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Health Literacy Teaching in U.S. Family Medicine Residency Programs: A National Survey

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Health care providers, including medical residents, often lack adequate knowledge and skills to work effectively with patients who have limited health literacy. Little is known about the degree to which medical residents are trained to communicate effectively with people who have limited health literacy. This study aimed to assess the status of health literacy training for physicians in U.S. family medicine residency programs. We conducted an online survey of residency directors at 444 U.S. family medicine residencies. Among 138 respondents (31% response rate), 58 programs (42%) reported teaching residents about health literacy as part of the required curriculum. Most instruction occurred during the 1st year of training. Hours of instruction ranged from 2 to 5 during Years 1 through 3. Skills-based training (e.g., plain language techniques) was taught by most programs. Not having access to a faculty authority on health literacy was strongly associated with lack of a required health literacy curriculum. Respondents overwhelmingly agreed that increasing health literacy training for medical students and residents would help improve residents' clinical skills. This study provides a baseline snapshot of health literacy curricula in U.S. family medicine residencies and likely overestimates the prevalence of such curricula. Additional studies are needed to determine the quality of health literacy instruction in U.S. family medicine residencies and the most effective methods for teaching residents about health literacy.

Health literacy, defined in the U.S. Affordable Care Act of 2010 as the degree to which individuals have the capacity to obtain, process, communicate, and understand basic health information and services needed to make appropriate health decisions (Somers & Mahadevan, 2010), is a key element of effective patient–doctor communication (Nielsen-Bohlman, Panzer, & Kindig, 2004). Low health literacy is a pervasive problem, affecting approximately one third of U.S. adults (Kutner, Greenberg, Jin, & Paulsen, 2006), with serious consequences for patients' health outcomes, including worse understanding of one's chronic disease, worse understanding of and adherence to medication use, lower overall health status, increased use of emergency services and rates of hospitalization, increased mortality rates among seniors, and increased disparities among racial minority groups (Berkman, Sheridan, Donahue, Halpern, & Crotty, 2011). Addressing low health literacy is a national priority (Adams & Corrigan, 2003; U.S. Department of Health and Human Services [HHS], 2010; HHS, 2014). Unfortunately, health professionals, including medical students and medical residents, often lack adequate knowledge (American Medical Association Foundation, 2003; Brown et al., 2004; Coleman & Fromer, 2015; Coleman, Peterson-Perry, & Bumsted, 2016; Cormier & Kotrlík, 2009; Kelly & Haidet, 2007; Lukoschek, Fazzari, & Marantz, 2003; Mackert, Ball, & Lopez, 2011; Marks, Plews-Ogan, & Schorling, 2003; Powell & Kripalani,

2005; Williams, Davis, Parker, & Weiss, 2002) and skills needed to address such issues effectively (Bass, Wilson, Griffith, & Barnett, 2002; Bourhis, Roth, & MacQueen, 1989; Lindau, Tomori, McCarville, & Bennett, 2001; Marks et al., 2003; Schlichting et al., 2007; Seligman et al., 2005). Medical students, physician assistant students, and internal medicine residents report very low levels of confidence in working with patients with low health literacy (Ali, Ferguson, Mitha, & Hanlon, 2014). Studies have shown that many best practices that could help mitigate the negative effects of low health literacy are not routinely used by physicians (Castro, Wilson, Wang, & Schillinger, 2007; Deuster, Christopher, Donovan, & Farrell, 2008; Farrell & Kuruville, 2008; Schwartzberg, Cowett, VanGeest, & Wolf, 2007; Turner et al., 2009). Providing better training on health literacy issues for health professionals has been repeatedly recommended (Ad Hoc Committee on Health Literacy for the Council on Scientific Affairs, 1999; Davis & Wolf, 2004; Gazmararian, Curran, Parker, Bernhardt, & DeBuono, 2005; HHS, 2010; Joint Commission, 2007; National Work Group, 1998; Nelson, Schwartzberg, & Vergara, 2005; Nielsen-Bohlman et al., 2004; HHS, 2003) and is a key component of the U.S. *National Action Plan to Improve Health Literacy* (HHS, 2010). Health literacy training curricula for family medicine (Rosenthal, Werner, & Dubin, 2004) and other residents (Clark et al., 1998; Ferreira, Dolan, & Fitzgibbon et al., 2005; Hazzard, Dabrow, Celano, McFadden-Garden, & Melhado, 2000; Kripalani et al., 2006) have been described and are reviewed elsewhere (Coleman, 2011). Evidence suggests that such curricula can improve health professionals' self-perceived knowledge and skills and planned behaviors with respect to

