Interprofessional Health Care Escape Room for Advanced Learners
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ABSTRACT

Background: Interprofessional education is essential to ensure that health care graduates are prepared for collaborative practice. One way to prepare students for interprofessional practice is to expose them to interprofessional activities throughout their educational program. Method: In this article, we present the design and curricular implementation of an interprofessional health care escape room—a type of serious game in which teams of interprofessional participants were provided with a fictitious case. The participants were given 1 hour to work together to solve puzzles and create a postdischarge care plan for the patient. Results: Seven hundred eighty-six students, across four professions, have participated in this experience as part of an academic course. The results were positive: 89.5% of participants found that the activity improved communication and teamwork, and 94.1% felt that team members were listened to. Conclusion: This report demonstrates the value of an interactive interprofessional activity for advanced learners. [J Nurs Educ. 2020;59(1):46-50.]

Because interprofessional collaborative practice is a primary mechanism by which health outcomes can be improved, readiness for interprofessional collaboration is a key goal of effective interprofessional education programs (World Health Organization, 2010). The Interprofessional Education Collaborative (IPEC) defines the interprofessional collaboration domain of learning by describing these four core competencies: Values/Ethics for Interprofessional Practice, Roles/Responsibilities, Interprofessional Communication, and Teams and Teamwork (IPEC, 2016). Translating these competencies into meaningful and effective learning activities is the work of many health professional training programs.

The University of Minnesota interprofessional team (the 1HealthTeam) recognized the need to discover innovative solutions to engage students in interprofessional education. Serious gaming is one such example of an innovative strategy that is designed for the purpose of teaching a specific skill or knowledge (Olszewski & Wolbrink, 2017). In 2015, at least one professional organization, the American Association of Colleges of Pharmacy, encouraged the use of serious gaming in education (Cain & Piascik, 2015), and a review found 65 articles describing serious games being used for medical education (Olszewski & Wolbrink, 2017). The 1HealthTeam explored the concept of a type of serious game—an escape room.

Escape rooms are a popular and fun interactive activity in which teams of players are “locked” in a room and must solve a series of puzzles to escape within a specific time period. Ideally, learning activities should be engaging for the learner while accomplishing the goals of the educator, but this is not always the case. However, escape rooms have been found to be both engaging and valuable to students (Kinio, Dufresne, Brandy, & Jetty, 2017) while still meeting the communication and collaboration goals of the 1HealthTeam (Kinio et al., 2017; Pan, Lo, & Neustaedter, 2017). The 1HealthTeam has created and implemented two interprofessional health care escape rooms: a beginning room that has a health care focus but does not require any clinical knowledge (Friedrich, Teaford, Taubenheim, Boland, & Sick, 2019) and an advanced escape room, described in this article, which required the unique contributions of different professions to successfully solve the puzzles. The advanced escape room was designed for learners who have clinical knowledge and experience. The previously reported beginning escape room (Friedrich et al., 2019) lacked objective assessment of student teams using a validated tool and did not explore the value of an escape room that required clinical knowledge. The present work aims to address these unanswered questions with the description of an advanced escape room for health care students that was hypothesized to promote highly functioning interprofessional teams.
Method

The advanced interprofessional escape room was a simulated patient encounter involving eight to 10 students in each room representing medicine, nursing (baccalaureate nursing [BSN] and Master of Nursing [MN] degrees), occupational therapy, and pharmacy. The students had 1 hour to solve puzzles using various objects in the simulation room, an electronic patient chart, and video interviews of the fictional patient. To successfully escape the room, the students needed to use what they learned through the various puzzles to determine a discharge plan for the patient. A 30-minute facilitated debrief session follows the experience. The advanced interprofessional health care escape room guidebook can be found at https://www.umn.edu/escaperoom.

The interprofessional health care escape room activity was delivered to students through the University of Minnesota interprofessional curriculum and is a required experience for all medical, nursing, and pharmacy students in the third and fourth year of their programs but is optional for occupational therapy students. However, the escape room was designed with the intention to also accommodate most professions.

The specific objectives are as follows:

- Address team conflict in a respectful manner and identify strategies to be used when conflict arises.
- Apply concepts of care coordination.
- Understand the strengths of the various roles of health professionals.
- Identify ways in which team care can lead to improved outcomes for patients.
- Express ideas and concerns in a clear and concise manner.
- Express ideas and concerns without being judgmental.

