Use of an Innovative Interprofessional Mini-Series Movie to Train Preceptors

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ABSTRACT

Objectives: To evaluate the effectiveness of the innovative “Preceptor Mini-Series: Adventures in Interprofessional Precepting” movie program in training pharmacy preceptors on interprofessional competencies and to determine pharmacy preceptors’ perceptions of the effectiveness of the Mini-Series format. Methods: Chronically by two preceptor experts, the Mini-Series movie follows the challenges of pharmacy, nursing, and medicine students and their preceptor during six-week experiential rotations. Pharmacy preceptors were invited to events held at movie theatres or local classrooms in three different cities. Participants were asked to provide basic demographic information and answer four “pre-program” and “post-program” survey questions focused on working in an interprofessional environment on a 5 point scale, 1=strongly disagree, 5=strongly agree. The post-program survey also included six additional questions to assess participant’s attitudes toward the effectiveness of this medium. Results: Fifty-eight (58) individuals attended the movie events. The majority had more than ten years of preceptor experience (n = 21, 36.2%), were female preceptors (n = 40, 69.0%), and practiced in an interprofessional environment (n = 48, 82.8%). The participants’ scores on all four interprofessional confidence level questions were significantly increased after viewing the Mini-Series movie and the overall mean increased from 4.47 (pre-confidence level) to 4.79 (post-confidence level, p < 0.001). There were no significant differences of confidence levels based on gender, location, or number of students a preceptor took on rotation each year. However, participants with fewer years of preceptor experience (<10 years) had a significantly higher perceived learning score than those with more preceptor experience (>10 years) (4.89 vs. 4.63, p = 0.020). The mean for satisfaction (4.9, 3 questions) was slightly higher than the means for perceived learning (4.8, 1 question), and instructional approach (4.87, 3 questions). Implications: After program completion, pharmacy preceptors indicated an increase in confidence level for precepting in an interprofessional environment. The Mini-Series movie program also yielded positive feedback on its delivery format and suggests the medium may be effective to use for similar future training initiatives.

Keywords: preceptorship, instructional films and videos, experiential learning

BACKGROUND

There is increased emphasis on interprofessional practice in today’s healthcare system. As a result, interprofessional practice in experiential education is becoming a cornerstone of health professions curricula. To guide development in this area, the Interprofessional Education Collaborative (IPEC) published “core” competency domains, including 1) roles and responsibilities, 2) interprofessional communication, 3) values/ethics, and 4) teams and teamwork. Experiential education, which makes up a significant portion of health professions curricula, provides numerous opportunities to teach the importance of these competencies of interprofessional education. The preceptors responsible for delivering this experiential component are vital to its success. To ensure quality, these preceptors must be trained on basic teaching strategies that allow them to successfully engage with their learners. In July 2016, the Accreditation Council for Pharmacy Education (ACPE) standards took effect. New standards, inclusive of Standard 20 (Preceptors) specifically focused on preceptors and their training and

Standard 11 (Interprofessional Education), now exist. Other health profession standards also provide varying degrees of emphasis on the importance of preceptor development and interprofessional education. In order to meet the preceptor development need, there are a diversity of preceptor training programs currently available. Programs are often offered through a variety of mediums including online modules, live workshops, podcasts, written programs, and webinars. To date, there is no clear evidence to support one type of learning medium over another.

Given the diversity of learner styles in addition to the new generation of preceptors, it would be beneficial to consider innovative ways to deliver preceptor training. With the popularity of theatre and movies in the United States, it seemed appropriate to explore these specific mediums. A literature review quickly highlighted that these have not been commonly used as delivery methods for preceptor training. However, there is some literature to support these modalities in the teaching of students. Interactive theatre is a simulated environment where individuals act out situations commonly encountered between students and preceptors. Audience members have the opportunity to engage with the actors immediately following the scene and have an open dialogue about what went well and what could be improved. In one study where medicine preceptors
attended an event structured like this, improved self-efficacy and comfort in dealing with patients were reported.  

