RESEARCH ARTICLE

Health Literate Communication: Teach-Back Training for First-Year Medical Students

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Abstract

BACKGROUND: Effective physician communication skill requires implementation of basic standards of practice, such as empathy, listening, and close attention to non-verbal indicators. Medical students must learn and understand that enhanced communication skills ensure better patient understanding of diagnosis and prognosis, and compliance to treatment plans. Health literate communication techniques like Teach-Back must be part of primary skills training for medical students in the early stage of medical education. The purpose of this study was to measure medical students' beliefs/knowledge about health literate communication and to evaluate use of Teach-Back skills during patient history taking and examination in the simulation center with standardized patients.

METHODS: First-year medical students' health literacy beliefs/knowledge of health literate communication were measured using pre- and post- Beliefs and Knowledge surveys. A one-hour health literacy skills training intervention lecture was delivered after pre-testing. Students were assessed for use of Teach-Back during the standardized patient encounter.

RESULTS: 36 students participated in the study. Median Belief scores increased from 9.25 pre-intervention to 10.00 post-intervention; mean Knowledge scores increased from 8.08 pre-intervention to 10.42 post-intervention with moderate to large effect sizes (beliefs r= .342, knowledge d=1.08). There was a significant post-intervention increase in both belief and knowledge scores, $p<.001$ with high power (.954). Eleven (11) students used Teach-Back successfully in the simulation center.

CONCLUSIONS: Medical students' beliefs, knowledge, and communication skills may benefit from a one-hour health literacy communication skills training. Primary care skills courses should incorporate health literacy training as a key competence along with existing curricular foci in order to improve health literate patient communication.

1. Introduction

Health literacy is a part of health communication that describes how patients obtain, understand, and use information to make decisions about their health and wellbeing, and how doctors communicate understandable and useable information for patient use.[1-3] Only 12% of American adults have adequate health literacy[1]; this means that close to 300 million Americans may not be able to seek or follow guidelines for age-appropriate preventive health services, complete a patient form, navigate the healthcare system, communicate with a health provider, or understand medication and discharge instructions.[4] There is also a strong and direct association between low health literacy, reduced use of health care services, and poor health in acute, preventive, and chronic disease care.[5-7]

Patients who do not understand their diagnosis, treatment plans, or discharge/ medication instructions are more likely to be non-compliant; this can lead to ineffective treatments, advanced disease states, and poor health outcomes.[8-10] Doctors ask patients if they understand what's been discussed during an office visit, and patients often say yes. However, most patients leave with little understanding or recall; up to 80% of information given in a doctor's visit is immediately forgotten, and half of what is remembered is incorrect.[11-12]

The ability of patients to follow medication and discharge instructions is positively related to a doctor's communication skills.[13,14] Many doctors believe they have excellent communication skills; however, they often have had little instruction, practice, or modeling, and often overestimate their skills in both psychosocial and task-oriented communication.[13,15-18]

Some believe that communication skills cannot be taught, yet studies show that intentional and systematic training using evidence-based practices can help doctors learn good communication skills.[16,19-21]

An appropriate time for health literate communication skills training is in medical school when students are learning techniques necessary to collect subjective and objective patient data, do assessments, and communicate diagnosis, treatments, and discharge instructions. In medical school curricula, communication skills are often integrated into classroom and practicum experiences and primarily cover issues of empathy and use of plain language[22], yet effective doctor/patient communication as a central tenet of patient care is more complex. One particular method where a doctor can confirm that the patient understands his/her diagnosis, care plan, and discharge instructions is called Teach-Back. A doctor confirms patient understanding by asking patients to repeat in their own words what transpired during the office visit.

The purpose of this study was to measure medical students' beliefs and knowledge about health literate communication techniques in clinical practice. Beliefs and knowledge work in tandem to help shape an individual's behavior[23], thus, a further purpose was to study the actual use of Teach-Back during patient's history taking and physical examination encounter in the simulation center. Our overall aim is to inform curricular content for medical students based on these findings.

