

## Design and Evaluation of Health Literacy Instructional Video for Pharmacy Students

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### Abstract

**Objectives:** 1) To describe the development of a health literacy video tailored for pharmacy students. 2) To compare the use of a health literacy video as an instructional method to a previously used health literacy instructional strategy by using both and: a) assessing pharmacy students' perceptions of their ability to communicate with low health literacy patients and b) assessing pharmacy students' perceptions of their overall understanding of the role of health literacy in a pharmacy setting.

**Case Study:** A novel pharmacy health literacy instructional video was created providing patient-pharmacist scenarios involving low literacy patients. A previously used role-play activity was performed in a required "Health Promotion and Literacy" course followed by the viewing of the newly designed health literacy instructional video. Two separate paper-based survey instruments were developed and administered to individually assess both active learning strategies and for comparison of the strategies. Statistically significant differences were noted on all five survey questions with the instructional video rating higher than the role play activity in the overall enhancement of students' understanding of health literacy.

**Conclusions:** A pharmacy health literacy instructional video was well received by students. It significantly improved students' perception of their ability to communicate with low health literacy patients in a pharmacy setting and their overall understanding of health literacy.

### Introduction

Since the recognition that approximately 80 million Americans lack the essential skills to effectively function in the health care environment, low health literacy has gained attention as a significant public health concern.<sup>1</sup> The Institute of Medicine defines health literacy as the ability to obtain, process and understand basic health information and services needed to make appropriate health decisions, including following medication instructions.<sup>2-3</sup> Although limited literacy skills are prevalent among all ages and ethnic groups, minorities and elderly are disproportionately affected.<sup>4</sup> Simple medication instructions such as "take one tablet by mouth twice daily for five days" may not be understood by patients with low literacy skills.<sup>5</sup> This patient misunderstanding can result in medication errors as well as poor medication adherence.<sup>6</sup> Studies have shown that patients with low health literacy have lower medication adherence rates, increased numbers of hospitalizations, poor patient outcomes and higher healthcare costs than patients with adequate health literacy.<sup>7-9</sup> Many patients with low literacy who have trouble reading and understanding health information experience a sense of shame about their literacy level due to embarrassment.<sup>10</sup> Thus, health care providers

such as pharmacists play a vital role in recognizing and assisting patients with low health literacy.

Due to their greater accessibility to patients, pharmacists are in a unique position to be able to assist patients, particularly patients with low health literacy in understanding their medications and treatment regimens.<sup>6</sup> When counseling patients about new medications or changes in medications, pharmacists must consider low health literacy and identify reasons for poor medication adherence. The National Work Group on Health and Literacy recommends that pharmacists and student pharmacists develop an understanding of health literacy issues and how to best communicate medication information to patients with low health literacy.<sup>2</sup> In their 2007 standards, the American Council of Pharmaceutical Education (ACPE) recommended that pharmacy schools and colleges address health literacy in their curriculum.<sup>11</sup> The Southern Illinois University Edwardsville (SIUE) School of Pharmacy designed a required course, offered during the 3<sup>rd</sup> professional year of the pharmacy curriculum entitled "Health Promotion and Literacy," to enhance students' understanding of and respect for the diversity of patients encountered as practicing pharmacists. This team-based learning course, offered for the first time in Fall 2007, provides content clusters in the areas of cultural competency, health beliefs, health disparities, cultural communication, health literacy and cultural encounters. A detailed description of the course is provided by Poirier et al.<sup>12</sup> The health literacy cluster encompasses the identification of the scope of the

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health literacy problem, discussion of how to recognize low literacy patients, tips on counseling patients with low literacy and discussion on how to tailor written materials for low literacy patients. Multiple active learning strategies that enhance student knowledge and confidence in their ability to apply health literacy concepts are utilized, such as the use of formal health literacy assessments, readability formulas and the creation of low health literacy patient educational materials.<sup>13</sup> Instructional strategies used include a role-play counseling exercise and the viewing of a DVD developed for medical schools and physicians marketed by the American Medical Association (AMA) titled "Health Literacy: Help Your Patients Understand."<sup>14</sup>

