

## ORIGINAL RESEARCH

# Interprofessional simulations to promote spring break safety and cultural awareness for healthcare students

Jacqueline Vaughn<sup>1,\*</sup>, Shannon Ford<sup>1</sup>, Stephanie Sims<sup>1</sup>, Lindsey H Schroeder<sup>2</sup>, Tiffany Erichsen<sup>3</sup>, Julia Peck<sup>3</sup>, Chase Dubois<sup>3</sup>, Stacey Kolomer<sup>4</sup>, Tamatha Arms<sup>1</sup>, Amanda Culp-Roche<sup>1</sup>, Matthew J Peterson<sup>1</sup>, Kent Guion<sup>5</sup>, Alexander T McDaniel<sup>6</sup>, Noell Rowan<sup>4</sup>, Joseph Pino<sup>7</sup>, Kirk Brown<sup>5</sup>

<sup>1</sup>University of North Carolina Wilmington, College of Health and Human Services, School of Nursing, Wilmington, NC, USA

<sup>2</sup>University of North Carolina Wilmington, College of Health and Applied Human Services, School of Health and Human Sciences, Wilmington, NC, USA

<sup>3</sup>University of North Carolina Wilmington, College of Health and Human Services, Wilmington, NC, USA

<sup>4</sup>University of North Carolina Wilmington, College of Health and Human Services, School of Social Work, Wilmington, NC, USA

<sup>5</sup>University of North Carolina Wilmington, College of Health and Applied Human Services, School of Health and Applied Human Sciences, Wilmington, NC, USA

<sup>6</sup>University of North Carolina Wilmington, College of Health and Human Services, School of Health and Applied Human Sciences, Wilmington, NC, USA

<sup>7</sup>University of North Carolina School of Medicine, Wilmington Campus, and Novant Health, Wilmington, NC, USA

**Corresponding author:** Jacqueline Vaughn, [vaughnj@uncw.edu](mailto:vaughnj@uncw.edu)

<https://ijohs.com/article/doi/10.54531/QOLW5385>

## ABSTRACT

### Introduction

Interprofessional simulation-based learning provides collegiate students with safe, realistic scenarios to learn and refine vital health related skills. This article describes an innovative project that engages college students from various disciplines in simulation-based activities to enhance health and professional knowledge, promote safety awareness, and improve cultural sensitivity. Additionally, the theme of traveling domestically and/or abroad during spring break provided a true-to-life backdrop.

### Methods

The Activity Theory provides the framework for this study emphasizing collaborative learning toward shared goals. Six spring break themed simulation scenarios were created and evaluated using a mix-methods design. Pre-posttest measures were conducted using the Student Perceptions of Interprofessional Clinical Education-Revised Instrument, and open-ended responses.

### Results

Twenty-eight students completed the survey showing statistically significant change scores from pre-post. Qualitative findings identified three overarching

themes of participants' gains: 1) knowledge of other healthcare professionals' roles, 2) healthcare professions' contributions to patient care, 3) being respectful of other cultures, being prepared when traveling, and knowing how to improvise while traveling abroad.

### Discussion

Students enjoyed a meaningful and engaging interprofessional activity while learning about one another's professions, appreciating other healthcare professions' roles, developing awareness and respect for other cultures, and practicing skills that may be needed during challenging encounters while traveling.

### What this study adds

- An innovative approach for interprofessional education (IPE).
- Simulation-based IPE fosters appreciation and knowledge of other healthcare professionals' roles.
- Simulation-based IPE enhances healthcare students' appreciation for other professions' contributions to healthcare.
- Evidence shows that simulation can enhance healthcare learners' appreciation for being respectful of other cultures, being prepared when travelling and knowing how to improvise while travelling abroad.

## Introduction and background

Spring break is a rite of passage for many college students. It is welcomed as a time for rest, fun, exploration and socialization. Many students will travel abroad during spring break, which can contribute towards additional barriers to staying safe. In addition, it is also a time that some will engage in risky or careless behaviours that can result in adverse events [1,2]. Injuries from alcohol and other substance use, driving while under the influence and taking risks with personal safety all increase during spring break [1,3,4]. When events become harmful or dangerous, college students may lack the experience and knowledge to manage the situation, especially in unfamiliar locations. Additionally, developing cultural awareness and respect are essential skills for travelling abroad on spring break.

Simulation is an engaging teaching methodology designed to immerse students in realistic healthcare scenarios that enable them to learn in a safe space [5]. Substantial research shows this evidence-based learning pedagogy is effective for skill training and confidence building [6,7]. Interprofessional simulation, where students from two or more professions engage with one another, lends itself to active learning experiences as it promotes student collaboration and interaction with other disciplines [8,9], fosters interprofessional communication and enhances students' learning from and with one another [10]. Many healthcare programs, including nursing, athletic training, medicine, pharmacy, dentistry and social work, either mandate or strongly encourage student involvement in interprofessional education during their healthcare curricula [11].

### Purpose statement

This article describes a novel project designed to immerse college students in an interprofessional simulation-based activity to enhance knowledge of one another's professions, promote awareness of safety, improve knowledge related to managing adverse/preventable situations and enhance the development of cultural competence and a global perspective for students travelling domestically and/or abroad during spring break. In addition, we describe the development and implementation of a spring break-themed interprofessional simulation activity and the simulation assessment from the healthcare students' perspectives.