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health literacy (Coleman & Fromer, 2015; Coleman et al., 2016; Mackert et al., 2011). Although general guidelines (Coleman et al., n.d.) and specific content recommendations for knowledge, skill, and attitudes competencies (Coleman, Hudson, & Maine, 2013) are available for the development of health literacy curricula, little is known about the extent, content, or methods of health literacy teaching for learners in any of the health professions. Only two published studies have reported the extent or type of health literacy teaching in training programs for health professionals. In the first, which surveyed all 133 U.S. schools of allopathic medicine, of the 63 schools that responded, 44% reported having a required health literacy curriculum (Coleman & Appy, 2012). Among these schools, the health literacy curriculum consisted of an average of 3 hours of instruction in total, using a variety of instructional and assessment methods. In the second study, Ali (2012) adapted the methodology and survey instrument used by Coleman and Appy (2012) to study health literacy curricula in a convenience sample of 30 community-based internal medicine residency programs and found that 43% of responding programs included a required health literacy curricular component.

The milestone project of the Accreditation Council for Graduate Medical Education and the American Board of Family Medicine has defined specific competencies for family medicine residents. One of these milestones specifically addresses skills in using culturally appropriate communication, including attention to health literacy (Accreditation Council for Graduate Medical Education & American Board of Family Medicine, 2013). The present study aimed to determine the extent and characteristics of health literacy teaching in U.S. family medicine residency programs. Understanding such efforts will be important to the design, evaluation, and dissemination of curricula for improving residents' advanced patient-centered communication skills vis-à-vis health literacy.

Methods

Study Design and Sample

We conducted a cross-sectional observation study by sending a Web-based self-administered survey to all accredited U.S. family medicine residency programs between July and August 2011. At the time of the study, the 451 accredited residency programs were represented by 445 unique program directors, with six individuals serving as the director for more than one program. Directors who were affiliated with more than one program were given the opportunity to report results for one main program only. In order to reduce undue potential bias, we did not survey our own residency program, where one of us (R.G.) is the residency director. Thus, a maximum of 444 responses were possible. An introductory e-mail with a link to a Web-based questionnaire, administered through SurveyMonkey (www.surveymonkey.com), was sent to the residency director at each program ($n = 367$) as identified through a search of program websites. If a director could not be contacted via e-mail, we contacted the program's residency coordinator ($n = 77$). Responses were tracked with a unique identifier number. Nonresponders were sent follow-up e-mails at 1 and 2 weeks. Respondents were

asked to complete the questionnaire themselves or forward it to an individual more familiar with the program's curriculum. The institutional review board at Oregon Health & Science University reviewed and approved this study.