The use of a video as an instructional strategy is recognized by most educators as a valid communications medium that can play an important role in reinforcing concepts.<sup>15</sup> A video can provide visual reinforcement and a sense of "being there". It can help promote discussion and reflection about personal values and help develop personal connections to teaching concepts not easily understood or valued. The AMA video previously mentioned is currently the only available health literacy video resource to teach pharmacy students. The 20-minute video illustrates the health literacy problem and ways to handle it through the use of case studies. Actual physicians and staff are featured interacting with real patients challenged by low health literacy in a clinic setting. The video has been widely used and referenced in the literature.<sup>16-18</sup> However, it provides limited pharmacy application due to the inclusion of only physician-patient interactions. The video does not adequately address health literacy from the pharmacists' perspective, nor does it provide crucial patient-pharmacist vignettes that clearly explain how to identify and tailor counseling to low literacy patients. Particularly for students who do not have active practice experience counseling and interacting with patients, the presentation of health literacy tailored communication in a typical pharmacy environment using a video would serve as a valuable teaching tool and would be useful not only to pharmacy schools, but also to practicing pharmacists in search of a teaching aid for health literacy. An audiovisual teaching tool targeting health literacy from a pharmacist's perspective does not exist to date. Consequently, a critical need exists for the development of a video tailored to the unique situations pharmacists and student pharmacists face, in order to augment health literacy training.

This paper will discuss the design and evaluation of a novel health literacy instructional video, developed by the authors, for pharmacy students and practicing pharmacists. The goal is to provide viewers of the video with a pharmacy-based example when learning about the topic of health literacy,

thereby increasing awareness and understanding of the topic. Initial assessment of the video relative to a previously used health literacy instructional strategy will also be provided.

### Case Study

#### Design of the video

A Southern Illinois University Edwardsville Office of the Provost Excellence in Undergraduate Education (EUE) grant was obtained to create a professional quality health literacy instructional video tailored to student pharmacists. EUE grants were established by the university for the purpose of funding innovative projects in undergraduate education. High priority is given to proposals involving teaching improvements including projects addressing the utilization of innovative instructional methods and technology. An evaluation and dissemination plan is a required component of the grant proposal. Measurable outcomes must also be identified to show the effectiveness of the project. Therefore, an initial assessment of the video and comparison to the previously used health literacy instructional technique was created to demonstrate its effectiveness and fulfill grant requirements.

The video was designed to serve as an audiovisual aid to teach pharmacy students how to identify and tailor counseling to low literacy patients. A script that included four patient-pharmacist scenarios was created by the authors based on real-life situations experienced by pharmacists in practice. Each case provided examples of low health literacy issues including the understanding of medication directions for prescription and over-the-counter products. Each scenario also illustrated the problem of health literacy and how one might deal with this problem in the pharmacy setting. Actors from the SIUE Department of Theatre and Dance, in addition to pharmacy school staff, were utilized to role-play as patients in the video. Practicing pharmacists, including clinical pharmacy faculty and a local community pharmacist, were also featured interacting with the actors posing as patients challenged by limited health literacy. Pharmacists demonstrated the use of the teach-back technique, which is recommended for use by healthcare professionals.<sup>4-6</sup> The actors were of various ethnic backgrounds, gender and age to create the sense of cultural and social diversity that pharmacists will face in practice.

The video was filmed at a local, independent pharmacy (Glen Ed Health Mart Pharmacy) over 2 weekdays for approximately 4 hours each morning during the summer of 2010. The pharmacy owner provided a verbal agreement to use his pharmacy as the video site. It was filmed, edited and produced under the direction of faculty and students from the SIUE Video Services in the Department of Theater and

Dance. The format was designed based on the AMA video and structured similar to the role play (as described in the next section). While each scenario was being filmed, the pharmacist at the Glen Ed Health Mart Pharmacy continued business as normal, such as answering the phone and filling prescriptions. Since the video was filmed during the non-busy hours of operation each day and the pharmacy had only been opened for 6 months prior to our project, prescription and customer volume was very low, which allowed for quicker shoots. After remote video work was completed, post-production and editing were completed by the university's video services. The completed video was shown for the first time during the fall 2010 "Health Promotion and Literacy" course offering. The approximately 14-minute DVD includes a brief overview of the scope of the health literacy problem in the US narrated by the lead developer of the video, and focuses on techniques that pharmacists could use when interacting with low health literacy patients. A description of each patient-pharmacist scenario and the low health literacy techniques utilized by the pharmacists are provided in Table 1.

#### Role-play activity

To assess the impact of the first created pharmacy health literacy instructional video, it was compared to a previously used role-play activity. The role-play activity was conducted in the third class session of the six session health literacy cluster, followed by the viewing of the video during the next class session the following week. The role-play activity involved 4-5 member student groups who were required to first create a script of the interaction between a patient and pharmacist for an assigned prescription, and then role-play the interaction using health literacy strategies learned during the cluster, with the entire class serving as the audience. Students were given actual prescription directions and pill bottles to role play their written script and enact communication between a pharmacist and patient with low health literacy. Each member within a group was given a specific role to play: the patient, pharmacist or observer. Depending on group size, there was typically one student who acted as the patient, one or two students who served as pharmacists and two students who served as observers. The observers noted the interaction between the patient and pharmacists and rated the interaction utilizing an observer rating checklist designed for this activity. The checklist determined if the pharmacist used clear health communication techniques (such as using simple words, emphasizing 1 to 3 key points and repeating them, utilizing the teach-back method to confirm understanding, etc.) in their interaction with patients. Pill bottles filled with M&M'S® candy were used to mimic actual prescription pills.

