NYU nursing and medical students learn teamwork with virtual teammates

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The Institute of Medicine has identified interprofessional education (IPE) as a key innovation for achieving the triple aim of better care, better outcomes and reduced health care costs. Yet, a shortage of qualified faculty and difficulty with aligning learners' schedules often prevent sustainable and scalable IPE. Now, a team of New York University researchers from both the College of Nursing (CoN) and NYU School of Medicine (SoM), are addressing the barriers to widespread adoption of IPE.

Led by Maja Djukic, PhD, RN, assistant professor at the CoN, and Marc Triola, MD, associate professor of medicine at the SoM the researchers have designed a virtual IPE curriculum in which students were paired with a virtual team member to learn with, from, and about each other to improve collaboration and the delivery of care.

Their paper, "E-Learning with virtual teammates: A novel approach to interprofessional education," appeared in the *Journal of Interprofessional Care*, June 2015. It concluded that their virtual IPE is an effective and efficient learning tool, and may be of particular benefit to medical and nursing schools that do not have a partner school. All components of the virtual IPE intervention are available for implementation by other schools at no cost on NYU School of Medicine's Division of Educational Informatics website.

"Until the turn of the century, it was conventional for doctors, nurses, physician assistants, pharmacists and other healthcare professionals to be

educated independently of one another," said Djukic. "The problem," explains Triola, "was that this model created a culture of fractured communication between medical professionals of different disciplines. Now we realize the whole is greater than the sum of its parts, provided the pieces fit together."

Prior to this study, little was known about the effectiveness of e-learning with virtual teammates for IPE.

NYU researchers hypothesized that there would be no difference in the learning outcomes for each intervention. To determine the efficacy of virtual IPE, the researchers administered virtual teammates to 540 students, and compared their outcomes with those of 220 students who had taken the traditional blended-learning curriculum a year prior.

In the blended-learning curriculum, participants partook in a one-time 4-hour in-person seminar and small-group learning session, and were paired with peers from the opposite school to complete the same seven e-modules as those in the virtual IPE cohort. The e-modules required learners from both disciplines to gain an understanding of cross-professional teamwork and collaboration perspectives by contributing comments.

To measure changes in their knowledge, students were given multiple-choice tests before and after the modules were administered. The researchers also gauged changes in students' teamwork ability and attitudes. They found that the support for their hypothesis varied according to the type of learner (i.e. medical or nursing) and the type of outcome (knowledge, skills, or attitudes).

For nursing students:

- The gains for the virtual learning cohort were significantly higher

compared to the blended-learning cohort with regards to team members' roles and responsibilities, teams and team work, communication and conflict resolution, and interprofessional care planning.

- The outcomes in team skills and attitudinal domains were comparable across the two nursing cohorts, leading researchers to conclude that, for nursing students, the virtual IPE learning approach had no disadvantages over a blended-learning approach for their program.

For medical students:

- Outcomes in knowledge, team skills and team efficiency were comparable between the virtual and blended-learning cohorts.
- However, the virtual cohort showed greater improvement in shared leadership when compared to their peers in the blended-learning cohort, while for team value, the blended-learning cohort improved more.
- The researchers concluded that for their program, medical students who participated in the virtual IPE intervention reported similar changes in their team skills and attitudes as the [students](link) from the blended-learning cohort.

The findings of this study are largely consistent with existing knowledge on the efficacy of e-learning and virtual patients for a variety of clinical topics. The study adds to this evidence by demonstrating that a virtual learning approach is not less effective than a blended-learning approach for IPE. Furthermore, this study highlights an interesting phenomenon that authenticity and relevance of the educational topic may be more compelling to the learner than fidelity.

In this study, faculty crafted virtual teammates to represent optimal interprofessional partners who provided helpful and positive clinical

notes and comments. These virtual mimics of actual teammates had no apparent detrimental effects on student outcomes and provided all benefits of a scalable and truly asynchronous e-learning intervention.

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