Instrument

We used a 13-item survey that was developed for an earlier study on health literacy teaching in U.S. medical schools (Coleman & Appy, 2012) and was later adapted for a survey of internal medicine residency programs (Ali, 2012). The electronic survey began by providing a definition of health literacy. The survey was structured such that respondents were presented with follow-up questions based on their responses to previous questions. The survey ascertained the characteristics of each program, including the type of program (based on the American Academy of Family Physicians' [AAFP] five categories: community based, nonaffiliated; community based, medical school affiliated; community based, medical school administered; medical school based; and military), the location of the program (based on the AAFP's four categories: inner city, urban, suburban, and rural; AAFP, 2015), and program size (based on the number of intern positions in the entering class). We asked whether the program includes instruction about health literacy in its required curriculum and whether the program has a faculty member with expertise in the area of health literacy. Programs that indicated having a required health literacy component to the curriculum were asked additional questions about when during the standard 3-year curriculum instruction about health literacy occurs, which instructional methods are used to teach it, and which assessment methods are used to evaluate the curriculum. Programs were asked whether they have a required rotation dedicated to health literacy issues and were asked to identify their general curricular approach to training residents in health literacy, selecting from one of three mutually exclusive options (one-time stand-alone session, a series of sessions, or integrated into multiple topics) that were chosen based on a previous review of health literacy curricula (Coleman, 2011). Programs were then asked to identify in which year(s) the health literacy curriculum occurs and how many hours are devoted to it in each year in which it is taught. We asked respondents to identify which instructional method(s) are used to teach about health literacy from among eight possible options (lectures/didactics, intentional exposure to and/or experiences with adult low-literacy [or low-health literacy] patients, workshops/role playing, assigned readings, watching a video, standardized/simulated patient encounters, online training, or other methods) that had been identified in a previous review of the literature (Coleman, 2011). Next we asked about specific curriculum content related to health literacy, including prevalence of low health literacy, outcomes associated with health literacy, how to use *plain language* (defined as the ability to communicate with patients in lay terms, without the use of medical jargon) in spoken as well as written communication with patients, and how to use a teach back or show me technique to check patients' understanding. We did not define the terms *teach back* or *show me* any further than this. We then asked

which assessment method(s) are used to evaluate learners vis-à-vis health literacy; again, participants could choose from among options identified in the literature (Coleman, 2011), including clinical observation, standardized patients/Observed Structured Clinical Examination/Group Observed Structured Clinical Examination, written examination (e.g., multiple choice, short answer), essay writing, or other methods. All respondents, regardless of whether they reported having a required health literacy curriculum, were asked three questions regarding their opinions about the preparedness of medical students entering their program in recent years vis-à-vis health literacy training and whether their residents would benefit from more health literacy training than they currently receive. Responses to these three items were on a 4-point Likert-type scale (strongly disagree, disagree, agree, and strongly agree).

Analysis

Descriptive statistics were calculated, and associations between program demographic variables and curricular items were examined using chi-square analyses. All tests were two tailed, and alpha levels were set at $\leq .05$ to determine statistical significance.

Results

From the 444 maximum possible respondents, we received 138 responses (31.0%).

Characteristics of respondents' programs are summarized in Table 1. A total of 58 of the 138 respondents (42% of the total) reported specifically teaching about health literacy in a required curriculum. An additional nine programs (11.2%) indicated plans to add a required health literacy curriculum within the next 3 years. Of the 58 programs with a required health literacy curriculum, 57 (98.3%) provided detailed data about their health literacy curriculum. Of the other 80 respondents (58% of the total), 72 (90%) reported not having a required health literacy curriculum, seven reported not knowing whether their program had a required curriculum, and one did not provide data. Respondents who did not know about the status of health literacy teaching in their programs were excluded from further analyses to avoid misclassification bias. Prevalence of a required health literacy curriculum did not differ by program type or location; however, the absence of a faculty authority on health literacy was strongly associated with the lack of such a program (see Table 1).