Mediums that draw on multiple core intelligences or cause learners to utilize both sides of their brain have proven effective.  Gardner’s multiple intelligences include verbal/linguistic, visual/spatial, and musical/musical rhythm. During a movie, individuals learn by listening (verbal) and by seeing and imagining (visual). The right brain is the non-verbal side and is responsible for creativity, emotions, and processing visual images; while the left brain is the verbal side and responsible for processing logic behind a movie plot. Since movies utilize multiple intelligences and both of our brain hemispheres, they have the potential to be an effective learning medium for preceptors.

Literature has also shown that movies can enhance emotions and make learning more enjoyable. Even more important, individuals have demonstrated the ability to learn and remember facts when there is an emotional response. However, it is important to recognize the process of watching a movie may not be enough to lead to quality learning. Rather, having a teacher who asks audience members to reflect on situations seen in the movies can help to transition an individual’s emotions to concrete plans that can be implemented into their lives. Interestingly, emotions have a significant impact on the way participants respond to and learn information. For events that trigger negative emotions, individuals tend to remember them better, but have difficulty applying them to more broad situations. On the other hand, positive emotions cause a focus on more general things and thus make it easier to apply the information to new learning opportunities. From this, one could hypothesize that since movies have the clear potential to affect one’s emotions, that regardless of whether there are positive or negative responses, movies can have an effect on one’s ability to learn.

Based on the potential impact of movies on learning, the development of an innovative movie training concept entitled, a "Mini-Series" was explored. The design of this concept has been described earlier. In general, each of these Mini-Series consist of 6 to 12 professionally produced video episodes developed to provide educational pearls to preceptors who train students/residents on experiential rotations. Each video episode is 5 - 14 minutes in length and builds upon the next. At moments throughout each video episode, two preceptor and/or student experts share insight on how they would deal with each learning situation. Episodes end with two preceptor and/or student pearls related to experiential learning. Each Mini-Series is available for use in three different ways, including a) online as six to twelve individual video episodes with accompanying individual reflection and evaluation, b) as a full feature film (high-quality 1080p high definition) consisting of all six to twelve episodes back-to-back, and c) stand-alone episodes that can be shown in a classroom or workshop setting, followed by live individual and/or group reflection. To date, six unique Mini-Series have been developed.

To specifically address the need for more interprofessional development opportunities, three of the six Mini-Series have focused in this area. These are entitled, “Adventures in Interprofessional Precepting,” “A Change of Heart,” and “The Reason I Jump.” Each of these Mini-Series is comprised of 12-episodes that highlight multiple health care professions, including pharmacy, nursing, medicine, occupational therapy, speech-language pathology, physical therapy, emergency medical services, and athletic training. The focus of this study was on the full-feature film medium of the Mini-Series entitled, “Adventures in Interprofessional Precepting” (Figure 1). This 12-episode video Mini-Series specifically follows three health professional preceptors, including a nurse, pharmacist, and physician, as they precept their students in an ambulatory care setting through six-week experiential rotations (Table 1). Through a combination of poor and quality interprofessional interactions, the interprofessional competencies of values and ethics, roles and responsibilities, communication, and teamwork are discussed. The two objectives of this study were to assess whether pharmacy preceptors report an increased level of confidence regarding interprofessional competencies following the full-feature movie and to determine pharmacy preceptors’ perceptions of the effectiveness of the Mini-Series format.

METHODS

This study was designed as a prospective, pretest-posttest study without a control group. Approval was obtained from the Texas Tech University Health Sciences Center (TTUHSC) Institutional Review Board as an exempt research study. Participants were informed that consent for the study would be presumed with participation in the study surveys. Pharmacy preceptors from three different campuses at TTUHSC School of Pharmacy were recruited to participate in the study with the use of flyers and emails. The movie screening was an integral part of a larger preceptor recognition event that was sponsored by the School of Pharmacy and was free to all participants. At each campus, preceptors were invited to network with other preceptors over hors d'oeuvres for approximately 30 - 45 minutes prior to the movie showing. After networking, preceptors were escorted to view the full feature presentation lasting 1 hour and 15 minutes. Popcorn and soft drinks were arranged in advance and served to attendees during the movie. Additionally, participants of the study had the potential to obtain 1.25 hours of continuing education credit for their participation.