The escape room case focused on a medically complicated 55-year-old male patient who was admitted to the hospital for diabetic ketoacidosis due to insulin noncompliance, triggered by a recent bipolar disorder episode. A foot infection and a tooth abscess further complicated his health. The patient also had some financial stressors and family problems that the students had to reconcile as they determined his discharge plan. Early in the activity, students had to unlock his electronic chart by using their own mobile devices to access a puzzle created on an Internet form. The electronic chart contained current and past medical records and one video each of the patient and his wife. The information gained through the electronic chart provided a foundation to solve several of the puzzles (Table 1). Ultimately, the students needed to integrate information from the electronic chart with information discovered through the puzzles, described in Table 1, to create a discharge plan for the patient.

At the beginning of the activity, students received an introduction from a trained facilitator as a large group (20 to 80 students) including an overview of the case and some general instructions. The students were then split into groups of eight to 10 and assigned to different rooms. Each group contained a mix of the four professions. There was no specific requirement for the size or configuration of the rooms other than that students need-
ed access to the Internet either through computers in the room or their own mobile device. The students had 60 minutes to complete the puzzles. In order to mimic real-life practice, they were able to access online resources of their choosing while in the room. The students were able to ask for hints from the facilitator if they desired. After the time ran out or the students successfully escaped the room, they participated in a large-group, facilitated debrief session with the facilitator to discuss their experience. Some important concepts discussed in the debriefing included whether a leader emerged, what conflicts arose, and what surprised the students about the experience.

Student perception of the activity was assessed using an institutionally developed 5-point Likert scale assessment. In addition, to assess whether the activity met the role and communication objectives, the functioning of the student teams was also assessed using the Jefferson Team Observation Guide (JTOG) (Lyons, Giordano, Speakman, Smith, & Horowitz, 2016). The JTOG was chosen for its ease of use and its known performance in assessing team functioning. Studies assessing JTOG demonstrated high reliability with Cronbach’s alphas of .97 to .98 (Lyons et al., 2016). In addition, t test analysis demonstrated that well-performing teams scored a mean of 21.5 points higher on the JTOG than dysfunctional teams ($p < .000$), indicating high predictive validity (Lyons et al., 2016). The JTOG was used for only three of the sessions (173 students in 17 groups) to verify that the objectives were being met and was not continued beyond this verification.

**Results**

Over the course of 2 years, 786 participants have engaged in the advanced interprofessional health care escape room (Table 2).

The results indicated that the teams overwhelmingly valued the opinion of others and learned about the roles of others. Of the 14 questions on the JTOG, the three directly related to the learning objectives are reported here (the percentage who

<table>
<thead>
<tr>
<th>Questions Asked to the Students</th>
<th>Overall, $N = 703$ (89.4% Responded)</th>
<th>Medicine, $N = 208$ (83.5% Responded)</th>
<th>BSN Students, $N = 210$ (86.4% Responded)</th>
<th>Pharmacy, $N = 220$ (96.1% Responded)</th>
<th>MN Students, $N = 63$ (100% Responded)</th>
<th>Occupational Therapy, $N = 2$ (100% Responded)</th>
</tr>
</thead>
<tbody>
<tr>
<td>This activity promoted interprofessional teamwork and communication.</td>
<td>89.5%</td>
<td>80.8%</td>
<td>96.2%</td>
<td>92.3%</td>
<td>87.3%</td>
<td>100%</td>
</tr>
<tr>
<td>This activity promoted my ability to work through conflict that might have arisen within the experience.</td>
<td>80.7%</td>
<td>66.4%</td>
<td>91%</td>
<td>85.5%</td>
<td>77.8%</td>
<td>100%</td>
</tr>
<tr>
<td>This activity enhanced my understanding of the importance of care coordination.</td>
<td>81.8%</td>
<td>66.8%</td>
<td>89.9%</td>
<td>87.3%</td>
<td>82.5%</td>
<td>100%</td>
</tr>
<tr>
<td>This activity was appropriate for my level of training.</td>
<td>89.3%</td>
<td>79.8%</td>
<td>97%</td>
<td>93.2%</td>
<td>87.3%</td>
<td>100%</td>
</tr>
<tr>
<td>The large group debriefing and discussion following the activity helped me better understand how team care can improve patient outcomes.</td>
<td>76.4%</td>
<td>57.2%</td>
<td>91.9%</td>
<td>82.3%</td>
<td>73%</td>
<td>100%</td>
</tr>
<tr>
<td>This activity is a valuable component of the interprofessional education curriculum.</td>
<td>78%</td>
<td>62.5%</td>
<td>88.9%</td>
<td>81.8%</td>
<td>74.6%</td>
<td>100%</td>
</tr>
</tbody>
</table>

*Note. BSN = baccalaureate nursing degree; MN = Master of Nursing.*

*Indicates response with somewhat agree, agree, or strongly agree.*
agree or strongly agree on a 4-point Likert scale):
• Members of team understood roles and responsibilities of others (88.2%).
• Team members listened to and considered the input of others (94.1%).
• Opinions of team members were valued by other members of the team (100%).