Programs with a required curriculum indicated that they used one of three mutually exclusive general instructional patterns: (a) one-time stand-alone lecture or workshop ($n = 17$, 29.8%), (b) recurring subject presented during more than one discrete episode ($n = 13$, 22.8%), or (c) recurring theme integrated into multiple topics ($n = 27$, 47.4%); most of these activities occurred in Program Year 1. Seven programs (12.1%) reported having a required rotation designed to expose residents to health literacy issues. The median time spent teaching about health literacy ranged from 2 to 4.5 hours in Year 1, 2 to 5 hours in Year 2,

Table 1. Residency program characteristics

Characteristic	All respondents ($n = 135$) ^a n (column %)	Does the program have a required health literacy curriculum? ^b		p
		Yes ($n = 56$) n (row %)	No ($n = 72$) n (row %)	
Program affiliation				.26
Community based, nonaffiliated	18 (13.3)	5 (31.3)	11 (68.7)	
Community based, medical school affiliated	77 (57.0)	33 (44.6)	41 (55.4)	
Community based, medical school administered	12 (8.9)	3 (27.3)	8 (72.7)	
Medical school based	25 (18.5)	15 (62.5)	9 (37.5)	
Military	3 (2.2)	0 (0.0)	3 (100)	
Program location				.25
Urban	64 (47.4)	32 (52.5)	29 (47.5)	
Suburban	46 (34.1)	15 (35.7)	27 (64.3)	
Rural	15 (11.1)	4 (26.7)	11 (73.3)	
Inner city	9 (6.7)	5 (55.6)	4 (44.4)	
Is there a faculty member affiliated with your department, program, or institution who is considered an authority on health literacy? ^c				<.001
Yes	35 (26.3)	25 (75.7)	8 (24.2)	
No	86 (64.7)	26 (31.7)	56 (68.3)	
Don't know	12 (9.0)	4 (40.0)	6 (60.0)	
Mean (SD) number of residents in entering class	8.1 (2.4)	8.3 (2.3)	7.8 (2.6)	.43

^aData are missing for three programs. ^bSeven programs were unsure of the presence of a required health literacy curriculum and were excluded from the analyses.

^cEight respondents did not know whether a faculty authority in health literacy was present.

Table 2. Methods of teaching about health literacy in U.S. family medicine residencies that report having a required health literacy curriculum

Teaching method	Number (%) of programs using the specific teaching method			
	All program years, <i>n</i> = 58 (column %) ^a	Residency year (row %) ^b		
		Year 1	Year 2	Year 3
Lectures/didactics	49 (84.5)	43 (87.7)	33 (67.3)	33 (67.3)
Intentional exposure to and/or experiences with adult low-literacy (or low-health literacy) patients	31 (53.4)	19 (61.3)	27 (87.1)	22 (71.0)
Workshops/role playing	25 (43.1)	11 (44.0)	17 (68.0)	11 (44.0)
Assigned readings	20 (34.5)	17 (85.0)	13 (65.0)	8 (40.0)
Watching a video	18 (31.0)	12 (66.7)	7 (38.9)	8 (44.4)
Standardized/simulated patient encounters	11 (19.0)	10 (90.9)	5 (45.4)	5 (45.4)
Online training	10 (17.2)	8 (80.0)	2 (20.0)	2 (20.0)
Other (<i>ns</i> = 14 in Year 1 and 18 in Years 2 and 3)	14 (24.1)	12 (7.1)	7 (3.9)	8 (4.4)

^aColumn percentages do not total 100% because the selection of multiple methods was allowed. ^bRow percentages do not total 100% because methods may have been used in more than 1 year.

and 2 to 4.5 hours in Year 3, with the lowest number of hours for one-time stand-alone curricula and the highest number of hours for curricula in which health literacy was integrated into multiple topics (data not shown).

Of the seven teaching techniques asked about on the survey, the majority of programs (84.5%) reported using lecture/didactic formats (see Table 2); 53.4% reported using intentional exposure and/or experience with low-literacy patients, and 43.1% reported using workshops/role playing. Other techniques and tools were used less frequently. Didactic instructional methods were used most frequently during the first year but were common in all years.

In terms of educational content, respondents indicated a high degree of skills-oriented training, especially for oral (89.5%) but also written plain language (78.9%) communication (see Table 3). Associations between health literacy and patient outcomes, and how to use a teach back or show me technique, were also included in more than 80% of programs teaching health literacy. Among assessment methods used to evaluate residents' knowledge, attitudes, and skills, direct observation in clinical settings was most commonly reported (*n* = 43, 75.4%), with standardized patients or other simulations used by 12 programs (21.1%). Written exams or essays were used less frequently (data not shown).