Pre-and post-test survey questions were made available on paper. The pre-test knowledge questions (Figure 2) were distributed to preceptors and completed immediately prior to...
the start of the movie, while the post-test knowledge and reaction questions were distributed and completed at the end of the movie (Table 2). Both the surveys were voluntary and participants were given the opportunity to back out of the study at any time without penalty. Both pre and post-test surveys asked for all participants to provide some basic demographic information that included: a) the last 4 digits of their driver’s license number to serve as an identifier to match pre- and post-test data (we were not able to match these numbers to names, so responses remained confidential), b) the number of years as a preceptor, c) number of students that taught on rotation each year, d) if they currently practice in an interprofessional environment, and e) gender.

The questions were based loosely on the framework of Kirkpatrick’s Four-Level Training Evaluation Model. This model includes Level 1 (Reaction), Level 2 (Knowledge), Level 3 (Behavior), and Level 4 (Results), with level 1 being the most basic, and level 4 being the most comprehensive. Because of time and resource limitations, the surveys focused on evaluating measures on Kirkpatrick’s Training Evaluation Level 1: Reaction and Level 2: Knowledge. Of note, the questions utilized to evaluate the effectiveness of the program were not formally pre-tested or validated.

Both pre and post-test surveys included four knowledge level questions (Table 2). The knowledge level questions were directed to assess how much the pharmacy preceptors learned as a direct result of watching the interprofessional Mini-Series. The pre and post-assessment items required preceptors to rate their level of confidence concerning practicing in an interprofessional environment. Respondents were asked to consider positively worded statements using a 5-point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree). The post-test survey had an additional six reaction level questions that were developed to measure the preceptor’s attitudes toward the program (Table 2), including a) perceived learning, b) instructional approach and c) satisfaction with the Mini-Series, using the same 5-point Likert scale.

Screenings of the Mini-Series were held at three campuses (i.e. Abilene, Amarillo, and Dallas) of the TGUHSC School of Pharmacy on March 17th, March 24th, and May 5th, 2015, respectively. On the Abilene and Dallas campuses the Mini-Series was shown at a local movie theatre, while on the Amarillo campus it was shown in one of the large School of Pharmacy classrooms. A total of 58 pharmacy preceptors attended these events. With approximately 300 preceptors (adjunct and full-time faculty) available at these campuses, this led to a 19% attendance rate. Responses from 54 preceptors were used for the final data analysis due to missing data for four of the preceptors who failed to answer one or more of the survey questions.

Pre-test and post-test data were matched based on the 4 digit identifier and were analyzed with the IBM SPSS Statistics (IBM Corporation, Armonk, NY). To compare pre- and post-responses, dependent (paired) t-test was used, and independent t-test was conducted to compare reaction levels between two groups of preceptors with an alpha level of 0.05.

RESULTS
The majority of the respondents had at least ten years of experience working in an interprofessional environment (n = 47, 82%) and were female (n = 38, 67%). Although the movie was designed for interprofessional training, it is important to keep in mind that only pharmacy preceptors participated in this specific study. As seen in Table 2 and Figure 2, the mean scores of post confidence levels related to interprofessional competencies, perceived learning, effectiveness of instructional approach, and satisfaction with movie medium were all high. These findings show that the Mini-Series was effective.

Knowledge
Prior to the Mini-Series, respondents reported a mean confidence level on the four knowledge questions of 4.47 (1 = Strongly Disagree to 5 = Strongly Agree). Immediately after watching the movie, preceptors were asked the same four questions and their confidence level increased to a mean of 4.79. This change was statistically significant (p < 0.001). Similarly, significant increases in confidence levels were seen for each of the four interprofessional competency knowledge questions when evaluated independently (Figure 2). No significant differences were found based on the variables of gender, campus, number of students taught on rotation each year, or years of preceptor experience.

Reaction
Table 2 provides the mean and standard deviations to each of the reaction level questions. Overall, the mean scores for each component, including perceived learning (4.80), instructional approach (4.87), and satisfaction (4.90) were high. There were no significant differences based on gender, campus location, or the number of students taught on rotation each year. However, preceptors with fewer years of precepting experience (0-10 years) had a significantly higher perceived learning score than those with more precepting experience (>10 years) [4.89 vs. 4.63, p = 0.020].

