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Opinion

Simulation-based interprofessional education: Are we hitting the mark?

Philip K. King, PharmD[a], Frank M. Szczerba, PharmD, BCPS[a,1], Paul P. Rega, MD, FACEP[b], Michael J. Peeters, PharmD, MEd, BCPS[c,*]

[a] Department of Pharmacy, University of Toledo Medical Center, Toledo, OH
[b] University of Toledo College of Medicine & Life Sciences, Toledo, OH
[c] University of Toledo College of Pharmacy & Pharmaceutical Sciences, Toledo, OH

Abstract

Bottenberg et al. described their experience with high-fidelity simulation in this Journal. They found that their high-fidelity simulation appeared to represent a practical, meaningful active-learning framework for interprofessional education. In this article, our foremost objective is to confirm that substantial study's major finding, within the context of our interprofessional educational experience. In addition, we provide further considerations for exploration based on our pilot study's findings. Based upon our review of the literature and our own experience, we are convinced that this is an exciting avenue for interprofessional education and collaborative practice.

Keywords: Simulation; Interprofessional education; Perception

Several decades ago, an Institute of Medicine report recognized that interprofessional collaboration was not a new concept and there remained a long way to go in fostering its advantages.[1] Collaboration can be fostered with preceding education. The World Health Organization defines interprofessional education as a form of education where students from "two or more professions learn about, from, and with each other" in a manner that enables "effective collaboration and improved health outcomes."[2] More recently in 2011, an expert panel of the Interprofessional Education Collaborative (IPEC) released a critical landmark report identifying essential core competencies for interprofessional collaborative practice.[3] In this report, interprofessional collaborative practice was recognized as key to safe, high-quality, accessible, and patient-centered care. A fundamental aspect of this "educating for collaboration" perspective is facilitating the education of learners; as students, being able to work effectively as members of interprofessional clinical teams. Upon reading Bottenburg et al.'s[4] report of interprofessional education in this Journal, we wish to report our similar experience from a public institution in a different region of the country as validity evidence of Bottenburg et al.'s main conclusion.

In the medical literature, Issenberg et al.[5] reported a meta-analysis specifically detailing high-fidelity simulation and concluded that simulation-based education helps complement medical education and should be incorporated across entire curricula. Furthermore, a meta-analysis of technology-enhanced simulation—including high-fidelity simulation, standardized patient role playing and computer-based simulations—found that health professions educational outcomes for knowledge, skills, and behaviors were of substantially greater benefit for students when compared with no intervention.[6] While promising, it is notable that the

* Corresponding author: Michael J. Peeters, PharmD, MEd, BCPS, University of Toledo College of Pharmacy & Pharmaceutical Sciences, 3000 Arlington Ave, Mail Stop 1013, Toledo, OH 43614.

E-mail: Michael.Peeters@utoledo.edu

[1] Frank M. Szczerba is now at, Pharmacy Department, Baystate Medical Center, Springfield, MA.

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individual studies included in these meta-analyses had only investigated education within a single profession—and without pharmacy education. Recently in this Journal, however, Bottenberg et al.[4] reported a benefit on students' perceptions with using high-fidelity simulation. In their simulation-based study, Bottenberg et al. described the interprofessional education perceptions and attitudes of students from both medical and pharmacy professions.

Over a decade ago, the idea of consilience (or convergence of evidence) was popularized with Wilson's[7] mainstream book, Consilience: The Unity of Knowledge. Therein, Wilson illustrated a philosophy of science where results from different sources, using different methods, will converge on a truth—and scientific knowledge advances as a result. Additionally in recent years, calls for replication studies have been made in research and, more specifically, medical education research.[8,9] New knowledge is generally not considered valid until it has been reproduced by more than one investigator in more than one location and context.[9] And so a balance of replication and consilience seems pertinent where independent investigators, using different methods, will verify past results as they also seek to uncover new findings. In the social sciences, or any other time that educational or psychological measurement are being used, it seems prudent that exact methods of measurement should vary from the original investigators—so as not to perpetuate potential psychometric biases from prior studies. Towards this goal, we report results from our recent pilot study of interprofessional students. In reporting, our primary objective is to provide validity evidence for Bottenberg et al.'s major finding. Secondly, we hope to extend those implications by adding insight from additional professions we had investigated, as well as highlighting differences in study methodologies between Bottenberg and ourselves.

We conducted a single-cohort, multiple-session pilot study to evaluate changes in interprofessional education perceptions among health professions students within multiple (two or more), weekly high-fidelity simulation sessions. In the setting of an academic medical center, students (from medicine, pharmacy, nursing, physician assistant, and public health) interacted with each other on a weekly basis through interprofessional simulation sessions. Most students who completed these (often four; though some months had fewer sessions if circumstances such as holidays interfered) weekly simulation sessions were on their month-long emergency medicine rotation. The sessions were consistent in that both students and faculty were interprofessional each time. The sessions were inconsistent in that, while they were mandatory for medical, physician assistant, and pharmacy students during their clinical rotations, it was voluntary for nursing and public health students. However, for every simulation scenario in each session, students were always divided into two interprofessional teams.

These high-fidelity simulation sessions included use of high-fidelity simulators positioned in an emergency department environment. They consisted of a variety of active-learning experiences and scenarios for the interprofessional student teams to assess and manage. Each session was broken into two scenarios. The theme of each session would revolve around an emergency department admission where one interprofessional team of students would determine and respond with (appropriate) management for that given scenario. An experienced (34 years of clinical experience) emergency medicine physician (PPR) primarily authored these cases based upon life experience and from evaluating case reports and educational reviews in the emergency medicine literature. Facilitators from other professions, such as an emergency medical technician, a nurse, and a clinical pharmacist (MJP), provided their scenario input both before and during these interprofessional simulation sessions. Periodically, emergency medicine residents on non-emergency department rotations (e.g., emergency medical system or administrative electives) would also help to facilitate these sessions.

As requested by student teams, a facilitator would provide lab values, physical cues, and diagnostic imaging (scans, x-rays, and electrocardiograms) that were unavailable from the simulators. The facilitators would also provide clinical pearls and encouragement as needed. Students would assume responsibilities based on their respective professional training (i.e., nursing students placed lines and administered medications, pharmacy students provided medication indication and dosing, and medical students led team response in each scenario). Moreover, facilitators made an extra effort to involve students outside traditional roles for their respective professions. As a result, pharmacy students were trained and encouraged to do things that were not necessarily medication related, such as assisting with log-rolling a back-boarded patient, assisting with chest compressions during cardiopulmonary resuscitation efforts, documenting critical interventions during advanced cardiovascular life support activities, or properly using a bag–valve mask; anecdotal pharmacy student feedback and performance was very positive with this. We should highlight that not only was our high-fidelity simulation education with interprofessional student learners, but the facilitators (often two or more present at each session) provided their interprofessional perspectives as well after each scenario. Therefore, all the learners were able to see how a particular scenario could be addressed from various perspectives (i.e., emergency medical technician, nursing, pharmacy, and medicine). Delivered in a respectful and non-confrontational manner, students were able to see consistencies of management as well as differences of opinion and perspective among professionals.

Following Institutional Review Board approval by the University of Toledo, the interprofessional education perceptions of students were assessed using the Readiness for Inter-Professional Learning Scale (RIPLS)[10] before each simulation session. A small convenience-sampled cohort of 25 students had complete, multiple-session data. Students that did not give their informed consent were not included