After each interprofessional health care escape room, students were asked to evaluate the activity. Although evaluations were not required, 89.4% of students completed an evaluation. Table 3 shows that the majority of students thought the activity addressed the objectives of team conflict, care coordination, and patient outcomes and overall promoted teamwork and communication. BSN and pharmacy students consistently rated the escape room higher in all areas than the medical and MN students (Table 3). Additionally, the majority of students considered this activity to be a valuable part of the curriculum, accomplishing a key goal of the 1HealthTeam (Table 3). A comparison was done between 2018 and 2019 data, and no differences were noted. Formal statistical testing was not performed between professions due to the high number of comparisons required, but these results are generating hypothesis for future studies.

Discussion

The interprofessional health care escape room provided interprofessional groups of students with the opportunity to collaborate, communicate, and depend on one another’s expertise in a fast-paced, high-stress, complex environment, which is reflective of many contemporary health care settings. Similarly, the advanced health care escape room also provides the opportunity to experience the challenges and the rewards that come with working toward a common goal in a diverse group. Although one previous study has described the value of an escape room in interprofessional education focused on early learners (Friedrich et al., 2019), the current article describes what the authors believe to be the first interprofessional escape room that incorporates clinical knowledge and is therefore designed for advanced learners. Furthermore, this advanced escape room builds on previous work by demonstrating the utility of a validated team assessment tool, JTQG, to objectively evaluate team performance.

Simulated health care settings have been used in interprofessional health education for many years; however, there has been little use of an escape room as the setting for this simulation. Simulation provides the opportunity to test student responses to situations that may not naturally occur in typical health settings, such as team conflict or decision making under stress, or may not occur in a way that is amenable to student assessment. Because it is timed and uses unfamiliar puzzles with little orientation, the escape room setting naturally created a stressful environment where these responses could be assessed and evaluated. The assessment showed that a high percentage of students learned the roles of the other professions and listened to, considered, and valued the input of other team members. Additionally, the student evaluations showed that most of the students thought the escape room promoted their ability to work together despite conflict and increased their understanding of the importance of care coordination.

Furthermore, in the experience of the authors, students are more engaged in interprofessional learning when it is fun, active, and interactive. During informal polling of the students during the large-group introduction to the escape room activity, 25% to 50% of the students report having participated in an escape room for fun. The evaluation of this activity shows that 78% of the students thought this activity was a valuable part of their interprofessional education curriculum, which likely represents that the students felt they learned something while they had fun doing so.

It was also interesting to note the different response to the escape room among professions. Nursing and pharmacy students consistently responded more favorably then medical students to the activity, and the BSN students consistently responded more favorably than the MN students. This disparity could come from the different knowledge, skills, attitudes, and shared beliefs that the students bring to the experience. For example, BSN and pharmacy students valued the emphasis on care coordination in the escape room, whereas the medical and MN nursing students rated this lower. This could result from their perceived future roles on the team. BSN nurses and pharmacists often require orders or direction from physicians to complete some of their responsibilities, but the reverse is not true. Additionally, at this institution, many of the MN students intend to pursue a Doctor of Nursing Practice degree, which confers a similar role as physicians in this state.

The debriefing, a key component of this experience, allows students to have tangible takeaways to bring into their clinical practice. Debriefing has been shown to be an effective approach that focuses on mental models, teamwork, and thought-processing techniques to help fill in performance gaps (Jeffers & Poling, 2019). The results from this activity demonstrated that 76.4% percent of the students thought the debriefing helped them to understand that team care can improve patient outcomes. Changing the debriefing to point out the difference in roles among nurses, pharmacists, and physicians on the team will likely yield valuable opportunities for students to discuss this role differential and how this can contribute to perceived power differences.

The interprofessional health care escape room also requires students to work collaboratively on a task. This collaboration shifts the focus away from traditional, hierarchal systems that still exist in health care (Hall, 2005). Hall (2005) mentioned that an opportunity exists early in students’ education, before silo walls become too thick, to provide students with teamwork tasks focused on a goal. In working toward this goal, students shared their profession-specific views to work collaboratively to solve the problem at hand. The challenge presented in the escape room provides the goal and the opportunity for teamwork.

Conclusion

The advanced interprofessional health care escape room provided a fun, interactive way to teach health professional students the skills needed for interprofessional collaboration. This educational innovation points to exciting opportunities in the field of health care education.

References