Approximately two thirds of respondents, regardless of whether their program had a required health literacy curriculum, indicated that residents entering their program had *not* been adequately trained in health literacy principles during medical school. When asked whether better training in health literacy during medical school would help residents entering their programs deliver better care, 100% of those with a required health literacy curriculum agreed or strongly agreed, and slightly fewer (94.3%) of those without a health literacy curriculum agreed or strongly agreed (*p* = .05). Programs with and without required

Table 3. Specific health literacy content being taught in family medicine residency programs (all years combined, *n* = 57)

Educational content	Responses <i>n</i> (%)
Prevalence of low literacy or low health literacy	43 (75.4)
Association between literacy or health literacy and patient outcomes	48 (84.2)
How to use plain language skills (i.e., the ability to communicate with patients in lay terms, without the use of medical jargon) for <i>oral</i> communication	51 (89.5)
How to use a teach back or show me technique to check patients' understanding	48 (84.2)
How to use plain language skills (i.e., the ability to communicate with patients in lay terms, without the use of medical jargon) for <i>written</i> communication	45 (78.9)
Other	7 (12.3)

health literacy curricula (83.9% and 88.7%, respectively) agreed or strongly agreed that their residents would benefit from more training in health literacy than they currently receive (see Table 4).

Discussion

Study Strengths

This is the first national survey of health literacy teaching in U.S. medical residency programs. Our survey instrument and methodology were adapted from a prior study of medical school deans (Coleman & Appy, 2012), the results of which were validated through an independent survey (Acosta, 2010).

Table 4. Residency directors' attitudes toward the health literacy education of residents

Survey item	Agree or strongly agree, <i>n</i> (%)		<i>p</i>
	Required health literacy curriculum (<i>n</i> = 56) ^a	No required curriculum, or don't know (<i>n</i> = 71) ^b	
In the recent past, interns who have entered this program have been generally well-trained on the topic of "health literacy" coming out of medical school.	18 (32.1)	23 (32.5)	.76
Better training about "health literacy" during medical school would help residents entering our program deliver better care.	56 (100)	67 (94.3)	.05
Residents in our program would benefit from more training about "health literacy" than they currently receive.	47 (83.9)	63 (88.7)	.90

^aTwo responses are missing. ^bDoes not include nine programs reporting plans to introduce a required health literacy curriculum in the next 3 years.

Furthermore, that original survey was subsequently adapted for use among internal medicine residency programs (Ali, 2012). The results of the present study are consistent with these two prior studies done in different populations, suggesting a degree of construct validity across settings for the instrument. A strength of this study is that we surveyed all U.S. family medicine residencies, whereas the one prior residency survey reported on a small convenience sample of community-based internal medicine residency programs (Ali, 2012).

Study Limitations

There are several important limitations to these data. Although our response rate of 31% is not unusual among similarly designed studies (Dickson, Chessner, Woods, Krug, & Kellerman, 2013; Mainous, Seehusen, & Sohkar, 2012), it limits our ability to accurately estimate the prevalence of health literacy teaching in U.S. family medicine residency programs. A total of 42% of respondents reported teaching about health literacy in their required curriculum. This can be considered a likely upper limit of the true prevalence of health literacy teaching in such programs. Although respondents in our study were relatively representative of all U.S. family medicine residencies in terms of program affiliation and size (AAFP, 2015), we believe that our results likely represent a significant response bias toward programs with a required health literacy curriculum. If true, this suggests that our results may overestimate the true prevalence of health literacy teaching in U.S. programs. This would be consistent with findings from a prior study of U.S. medical school curricula in which a response rate of 45.9% yielded a curriculum prevalence rate of 72.1% (Coleman & Apy, 2012). The only other published study of health literacy teaching in medical residency programs found that among a convenience sample of 30 community-based internal medicine programs, 43% reported having a required health literacy curriculum (Ali, 2012). Although the low response rate limits the generalizability of our findings, it should not affect their validity. The picture of health literacy teaching that emerges from these data is likely to be an accurate representation of existing curricula. That said, the self-report nature of our data may increase the risk of reporting