Interprofessional Environment
Of the 54 preceptors participating, forty-six (85%) reported working in an interprofessional environment. Pre-confidence levels on interprofessional competencies were significantly lower in the group who did not currently practice in an interprofessional environment, which was to be expected [4.03 vs. 4.57, p = .001]. In addition, these preceptors were more likely to recommend the Mini-Series to others [5.0 vs.
DISCUSSION
The full feature movie of the “Adventures in Interprofessional Precepting” Mini-Series provides a unique medium for delivering training to pharmacy preceptors. The results of the study showed that confidence in interprofessional competencies increased after viewing the Mini-Series. In addition, participants had a positive reaction to the utilization of the Mini-Series as a training medium. All participants “agreed” or “strongly agreed” to the statements, “I will complete more continuing education opportunities utilizing this format in the future” and “I would recommend this Mini-Series to a colleague.” Of interest, preceptors who did not practice in an interprofessional environment were more likely to recommend the Mini-Series to others and to report that they learned a great deal from it.

The Mini-Series was thus successful in both the “reaction” and “learning” components of Kirkpatrick’s Model. Future analyses should be performed to determine whether this learning medium can effectively change “behavior,” the next level in Kirkpatrick’s Model. Methods for this level of evaluation might include a follow-up survey, 3 to 6 months following the education event, asking preceptors to report on the impact the training has had on their overall teaching. Another method to measure “behavior” changes would be to consider student evaluations, peer assessment, and/or self-assessment of interprofessional preceptor behaviors before and after the training. Assessing the “results” stage of Kirkpatrick’s model would prove more difficult, but one might try to show that by improving preceptor performance, patient care is enhanced through services delivered by preceptors and their students.

This was a small study focused on assessing the effectiveness of only one Mini-Series in the full feature movie format. In addition to this Mini-Series, five others have been created. Each of them is available to be used online and in the classroom, in addition to the full feature movie that was studied here. Unlike the full feature movie, when the Mini-Series is offered online and in the classroom, individual episodes of the Mini-Series are used and require learners to reflect after each video episode concludes. Learners completing the online version would reflect individually, while in the classroom there is the opportunity for group reflection. Adding a reflection component to the full feature movie, like the one studied here, could have led to even greater learning for preceptors.

The online version of another Mini-Series entitled “Preceptor Pharm Tools” (focused on pharmacy preceptors only) has been studied and shown to be effective. Two hundred preceptors completed all twelve episodes of this online Mini-Series, and their confidence in objectives were significantly at program completion ($p <0.001$). In addition, 99% of preceptors indicated they would complete a similar training program and recommend it to others. These findings are similar to those found in this study of the interprofessional Mini-Series. Of note, this past study of the online medium also assessed whether the “Preceptor PharmTools” Mini-Series may have led to behavioral changes. Three months following completion, 32% of the original preceptors reported an increase in preceptor confidence as a result of the series (mean - 6.84 with 1 - no increase, 10 - big increase). Future studies to investigate these potential behavior changes and to assess the effectiveness of the online and classroom versions of all Mini-Series are warranted.

There were some notable limitations to this study, including participation by a small percentage of the preceptor pool (19%). Several variables could have led to this. First of all, in the State of Texas, pharmacy preceptors must complete three (3) hours of preceptor-focused training every two years to maintain their preceptor license. It is possible that many of our preceptors had completed their training prior to our offering and thus had less incentive to attend. The interprofessional Mini-Series had also been available online for eight months prior to our study showing the full feature movie. Thus, many of our preceptors may have already successfully completed either this or one of our other Mini-Series programs online. In addition, the programs were offered during the week on school nights requiring preceptors to travel to a specific location that may have proved difficult with family and other personal responsibilities. Since the evaluation questions were not pre-tested or validated, it is also possible that the final evaluations may not have clearly measured what was intended.

