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An analysis of interprofessional communication and teamwork skill acquisition in simulation



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ABSTRACT

Background: Communication and teamwork skills in interprofessional education are key competencies for ensuring safe patient outcomes. Simulation is a safe environment in which to foster and develop such skills.

Purpose: The purpose of this study was to evaluate a program of communication and team skill development in a sequential set of interprofessional simulations for pre-licensure nursing and medical students.

Method: A prospective, repeated measures design was employed to determine whether team training at the beginning of a longitudinal interprofessional had an effect on subsequent performances in interprofessional communication and teamwork skills. Student teams engaged in an interprofessional simulation once a semester for four semesters.

Discussion: Targeted team training improved communication and teamwork skills in interprofessional nursing and medicine student teams.

Conclusions: Team training through simulation is an effective means to develop and sustain communication and teamwork skills in interprofessional student teams.

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1. Introduction

Interprofessional education (IPE) is a method to prepare students for their eventual roles in interprofessional collaborative practice (IPCP). Consistent with the Framework for Action on Interprofessional Education and Collaborative Practice, IPE prepares the present and future workforce to be practice-ready for collaborative care, which strengthens the health care system, and promotes optimal health services and outcomes.¹⁹

Patient safety is a critical outcome of collaborative practice. Communication and teamwork are two competency domains advanced by the Interprofessional Education Collaborative (IPEC),⁹ which identify the knowledge, behaviors, and attitudes desirable in

interprofessional healthcare teams to promote safe practice. A seminal report from the Institute of Medicine (IOM) highlights the role of interdisciplinary communication in the prevention of errors in the healthcare environment.⁸ As a result, interprofessional communication is the focus of a Joint Commission Patient Safety Goal.¹⁸ Further, the IOM highlighted the importance of educating future health care professionals on collaborative practice skills such as communication and teamwork, and called on health professions schools to rise to the challenge of reducing silos in health professions education.⁷

Embedding interprofessional simulations into health professions education curricula is increasing in an effort to increase training in collaborative practice. Simulations provide a safe environment for students to learn critical communication and teamwork skills with the goal of creating a safe passage for patients; however many simulation studies are without evaluation of longitudinal effect. Indeed, researchers have concluded that more studies on the longitudinal effects of interprofessional simulations

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are needed,^{5,15} particularly due to the possibility of knowledge decay.¹¹ This report describes a study using longitudinal high fidelity simulation to train pre-licensure health professions students in collaborative practice. The training program is focused on developing communication and teamwork skills designed to improve patient safety in the practice setting.

1.1. Related literature

Literature presented in this section contains studies directly relevant to longitudinal evaluation of interprofessional simulations, the focus of the current study. Studies that were included in this review included research in the undergraduate and graduate pre-licensure health professions student populations.

Undergraduate nursing and medical student teams were compared on their performances when engaging in a differing number of simulations. One cohort received team training in collaborative care with subsequent simulations in 2 events: end-of-life discussions, and a rapid response scenario. The second cohort participated in the same events as the first cohort, but had additional experiences in pediatric illness and cognitively impaired adult scenarios, for a total of 4 scenarios. Both cohorts were evaluated pre and post events. Measurement included the Team Skills Scale (TSS), and the Collaborative Behavior Observational Assessment Tool (CBOAT) developed and validated by Blackhall.² While TSS and CBOAT scores significantly improved within cohorts, there was not a significant difference in scores between those students that participated in 2 scenarios versus the students that participated in 4 scenarios.³

In a study involving students in undergraduate and graduate nursing, pharmacy, dentistry, medicine, veterinary medicine, and public health, an emergency preparedness simulation was assessed for its effect on participant retention and transfer of skills longitudinally. Participants were evaluated on their emergency response skills and knowledge in four successive simulation episodes. Performance scores indicated significant differences between scores in each successive simulation with the exception of showing regression in some skill sets between simulations 2 and 3 and between simulations 2 and 4.¹²

An emergency room code simulation scenario was used to train students in undergraduate nursing, respiratory therapy, nurse anesthesia, and medicine. Performance was measured using the Communication and Teamwork Skills (CATS), the Teamwork Assessment Scale (TAS), and the Mayo High Performance Teamwork Scale (MHPTS) twice a semester for 2 semesters (total of 4 simulations). Students showed significant improvements from the first simulation to the second simulation in both semesters. However, significant decreases were experienced in the 3 subscales of the TAS between the second and third simulations, as well as 2 subscales on the CATS. Significant increases across all measures were found between the first and the fourth simulations.⁴

In a similar study, the CATS was used over a repeated timeframe with an interprofessional student team including medicine, pharmacy, nursing, social work, and physician assistant students. The simulation included a patient who experienced multiple health issues across the continuum of care within a hospital environment. The results showed significant improvement between sessions 1 and 2, 2 and 3, and overall between 1 and 4, but not between sessions 3 and 4.¹⁷

Previous literature demonstrates positive effects using interprofessional simulations and training to improve a variety of interprofessional and technical skill sets. The literature findings are consistent with a review conducted on interprofessional team training in pre-licensure students. The authors of the review

concluded that team training was effective in promoting skills, knowledge, and communication. A variety of methodological and interventional approaches were noted.¹³ The current study will add to the scientific knowledge base on the effectiveness of successive team training in simulation on the development of interprofessional communication and teamwork skills.

1.2. Study purpose

The purpose of this study was to evaluate a program of communication and team skill development in a sequential set of interprofessional simulations for senior nursing and second-year medical student teams, following successive team training events. The research question was: “Is there continued improvement in communication and teamwork skill performance after successive team training, in an interprofessional simulation environment?” This study fills an important gap in interprofessional simulation studies by investigating the longitudinal effect of successive team training using a reliable and valid objective measure with a larger number of participants. Specifically, the team training and evaluation focuses on 2 IPEC competencies: interprofessional communication, and teams and teamwork. Principles in TeamSTEPS¹ were used to train and evaluate student behaviors in these competencies.

1.3. Guiding frameworks

Experiential learning is a key concept underpinning the use of simulations, and thus, Kolb's Experiential Learning Theory is applied in this research.¹⁰ As also described previously, simulation creates an environment where knowledge and learning occurs from participating in an active learning environment.¹⁶ Based on Kolb's theory, we postulated that with the immersion experience in simulation and proper debriefing by skilled faculty, students transform their experience into usable and retrievable knowledge that they may apply to future practice.

All of our interprofessional efforts support the overarching frameworks advanced by the World Health Organization (WHO) and IPEC. At our organization, we have translated these frameworks into an operational framework that integrates the IPEC competencies across levels of expertise from exposure, to immersion, to competence. This framework is called the Indiana University Team Education Advancing Collaboration in Healthcare (IUTEACH).⁶ The exposure level provides an introduction to teamwork and a baseline assessment for learners involved in the exposure. Development and process assessment are features of the next level, immersion. The final level, entry-to-practice, prepares students for entry into the health care profession. Each level provides a formative assessment methodology for achievement of the IPEC competencies with a summative assessment at the conclusion, launching the professional into a collaborative practice setting. Our IPE program involves activities at all three levels in the framework. The simulation intervention in this research involves immersion level activities (see the Fig. 1).

2. Materials and methods

A prospective, repeated measures design was employed for this study. Communication and team performance in an interprofessional high fidelity simulation at the time of the first simulation was compared to three subsequent performances in interprofessional high fidelity simulations. Human subjects approval was secured. All students were required to participate in the team training and simulations as a part of their required curricula.

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