2. Methods

2.1 Sample

We recruited 55 first-year medical students taking a Primary Care Skills course at a Southeastern US medical school in the Spring semester. The instructor recused himself from the class period, and researchers introduced the study to the students. The research team informed the students that there would be two parts to the study: 1) pre- and post- intervention health communication Beliefs and Knowledge surveys, and 2) assessment of Teach-Back use during a regularly scheduled simulation center experience. All students received the intervention which was a one-hour lecture on health literate communication. Those students who agreed to be in the study completed an electronic consent form; there was no incentive offered for participating and 36 students completed both pre- and post-surveys. The medical school employs standardized patients; as a normal course of their work, the standardized patients were taught how to evaluate and record the students' use of health literate communication techniques in the simulation center. The researcher's university Institutional Review Board approved this study and the medical school signed an Institutional Review Board Authorization Agreement to rely on the University's IRB.

2.2 Measures

Medical students completed a demographic survey that included age, gender, race, and native

language. They also completed a Beliefs survey both before and after the training intervention and simulation center experience (see Table 1). This 11-question survey was designed specifically for this study; two existing surveys provided content. To the best of our knowledge, there is no validated health literacy beliefs scale, thus, we used components from the "Always Use Teach-Back Conviction and Confidence Scale"[24] and Cormier's Health Literacy Knowledge and Experience Survey[6]. Our 11-question survey was scored in Likert-style scale ranging from 1 (not at all important) to 10 (very important). The median response was computed for each question. We determined internal consistency and reliability for this scale with a Cronbach's alpha coefficient of .85 (n=55) pre-test and .78 (n=36) post-test. A non-parametric Wilcoxon signed-rank test was used to measure the ordinal variables.

Students also took an 11-question Knowledge survey before and after the training intervention to determine gains in health literacy knowledge. Questions were developed based on the one-hour skills training lecture delivered by the PI. The multiple-choice questions focused on health literacy knowledge and communication skills and were coded as correct or incorrect; an average score was computed. We were unable to determine an internal consistency estimate for the knowledge measure because some of the items had no variance, however, each question in the measure came directly from the one-hour health literacy training session, therefore we believe it has adequate face validity. We examined mean score differences to determine if any changes occurred between the pre- and post- Knowledge responses using a paired samples t-test.

Medical students participated in a one-hour health literacy communication skills training during a regularly-scheduled class period which was delivered by the study PI. The training included video, lecture, and discussions about how healthcare professionals can reduce adverse health outcomes by developing clear communication styles with all patients. Teach-Back, an evidence-based health literate technique, was introduced as a method to ensure patients understand their care plan by repeating – or teaching the doctor back – in the patient's own words.[28] One week before the assigned simulation center day, students received a 2-minute reminder video through email about the importance of using Teach-Back. The video included examples of Teach-Back language. The use of Teach-Back was measured during the simulation center experience with standardized patient.

Standardized patients were trained by the PI during a regularly scheduled training session and included introducing the concept of health literate communication, describing what Teach-Back is, and discussing how to assess whether medical students used Teach-Back during the simulation experience. An important component of Teach-Back is that the doctor takes responsibility for his/her communication, i.e., he/she might say something like "I know I've given you a lot of information today and I wanted to make sure I was clear. Can you tell me what you're going to do when you get home?" Teach-Back was measured as occurring if the student both acknowledged that a lot of information was given and also asked the patient to repeat back what was said; use of one or the other was not considered proper use of Teach-Back

Table 1: Beliefs and Knowledge survey

Beliefs: On a scale from 1 to 10, how would you rate these elements of communication with patients? (1 Not at all important to 10 Very important)
1. Use a caring tone of voice and attitude. 2. Use plain language. 3. Ask the patient to explain, in their own words, what they were told. 4. Use open-ended questions. 5. Avoid asking questions that can be answered with a yes or no. 6. Take responsibility for making sure you were clear. 7. Explain and check again if the patient is unable to explain their care plan. 8. Document use of and patient's response to explaining their care plan. 9. Use reader-friendly print materials to support learning. 10. Provide a written care plan. 11. On a scale from 1 to 10, how convinced are you that it is important to use Teach-Back (ask patients to explain key information in their own words)? (1 Not at all important. 10 Very important)
Knowledge: Multiple choice questions with correct answer (shown)
1. Low literacy levels are common among (all ethnic groups). 2. What is one impact of low literacy on patient medication use? (decreased medication adherence) 3. Patients with low health literacy (are unable to read basic health care materials) 4. The key elements of plain language are (no jargon, short sentences, common everyday words) 5. When people have low health literacy they are likely to (be less aware of preventive health measures) 6. After providing written healthcare information to a patient, he states "Let me take this information home to read." This may be a clue that the patient (may not be able to read the materials) 7. Which of the following is true with regard to written healthcare information? (Illustrations can improve a patient's understanding of written information) 8. Spoken healthcare information provided to a patient related to a specific disease should include (only 3 or 4 main ideas about the disease) 9. Who should you use Teach-Back with? (all patients) 10. Which is an example of Teach-Back? (What are you going to do when you get home) 11. Whose responsibility is it to make sure information is communicated clearly? (the health professionals)