In addition, although “The Adventures of Interprofessional Precepting” Mini-Series was developed for an interprofessional audience, only pharmacy preceptors were utilized during this study. Thus, we cannot speak to the success of this program for other health care professional preceptors like medicine and nursing whose roles were highlighted throughout the program. This study also only evaluated the full-feature movie format of the Mini-Series, so the effectiveness when used online and in the classroom is still unknown. The Mini-Series was solely written and directed by one pharmacy practice faculty member. This could have led to potential biases and limited the movie scenarios to his personal experience as a pharmacy preceptor and practice in an interprofessional setting. All actors were volunteer students and faculty who had received no formal training. This may have impacted the quality of final product. Finally, the cost of developing “The Adventures of Interprofessional Precepting” Mini-Series (all three program formats) was $9,000 which may be outside the budgets of preceptor training at many institutions. However, if the product could be
successfully used to train both preceptors and students representing multiple health professions it may not prove to be as cost prohibitive. Institutions could also consider collaborating with others in their state, region, or and/or consortium to share the costs to develop new and innovative preceptor development programs like the Mini-Series.

SUMMARY
After program completion, pharmacy preceptors indicated increased confidence for teaching in an interprofessional environment. The Mini-Series full feature movie yielded positive feedback indicating this program and movie delivery format are well received and may be effective for similar training initiatives. The authors recognize that innovative technology should not just be used for its novelty, but instead only if it can be shown to be equal to or superior to other mediums in improving teaching and learning. This study provides some insight into effectiveness, but future research can further evaluate the effectiveness of this approach.

Acknowledgements: We would like to Zheng Zhang, PharmD, who is completing an American Society of Health-System Pharmacists (ASHP) Accredited Pharmacy Residency at Memorial Regional Hospital in Hollywood, FL at the time of writing this manuscript, for her assistance in analyzing data associated with this study. Dr. Zhang was a 4th year student at Texas Tech University Health Sciences Center School of Pharmacy during time study was conducted.

REFERENCES
Figure 1. The Movie Poster and Trailer for the Series, “Adventures in Interprofessional Precepting”

Movie trailer: [https://www.youtube.com/watch?v=bZ0jG6C-6WU](https://www.youtube.com/watch?v=bZ0jG6C-6WU)
Table 1. Description of Twelve Individual Preceptor Mini-Series Episodes in “Adventures in Interprofessional Precepting”

<table>
<thead>
<tr>
<th>Episode Number &amp; Title</th>
<th>Brief Episode Description</th>
<th>Length of Episode (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1: Medicine Orientation</td>
<td>A physician preceptor and medical student during orientation</td>
<td>5:45</td>
</tr>
<tr>
<td>#2: Nursing Orientation</td>
<td>A nurse preceptor and nursing student during orientation</td>
<td>4:57</td>
</tr>
<tr>
<td>#3: Pharmacy Orientation</td>
<td>A pharmacy preceptor and pharmacy student during orientation</td>
<td>6:09</td>
</tr>
<tr>
<td>#4: Did That Just Happen?</td>
<td>Inappropriate interactions between pharmacy and nursing preceptors and their students as they meet with a patient in an ambulatory care clinic</td>
<td>6:21</td>
</tr>
<tr>
<td>#5: It’s Getting Hot in Here!</td>
<td>Inappropriate interaction between a nursing student and a physician with a patient. This is followed by a brief heated discussion between the physician, nurse, medical student, and a nursing student</td>
<td>5:21</td>
</tr>
<tr>
<td>#6: Uncontrollable Rage!</td>
<td>An interaction between the pharmacy preceptor and her student, followed by an uncomfortable exchange between the pharmacy student and the physician</td>
<td>6:22</td>
</tr>
<tr>
<td>#7: Communication Disaster</td>
<td>A brief uncomfortable discussion between the nurse and physician. Later you observe inappropriate interactions between a nursing and pharmacy student with the patient</td>
<td>7:05</td>
</tr>
<tr>
<td>#8: Changing Roles</td>
<td>Several health care professionals having a quality interaction with each other and a patient approximately 1 year after episodes 1-7</td>
<td>8:31</td>
</tr>
<tr>
<td>#9: Teaming Up</td>
<td>A medical, nursing, and pharmacy student interact positively with their preceptor and a patient</td>
<td>6:21</td>
</tr>
<tr>
<td>#10: Valuing Others</td>
<td>A quality interaction between a physician, pharmacy student and the student’s preceptor. Immediately following this, a medical resident has a good discussion with the patient</td>
<td>5:46</td>
</tr>
<tr>
<td>#11: Communicating the Right Way</td>
<td>A positive interaction between a nursing and pharmacy student with a patient</td>
<td>5:19</td>
</tr>
<tr>
<td>#12: Reflection</td>
<td>A conference between multiple health care professionals and their students discussing the concept of interprofessionalism</td>
<td>6:40</td>
</tr>
</tbody>
</table>
Table 2: Post-Survey Questions (n = 54)

