Preparing Nursing Students for Interprofessional Collaboration Through High-Fidelity Simulation

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Background

There is a need to improve and advance research in simulation and interprofessional education (IPE), both trending innovative solutions in healthcare education (Palaganas et al., 2016). Research suggests combining IPE with high-fidelity simulation has a positive impact on student interprofessional learning (Palaganas et al., 2016). However, it is difficult to identify the most important factors that impact IPE learning, because of the limited information and lack of innovative suggestions provided in the literature (Jeffries, Swoboda, & Akintade, 2016; Palaganas et al., 2016).

High-fidelity human patient simulation (HF-Sim) has grown into a well-established teaching pedagogy in nursing education. Simulation-based training has positively impacted provider knowledge and procedural proficiency, provider performance, and positive patient health outcomes (Buppacher et al., 2010; Mills et al., 2013; Riely et al., 2011). HF-Sim provides a safe environment for students to practice interprofessional teamwork and communication skills with the focus of improving the overall quality of patient care (Jeffries, Swoboda, & Akintade, 2016).

The Joint Commission has recommended the implementation of team obstetrical emergency training drills with a post-debriefing session (Alderman, 2012). Obstetric emergency HF-Sim trainings are particularly geared towards interprofessional communication and teamwork training due to the collaborative nature of labor and delivery units. HF-Sim trainings allow healthcare team members the opportunity to practice collaborating and communicating with each other to achieve the best clinical outcome for their patient(s) (Alderman, 2012). Effective interprofessional collaboration in the healthcare setting includes understanding the defined roles of one’s own profession and the specific duties of other team members allowing for the inclusion of key personnel when developing effective work teams.

The expanded Kirkpatrick Model is commonly used to evaluate the effectiveness of IPE training (Barr, Freeth, Hammick, Koppel, & Reeves, 2000). Barr et al. (2000) expanded the four level Kirkpatrick Model by subdividing levels 2 (learning) and 4 (results). The majority of IPE research has focused on level 1 (reaction) and level 2a (attitudes/perceptions). However, there is a need to expand the growth of IPE research into level 2b (knowledge and skills) and level 3 (behavior) to determine additional learning outcomes of IPE training. The current study evaluated student IPE outcomes based on level 2a and 2b through the use of HF-Sim.

The IPE learning outcomes for this study are reflective of two Interprofessional Education Collaborative (IPEC) roles and responsibilities sub-competencies (IPEC, 2016): communicate one’s roles and responsibilities clearly to other professionals (RR1) and explain the roles and responsibilities of a nurse and respiratory therapist (RT) and how the team can work together to provide care and promote health based upon the maternal/infant case (RR4). The purpose of this study was to evaluate the perceptions (Kirkpatrick 2a) and knowledge (Kirkpatrick 2b) of undergraduate nursing students of the RT role in the delivery of a high risk neonate.
Methodology

Faculty developed an IPE HF-Sim for junior-level nursing and respiratory therapy students. Three nursing groups of seven students each were included in the study: IPE HF-Sim and debriefing session, HF-Sim and debriefing session, and no intervention. The IPE HF-Sim group included two respiratory therapy students. The HF-Sim was a required component of the undergraduate nursing course. Participation in the IPE research aspect of the study was voluntary and consent was obtained. Study approval was obtained through the Health Science Center's Institutional Review Board.

The study was a pre-post test, non-equivalent control group design. Nursing students’ perceptions and knowledge were assessed through an electronic survey. Two of the three groups participated in the pre-survey prior to the simulation (IPE HF-Sim and HF-Sim). The no intervention group participated at the beginning of their obstetric clinical experience.

One week prior to the IPE HF-Sim, the intervention student group received an IPE session document which outlined learning objectives and a timeline. Students met in a classroom prior to the IPE HF-Sim and completed the pre-survey. Then students rotated through two, 40 minute, IPE HF-Sims. After the IPE HF-Sims, students engaged in a 60-minute debriefing session. After debriefing, the intervention student group was provided class time to complete the post-survey. The HF-Sim group was provided time after debriefing to complete the post-survey. The no intervention group was provided time after a one-week obstetric clinical experience to complete the post-survey.