bias, wherein responders may provide responses that are perceived to make them look more favorable. In addition, the topic of health literacy is broad and may overlap with other curricular content areas, such as the doctor-patient relationship and cultural competency (Coleman et al., 2013). It may be that by asking respondents to focus on health literacy issues explicitly, our self-report survey missed some curricular elements that would be considered health literacy principles. Because we used a multiple choice format to elicit information about curricular content and teaching and assessment methods, we cannot be sure that responses to these items were not affected by recall bias. In asking whether programs teach residents to use a *teach back* or *show me* technique to assess patient understanding, we did not formally define these jargon terms and may have thus merely assessed respondents' familiarity with such terms. Furthermore, although we collected information on the structure and content of health literacy curricula, we cannot comment on the quality of such instruction or on any potential outcomes relating to resident skills or behavior. Finally, didactic formats and experiential teaching techniques such as workshops and role plays were commonly reported techniques used to teach about health literacy; however, we cannot determine from our data the relative importance of a given technique within responding programs. Despite these limitations, our results provide a detailed picture of the variety of health literacy teaching practices among a diverse group of family medicine residencies.

Conclusion

Graduate medical education in the United States has been increasingly focused on demonstration of competency and not just time in training. It has also been recognized that in the past there was too much attention to training regarding patient care and medical knowledge and too little attention to other core competencies. The Family Medicine Milestones committee emphasized this fact by including four milestones on communication and only two on medical knowledge (Accreditation Council for Graduate Medical Education & American Board of Family Medicine, 2013). Residency programs will need to develop curricula to address the competency of health literacy.

Our data suggest that a significant minority of U.S. family medicine residency programs have introduced health literacy issues into their required curricula. Training physicians on low health literacy and principles for addressing it is an important component of the *National Action Plan to Improve Health Literacy* (HHS, 2010), and respondents in our study overwhelmingly agreed that better health literacy training for medical school graduates and family medicine residents would be helpful. As awareness of health literacy continues to grow, more and more residency programs are likely to introduce health literacy curricula. Nonetheless, relatively little educational research has focused on health literacy training for health professionals (Coleman, 2011). The Calgary Charter on Health Literacy (Coleman et al., n.d.) provides some general considerations for educators designing health literacy curricula. More recently, a comprehensive set of health literacy educational competencies (knowledge, skills, and attitudes) was published (Coleman et al., 2013) that provides specific content recommendations. Still, a number of important curricular issues are yet to be worked out. Although a variety of techniques and tools have been used to teach medical students and residents about health literacy, evaluative outcomes data are limited, and it is not known which techniques and tools are most effective (Coleman, 2011). Our results suggest a couple of important issues for health literacy curriculum developers. First, although the large majority of programs with health literacy curricula reported teaching skill-oriented content (e.g., the use of plain language and the teach back technique; see Table 3), relatively fewer reported using instructional methods that are widely felt to promote such skill development, namely, experiential techniques such as workshops and role plays (see Table 2). Second, the most commonly reported method of assessing learning in the health literacy curriculum was direct clinical observation. This is somewhat concerning because previous studies have indicated that physicians are frequently unaware of effective communication practices for mitigating the negative effects of low health literacy (Coleman, 2011). It is not known to what extent the faculty doing the direct clinical observation have been trained in health literacy and clear communication principles. Lastly, there are no validated tools for assessing health literacy and clear communication practices through direct observation. More research is needed to determine the most effective means of teaching medical residents about health literacy. Ultimately it will be most important to determine whether teaching medical residents about health literacy can result in clinical behaviors that improve patient-centered outcomes.

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