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
<th>SD</th>
<th>Years of Preceptor experience</th>
<th>Average</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Perceived Learning</strong> - I think I learned a great deal from this Series</td>
<td></td>
<td></td>
<td>10 years (n = 35)</td>
<td>4.89</td>
<td>.32</td>
</tr>
<tr>
<td></td>
<td>*4.80</td>
<td>.41</td>
<td>&gt; 10 years (n = 19)</td>
<td>4.63</td>
<td>.50</td>
</tr>
<tr>
<td><strong>Instructional Approach</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I think the video was an appropriate teaching strategy for the content delivered</td>
<td>4.87</td>
<td>.29</td>
<td>10 years ≤</td>
<td>4.89</td>
<td>.32</td>
</tr>
<tr>
<td></td>
<td>4.89</td>
<td>.32</td>
<td>&gt; 10 years</td>
<td>4.89</td>
<td>.32</td>
</tr>
<tr>
<td>I will take more continuing education activities that utilize this type of video in the future</td>
<td>4.85</td>
<td>.36</td>
<td>10 years ≤</td>
<td>4.80</td>
<td>.41</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&gt; 10 years</td>
<td>4.95</td>
<td>.23</td>
</tr>
<tr>
<td><strong>Satisfaction</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am very satisfied with the content of this Mini-Series</td>
<td>4.90</td>
<td>.23</td>
<td>10 years ≤</td>
<td>4.86</td>
<td>.36</td>
</tr>
<tr>
<td></td>
<td>4.89</td>
<td>.32</td>
<td>&gt; 10 years</td>
<td>4.95</td>
<td>.23</td>
</tr>
<tr>
<td>The knowledge provided in this Mini-Series is meaningful and important to me</td>
<td>4.91</td>
<td>.29</td>
<td>10 years ≤</td>
<td>4.89</td>
<td>.32</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&gt; 10 years</td>
<td>4.95</td>
<td>.23</td>
</tr>
<tr>
<td>I would recommend this Mini-Series to a colleague</td>
<td>4.91</td>
<td>.29</td>
<td>10 years ≤</td>
<td>4.89</td>
<td>.32</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&gt; 10 years</td>
<td>4.95</td>
<td>.23</td>
</tr>
</tbody>
</table>

SD=Standard Deviation
1 = Strongly Disagree to 5 = Strongly Agree.
* p = 0.020
Figure 2. Interprofessional Knowledge Level Questions (Pre- vs. Post-survey Data; n = 54)

1. I am confident working with individuals of other professions to maintain a climate of mutual respect and shared values.

   Pre: 4.55, Post: 4.79, p = .001

2. I am confident using the knowledge of one's own role, and those of other professions, to appropriately assess and address the healthcare needs of the patients and populations served.

   Pre: 4.41, Post: 4.69, p < .001

3. I am confident communicating with patients, families, communities, and other health professionals in a responsive and responsible manner that supports a team approach to the maintenance of health and the treatment of disease.

   Pre: 4.56, Post: 4.83, p < .001

4. I am confident applying relationship-building values and the principles of team dynamics to deliver care to patients that is safe, timely, efficient, effective, and equitable.

   Pre: 4.35, Post: 4.76, p < .001

   Total

   Pre: 4.47, Post: 4.79, p < .001

1 = Strongly Disagree to 5 = Strongly Agree.