The pre-survey included 20 quantitative and two open-ended questions. Of the 22 questions, five collected demographic information, nine were IPE related, and eight were clinically focused. The post-survey included 11 IPE questions and eight clinical questions. Specific to the purpose of this study, the following four IPE pre- and post-survey questions were analyzed. Three quantitative questions: “I am able to communicate my roles and responsibilities clearly to other professionals”, “I am able to explain the roles and responsibilities of a RT on an interprofessional team”, and “I am able to explain how the team can work together to provide care and promote maternal and infant health.” One open-ended question “What is the role of a RT in the delivery of a high risk neonate?” assessed student knowledge.

Results

The data set was cleaned to include paired pre-post completed surveys. A Likert scale ranging from strongly disagree to strongly agree (1 to 5) measured the responses of the three quantitative questions. All analyses were performed using the SAS 9.4. The pre/post paired comparisons were carried out using the Wilcoxon signed-rank test (p < 0.05).

A RT faculty member provided a written response to the open-ended knowledge-based question, which guided the evaluation of pre-post responses. Nursing student paired answers to the open-ended question was independently evaluated by the RT faculty member, a nursing faculty member, and the IPE director. A consensus among the three members was achieved.

Seven nursing students engaged in the IPE HF-Sim participated in the pre- and post-survey. Six of the seven students engaged in the HF-Sim participated in the pre- and post-survey, and seven students in the non-intervention group participated in the pre- and post-survey. Twenty pre-post paired data sets were analyzed. The IPE HF-Sim student group had a statistical significant difference (p<.05) in post-survey scores for all three quantitative questions as compared to the HF-Sim and no intervention group. The IPE HF-Sim group also had a statistical significant difference (p<.05) in the post-pre difference survey scores for “I am able to communicate my roles and responsibilities clearly to other professionals” and “I am able to explain how the team can work together to provide care and promote maternal and infant health” as compared to the other two student groups.
There was no differences noted in student written responses to the question “What is the role of a RT in the delivery of a high risk neonate?” Responses were evaluated at the paired individual level and by the respective group level. Individual students and students in all three groups described the roles of a RT similarly in the pre- and post-survey.

Conclusion

This study contributes to the literature by discovering a difference in undergraduate nursing student knowledge of a RT as compared to student self-perception of his/her ability to communicate the role of a RT. All three nursing student groups were able to accurately document in writing the role of a RT in the delivery of a high-risk neonate. However, there was a statistically significant difference in the self-perception ability to communicate the roles of a RT between student groups. Students engaged in the IPE HF-Sim reported higher self-perceptions of their ability to communicate the roles of a RT.

Two of the three nursing student groups had a one week obstetric clinical experience prior to participation in the pre-survey. It is unknown if all students had exposure to the delivery of a high-risk neonate and/or with exposure, was there concentrated learning regarding the roles of health professionals in the birthing environment. A stronger agreement to communicate roles could have been influenced by the IPE HF-Sim experience and/or engagement in the IPE debriefing session.

Using Kirkpatrick’s assessment model, the nursing students increased their perceptions (level 2a) and demonstrated knowledge (level 2b) of the RT role. Students who have a foundational understanding of other professional roles should be able to clinically integrate this knowledge into behaviors (level 3). Behavioral change promoting interprofessional collaboration is essential to creating healthy work environments and optimizing patient outcomes. The study outcomes can be strengthened by increasing the number of participants. Continued data collection is planned for August 2018 with findings forthcoming.

Title:
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Keywords:
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References:


**Abstract Summary:**
Interprofessional education (IPE) and high-fidelity simulation (HF-Sim) are innovative educational solutions impacting student learning. There is a need to explore IPE and HF-Sim for optimizing patient outcomes and interprofessional collaboration. Students engaged in IPE HF experiences increased their perceived ability to articulate roles.

**Content Outline:**

1. **Intro:** Overview of HF-Sim and IPE
2. **Body:**
   1. Innovative educational solutions
      1. IPE
      2. HF-Sim
3. **Methodology:**
   1. Participants
   2. Research Design
4. **Results:**
   1. Knowledge
   2. Perceptions
5. **Conclusion:**
   1. Contribution to literature
   2. Kirkpatrick's model
   3. Next step

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