3. Results

As indicated in Table 2, 20 out of the 36 medical students were female; the mean age was 24.7 years old. Students were predominantly African American (44.4%) and Asian (36.1%) and 89% spoke English as their native language. Standardized patient scoring indicated that 11 out of 36 medical students used Teach-Back in the simulation center. This sample is representative of the Primary Skills Course students in age, gender, and race; the distribution in each of these demographic categories is similar to that of the 110 students in the course.

Table 2: Demographic Characteristics of Medical Students (n=36)

	N	%	Range	Mean (SD)
Gender				
Female	20	55.6%		
Male	16	44.4%		
Age			22-29	24.7 (1.91)
Race				
White	3	8.3%		
African American	16	44.4%		
Asian	13	36.1%		
Hispanic	4	11.1%		
Native Language				
English	32	88.9%		
Spanish	2	5.5%		
Other	2	5.6%		

To answer Research Question 1, *"Are there differences in medical students' beliefs and knowledge about health-literate communication before and after a one-hour health literacy skills training intervention?"*, we compared pre- and post- responses to the Belief and Knowledge survey questions. For the Beliefs questions, using a Wilcoxon signed-rank test to measure these ordinal variables, there was a statistically significant mean increase in post-intervention scores, $p=.023$. The pre-intervention median score was 9.08 and the post-intervention median score was 10.42 (See Table 3). The beliefs effect size was moderate $r=.342$.

For the Knowledge questions, using a paired-samples t-test, there was a statistically significant increase in knowledge scores after the health literacy and Teach-Back skills training intervention, $p<.001$. Of the 36 participants who returned both the pre- and post-survey, the intervention elicited an improvement in beliefs for 24 participants, whereas eight participants saw no difference and four participants' scores did not improve. The Knowledge survey effect size was large, d=1.08. The moderate and large effect sizes for both beliefs and knowledge and high power (.954) indicate both statistical and clinical significance.

To answer Research Question 2, "*Did medical students use Teach-Back in the simulation center after a health literacy skills training intervention?*", standardized patients were asked to score whether or not students used Teach-Back in the simulation center. For students who completed both pre- and post-surveys, results indicated that 30.1% of students (n=11) successfully used Teach-Back.

Table 3: *Comparison of pre- and post-knowledge and belief scores*

Variable	Pre-Knowledge (n=36)	Post-Knowledge (n=36)	Pre-Belief (n=36)	Post-Belief (n=36)
Mean	8.08	10.42*		
SD	1.519	.874		
Median			9.25	10.00*
Range	3-11	7-11	7-10	8-10

*Significant at $p<.05$

4. Discussion

Results from our study indicate that a one-hour health literacy skills intervention increased medical students' beliefs and knowledge about health-literate communication practices. With regard to Research Question 1, the change in raw score was small, however the moderate and large effects $r=.342$ (Beliefs) and $d=1.08$ (Knowledge) and high power (.954) suggest that a

robust clinical effect may be present which indicates a positive impact on how students' beliefs and understanding in how to communicate with their patients. Students were introduced to health literacy, the negative outcomes associated with low health literacy, and health-literate communication techniques. Since anyone can have low health literacy depending on what is happening at the moment health care is needed, health literate communication should be a universal precaution and used for every patient. [25]

With regard to Research Question 2, our results show that with Teach-Back skills-training as part of the Primary Care Skills curriculum, medical students may be able to implement these skills when working with standardized patients in the simulation center. Improved health literate communication skills increase patient-centeredness and patient satisfaction.[24] The use of simulation training has been well received worldwide by students due to its ability to provide opportunities to practice skills in a safe environment and increase student comfort level with using learned skills. [26-28] For these students, this was their first time in the simulation center; based on our prior qualitative research with nursing students, we know that the simulation center experience – particularly the first one – is nerve wracking and produces great amounts of performance anxiety.[29] This may also account for the low percentage of Teach-Back use. However, it remains critical that health providers use health literate communication with patients.