The prescriptions were designed to include patient names reflecting diverse ethnicities.

#### Evaluation

The health literacy instructional video was evaluated and compared to the role play activity, by assessing pharmacy students' perception of their ability to communicate with low health literacy patients and overall understanding of the role of health literacy in pharmacy. Approval was obtained from the SIUE Investigational Review Board (IRB) prior to administering the surveys. The survey directions indicated that the survey was anonymous and that participation was voluntary. Immediately after each activity (role-play and video), a five-item paper-based survey instrument consisting of identical questions evaluating each activity was administered to the class by a course instructor not involved in the health literacy cluster. The survey questions were developed by the authors and based on desired key health literacy concepts and learning outcomes that aligned with the course and instructional tools. The survey instruments contained items inquiring if the activity enhanced their understanding and awareness of health literacy and ways to counsel patients with low health literacy. All items were on a 6-point Likert scale from Strongly Disagree (1) to Strongly Agree (6).

Seventy-five students completed the role-play survey (response rate =100%) while 70 students (response rate =93.3%) completed the video survey. Class demographics of the students participating in the study surveys included 60% females (n=45), 40% males (n=30), 92% Caucasian (n=69), 4% African American (n=3), 1.3% Middle Easterner (n=1), 1.3% Hispanic (n=1) and 1.3% American Indian (n=1). Mann-Whitney U tests were performed to determine if distributions of the role-play and video were significantly different for each item in the survey. The same students were asked to complete both surveys after completing the role-play activity and viewing the health literacy video. Therefore, use of the Wilcoxon signed rank test would have been a more appropriate statistical test for this type of research. However, identification was not collected on the two surveys which did not allow pairing of the data. Therefore, the surveys offered two different pools of data that were compared. An alpha value of 0.05 was used to test significance. Students agreed that the video was significantly better than the role play in all survey items (Table 2). All items assessed showed statistical significance ( $p < 0.05$ ).

#### Discussion

The health literacy video created is the first of its kind to address health literacy from the pharmacists' perspective in a pharmacy setting. The results of this study showed that

students agreed the video was significantly better than the role-play activity in enhancing students' ability to identify common behaviors and signs of low health literacy, heightening their awareness and understanding of health literacy, and demonstrating ways to counsel low health literacy patients. The video visually exposed students to pharmacists interacting with low-health literacy patients in a community pharmacy, therefore reinforcing and depicting the didactic health literacy information provided prior to viewing the video. Students were able to visualize themselves talking to patients like those depicted in the video and also visualize how to incorporate techniques used to counsel patients with low health literacy. They were able to see what they learned in action. Past student evaluations of the course had consistent suggestions for areas of improvement including more real application needed and focus on more information relevant to providing healthcare. Viewing of the video made health literacy visually relevant to the students through the depiction of real pharmacist-patient encounters in an actual pharmacy. The surveys had high response rates (93.3%-100%) which may be due to the small number of assessment items included. Most of the survey participants were Caucasian (N=92%), which mirrors the student population of the school. Even though the demographic background of the survey participants may be viewed as a limitation, the video was purposefully created to include ethnic diversity among the pharmacists and patient actors to enhance its application to diverse populations. An additional limitation of the evaluation is the comparison of two different types of instructional strategies, a video and a role play activity. Due to the role play activity being more complex and requiring more work of the students, it could have been viewed as a less favorable student experience. Additionally, a confounding factor of the study is the order in which the instructional strategies and assessments were implemented (the role play first and then the video). This order could have impacted student survey responses, resulting in a bias for the novel video.

Limitations of the video include the use of predominately untrained actors in the DVD. The actors consisted of pharmacy faculty and staff, practicing pharmacists, 4<sup>th</sup> year pharmacy students and an undergraduate student with experience in film and dance. Although paid actors were included in the grant budget, recruiting theater majors to fill the roles was difficult due to filming in the summer when most classes were not in session. Hence, all actors volunteered their time and the unused portion of the grant budget was returned to the Office of the Provost. The actors were asked to volunteer for the most appropriate role chosen by the principal investigator of the project and provided the script to practice prior to filming. However, although the

actors were able to practice their role play part prior to filming, this did not seem to impact the quality of the final video. The video also did not depict a high volume pharmacy store and therefore may not be seen as a typical pharmacy setting. One of the student comments on the survey stated, "the video did not take into account the high volume of prescriptions pharmacists deal with and how to implement it." Although the pharmacy was a low-volume pharmacy, it still allowed a real depiction of pharmacist interactions with low health literacy patients.

