post-anchor: Indicate how likely you are to use each technique, from Very Unlikely (1) to Very Likely (7)	**Pre-**	**Post-**	***P* Value**	**Pre-**	**Post-**	***P* Value**	**Pre-**	**Post-**	***P* Value**
	Speaking slowly	4.91 (1.49)	5.94 (1.15)	<.003	5.0 (1.44)	6.29 (0.90)	<0.001	4.8 (1.55)	5.1 (1.45)	.591
	Using plain, non-medical language	5.70 (1.49)	6.43 (0.70)	<.002	5.56 (1.05)	6.48 (0.68)	<.001	6.1 (0.7)	6.3 (0.82)	.447
	Show or draw pictures	3.43 (1.92)	5.54 (1.89)	<.001	2.94 (1.72)	5.16 (2.10)	<.001	4.5 (1.96)	6.2 (0.79)	.013
	Limit the amount of information provided and repeat it	5.02 (1.09)	6.20 (0.81)	<.001	5.06 (0.91)	6.26 (0.86)	<.001	4.7 (1.56)	6.4 (0.70)	.049
	Use the teach-back or show-me techniques	3.85 (1.80)	6.28 (1.17)	<.001	3.81 (1.86)	6.32 (1.25)	<.001	3.55 (1.61)	6.2 (1.03)	<.001
	Create a shame-free environment	5.65 (1.17)	6.61 (0.53)	<.001	5.78 (1.07)	6.71 (0.53)	<.001	5.35 (1.53)	6.6 (0.52)	.025

Table 2: Participant Demographics*

	Total Number (% of Sample)	Physicians Only (n=11)	Nonphysicians Only (n=34)	*P* Value
Gender				
Female	33 (73.3%)	5 (45%)	28 (82.3%)	.03
Male	11 (24.4%)	6 (55%)	5 (14.7%)	.1
Unknown	1 (2.2%)	0 (0%)	1 (3%)	.2
Age (n=43, mean)	40.1 years	32.8 (SD 4.1)	42.3 (SD 13.4)	.02
Ethnicity				
Hispanic or Latino	4 (8.9%)	2 (18%)	2 (5.9%)	.6
Non-Hispanic or Latino	36 (80.0%)	8 (73%)	28 (82.3%)	.001
Unknown	5 (11.1%)	1 (9%)	4 (11.8%)	.02
Race				
White	41 (91.1%)	9 (82%)	32 (94.1%)	.05
Black or African American	1 (2.2%)	1 (9%)	0	.002
Asian	0	0	0	N/A
American Indian or Alaska Native	0	0	0	N/A
Native Hawaiian or Other Pacific Islander	—	—	—	—
Unknown	3 (6.7%)	1 (9%)	2 (5.9%)	.01
Role at clinic (n=45)				
Physician	11 (24.4%)			
Registered nurse/licensed practical nurse	6 (13.3%)			
Medical assistant/certified nursing assistant	3 (6.6%)			
Patient advocate/promotora	2 (4.4%)			
Social worker/case worker	2 (4.4%)			
Other	4 (8.8%)			
Unknown	17 (37.7%)			
Years working in medicine/health care (n=45, mean)	11.8 years	4.2 years (SD 3.0)	13.6 years (SD 10.1)	.004

* n = 45

important strategy for educators and administrators to consider.

Following the training, physicians in our sample reported being less likely to make some behavioral changes (speaking slowly and using plain non-medical language) compared to their nonphysician colleagues, despite the two groups reporting similar baseline rates for these behaviors (Table 1). Curricula using recently published health literacy educational competencies for health professionals[19] should be studied for differing needs across professions. Our results should be replicated with a larger cohort, and in multiple settings, controlling for possible demographic confounders. We also observed significant differences in outcomes among physicians, with more positive educational effects occurring among the more experienced physicians in our sample. These findings should be confirmed in a larger sample of physicians. While we only assessed participants' intended behaviors, studies show that intentions do predict actual behavior.[20] Future studies should determine whether health literacy training can change health professionals' observable communication behaviors.

This study has a number of important limitations. First, while we used a survey instrument that had been used previously,[8] efforts to validate this instrument have not been reported; use of different assessment tools, such as those developed and used by Cormier and Kotrlik[21] and Cafiero[22] may have yielded different results. Two items in the instrument (identifying patients with low health literacy and knowing whether patients understand) use an atypical format, with anchors that differ between the pre- and post-assessment. It is possible that the positive changes noted on these items do not actually represent the accurate perceptions of participants. In addition, the pre-assessment item assessing the use of a "teach back" technique to check for patients' understanding may have actually measured participants' familiarity with this jargon term, rather than actual perceived behavior. Second, the training was conducted by an instructor with specific experience in health literacy training; instruction from less experienced trainers may produce different results. Third, with just 11 physicians in the sample, subgroup differences may have been affected by small sample size. However, based on prior work,[8] we calculated

needing only 10 individuals per comparison group for adequate statistical power. Response differences observed between physicians and nonphysicians could have been due to demographic differences between these two groups (Table 2). Given the small sample of physicians, however, we did not attempt to adjust the main findings for demographic differences. The nonsignificant improvements observed among physicians on the intent to speak slowly and to use plain language could represent inadequate study power or perhaps a ceiling effect on the plain language item. Fourth, because we studied a single clinic, our findings may not be generalizable to other settings. Finally, our data are self-reported and may be subject to reporting bias, as well as response shift bias due to the immediate post-testing design.

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