Improved health literate communication skills increase patient-centeredness and patient satisfaction.[24] Patients have reported that it is important that providers communicate information by speaking in a comprehendible manner and paying attention to patient concerns.[30] However, research shows that less than 40% of patients said their doctors shared clear and understandable medication and discharge instructions.[31] Doctors must learn how to explain complex medical information to patients of all health literacy levels. When doctors have communication training patient adherence is 1.6 times greater. [32] Patient-centered communication skills are essential to improved health outcomes.[32,33]

The language of medicine is dense and complicated, and even though patients may acknowledge what their doctor is saying, there is a high probability that the information is neither received as intended or understood.[34] Additionally, patients with low health literacy tend to be more hesitant to ask questions and be less engaged.[35] Medical students need to learn how to break down medical jargon to encourage patient dialogue and encourage patient participation. Teach-back is a health literate communication technique that can lead to better patient understanding by engaging patients in conversation.

Numerous studies have been conducted examining training interventions to help develop medical provider's communication skills in the United States. These interventions have proven successful in improving the communication skills that medical providers need while communicating with patients.[36-38] Internationally, teach-back has been used to ensure that patients understand directions given by their health care providers.[39-40] Teach-Back can be used with all patients regardless of medical conditions.[39-40] When using teach-back during educational sessions, patients tend to be more knowledgeable about the information discussed.[39-40]

The current curriculum includes communication skills training embedded in the Primary Care Skills course; however, it does not sufficiently develop health literate communication skills like Teach-Back and may leave medical students unprepared to communicate effectively with patients. Teach-Back skills training can help doctors in training develop much-needed communication proficiencies.[34] Doctors need to know how to effectively communicate with patients to deliver biomedical, lifestyle, and psychosocial information in a way that allows patients to understand diagnosis and care plan. Developing health literate communication skills takes time and practice, and students should begin learning and practicing these skills early and often in their academic programs.

While a one-hour health literacy training was helpful in developing and using Teach-Back, further instruction (including role-playing) may be needed.[29,41] Given the importance of patient communication, primary care skills courses should incorporate health literacy training as a key competence along with existing curricular foci; in particular, use of Teach-Back should be measured as a key competence in the simulation center. The competence of completing a standardized patient simulation in 14 minutes may concern about adding yet another component in the simulation, however, our prior

study with medical residents shows that there is no statistically significant time difference between patient encounters that include Teach-Back and those that do not.[42] Further, unless communication skills like Teach-Back are considered a key element of certification and licensing, their importance will only continue to be discussed and not implemented in a consistent manner across curricula.

5. Limitations

There are a few limitations to note. First, students sat through a primarily didactic lecture and did not have time to role play or practice Teach-Back skills. This limitation could be addressed by providing sufficient time during the introductory lecture for students to practice skills. A second limitation is that we were not able to assess whether Teach-Back skills improved because students only participated in the simulation center experience after training. One way to assess improvement is to evaluate a simulation center experience before and after Teach-Back training. Third, we did not know if the students had any prior health literate skills training; we will ask this question on future studies. Fourth, we did not measure if a multi-session intervention would have had a greater effect than a one-hour training session. The point of this study was to determine if a single skills-based class had an impact on health literate communication within curricular time constraints. Fifth, results relied on self-report by standardized patients and centered on whether or not the student used Teach-Back not on the quality of Teach-Back use. We were limited by both study design (we did not audiotape the encounter) and time constraints; standardized patients were trained to not engage with the student in a Teach-Back conversation, rather they simply answered yes or no when asked if they could teach back the student doctor. Future study design could include a deeper focus into the Teach-Back conversation itself. Finally, this study may not be generalizable to all medical students since we studied first-year students in their Spring semester only and also because the sample size was small.

Acknowledgements

H. William Craver, DO
Vice-Provost, Dean and Chief Academic Officer
GA Campus, Philadelphia College of Osteopathic Medicine
Dr. Craver was instrumental in bringing health literacy lectures for both faculty and students to the GA Campus and paved the way for this research study.

Funding

The Georgia Alliance for Health Literacy provided funding for this research study.

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