During future video viewing in subsequent course offerings, time was allotted for discussion after each scenario. After each scenario, the following questions were asked: "What signs of low health-literacy were displayed by the patient? How did the pharmacist accommodate the patient? Is there anything you would have done differently if you were the pharmacist?" Questions posed encouraged the students to participate and reflect on each scenario. Due to the positive student response to the video and the enhanced student learning outcomes, it will continue to be used as an instructional video in future course offerings. Future direction for this visual aid is to create a teaching guide that includes teaching points for each scenario. Future research assessment plans include initiating a thorough evaluation of the video utilizing multiple class cohorts and assessing the impact of the video at other schools of pharmacy. Additionally, the video has been submitted and is in-press for national publication.

### Summary

Health literacy has become a topic of importance to address in the pharmacy curriculum and many universities are interested in learning about ways to incorporate this concept into their curriculum effectively. Pharmacists are in a unique position to assist low literacy patients in understanding their medication regimens. The development of a novel health literacy instructional video depicting pharmacist-patient interaction in a community pharmacy setting enhanced pharmacy students' perception of their overall understanding of this important topic of health literacy. It is anticipated that in the near future, such a video will serve as a valuable resource to other schools of pharmacy as they address health literacy in their curriculum, and also for currently practicing pharmacists across the nation.

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The video is available for purchase at:

<http://ffh.films.com/Search.aspx?st=adv&xtid=52174>

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**Table 1.** Description of video scenarios and literacy strategies used by pharmacists in a health literacy video

Scenario	Scenario Description	Low Health Literacy Techniques Used by Pharmacist
#1	42 year-old woman presents to pharmacy to pick up diabetes medication and receive the flu vaccine. She identifies her diabetes medication by pill color. When asked to fill out forms she states she forgot her glasses and requests to come back with her husband.	<ul style="list-style-type: none"> <li>Assists patient with filling out forms in a private patient counseling area</li> </ul>
#2	35 year-old male presents to pharmacy to pick up prescription for Hydrocodone/APAP tablets for back pain. Patient states print of written materials provided is too small and that he forgot his glasses. He also wants to purchase an OTC cold product containing acetaminophen.	<ul style="list-style-type: none"> <li>Shows patient the tablets</li> <li>Verbally counsels patient on how to take the pain medication in addition to possible side effects</li> <li>Uses the teach-back method</li> <li>Offers to help patient find a cold product that does not interact with his pain medication</li> </ul>
#3	A mother presents to pharmacy with her 5 year-old son stating that the liquid antibiotic for her son's ear infection is not working. The mother states the excess liquid drips down on his shirt when she administers it to her son.	<ul style="list-style-type: none"> <li>Asks mother to demonstrate how she is administering the liquid antibiotic</li> <li>Uses laymen terms instead of medical terminology</li> </ul>
#4	65 year-old male presents to pick up his warfarin prescription but is confused about the directions.	<ul style="list-style-type: none"> <li>Creates calendar and draws pictures of the number of pills the patient is to take each day for the month</li> <li>Uses the teach-back method</li> <li>Uses laymen terms instead of medical terminology</li> </ul>

**Table 2.** Comparison of role-play activity versus health literacy instructional video

Survey Question*	Type of Active Learning Activity		Mann Whitney U	Z	p
	Role Play (N=74)Average Rank	Video (N=70) Average Rank			
1) This activity showed the importance of health literacy awareness in a pharmacy setting.	60.14	86.78	1660.5	-4.035	0.000
2) This activity enhanced my ability to identify common behaviors and signs of low health literacy.	64.25	82.38	1968.5	-2.707	0.007
3) This activity demonstrated the role of the pharmacist in decreasing health disparities by addressing low health literacy.	57.99	87.84	1516.0	-4.577	0.000
4) This activity demonstrated ways to counsel low health literacy patients (i.e., teach back, visual aids, show medications) that will be useful in my future pharmacy career.	65.63	80.90	2072.0	-2.340	0.019
5) Overall, this activity enhanced my understanding of health literacy.	60.65	86.23	1699.0	-3.832	0.000

\*Likert scale ranging from 1 = Strongly Disagree to 6= Strongly Agree