## Theoretical framework

Evidence shows engaging students in the learning process facilitates increased knowledge, increased confidence and improved attitudes towards teamwork [10,12]. Further studies highlight that making learning fun has been correlated with improved student success [13–15]. This project used Activity Theory as the theoretical framework. Activity Theory posits that learning occurs and is co-constructed as students collaborate with one another to achieve shared goals [16]. This framework is highly applicable to interprofessional simulation-based learning [16,17] as students learn by engaging with one another to optimize client care and learn about one another's professions. The attributes of the project as they correspond to Activity Theory are demonstrated in Figure 1 [18].

## Methods

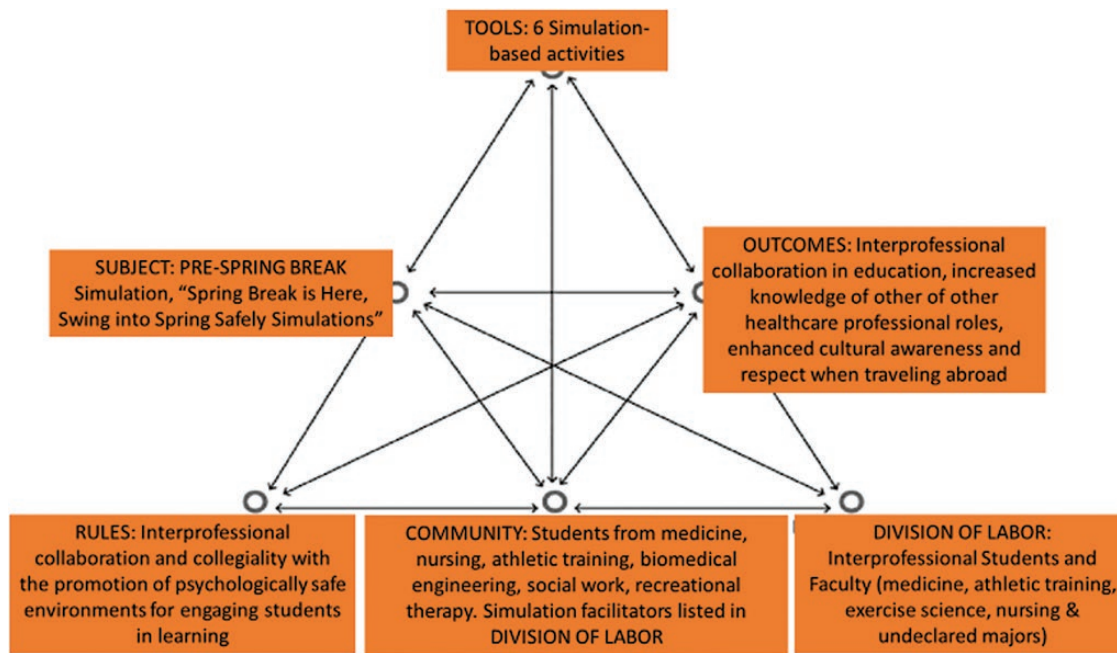
### Research design

This study included an interprofessional simulation educational activity for diverse groups of healthcare students at an academic university in the southeastern United States. A pre-posttest survey design was used for assessment. The authors' University Institutional Ethical Review Board approved this educational activity as an exempt study (H23-0618). We used the CONSORT simulation guidelines developed by Cheng et al. to highlight what was planned, done, found, and concluded [19].

In this activity, a diverse group of interprofessional healthcare college students participated in six spring break-themed simulation scenarios. The spring break theme provided opportunities to immerse students in scenarios designed to promote safety awareness and foster cultural sensitivity awareness in a simulated interprofessional educational activity. The team designed and implemented the event and named it the 'Spring Break is Here, Swing into Spring Safely Simulations'.

### Simulation design

An interprofessional team of faculty and staff from the college designed the simulation activity. In accordance with the Health Care Simulation Standards of Best Practice,

**Figure 1:** Activity Theory framework for interprofessional simulation activity

learning outcomes were identified, and scenario objectives were developed [20]. Table 1 highlights the simulations' objectives, designs and student activities. The planning team consulted content expert faculty from across the college and community partners such as a Regional Trauma Coordinator to ensure the simulated scenarios were realistic and evidence-informed. The team met weekly for 3 months to design the activity. Six interprofessional simulation scenarios were designed to be engaging for a diverse group of healthcare students. The content of the simulations was on an introductory level with the goal of being inclusive of all healthcare students regardless of their individual education level.

Prior to the event, the simulation educators offered a dress rehearsal session for faculty facilitators to practice their scenarios and learn about debriefing methods. Faculty facilitators were identified as interprofessional champions at the university. Facilitators were trained in both simulation facilitation and debriefing methods following the Health Care Simulation Standards of Best Practice [21,22].

The simulations were designed to expose students to basic safety events that require emergency management skills relevant to all healthcare professions. The rationale for this focus was that if students found themselves in emergency situations, skills such as beginning cardiopulmonary resuscitation, applying an automated external defibrillator (AED), treating symptoms of heatstroke, managing a hemorrhage and recognizing alcohol-related illnesses are pertinent, timely and essential skills all healthcare students should be able to perform. Additionally, four of the simulation scenarios were designed to engage students in scenarios encouraging cultural awareness and sensitivity. Finally, the interprofessional nature of these scenarios immersed students in a meaningful activity intended to enhance their knowledge

of other healthcare professions' roles, responsibilities and skills through collaboration and discussion.

### Implementation of the spring break simulations

The *Spring Break is Here: Swing into Spring Safely* interprofessional simulations were implemented during a 2-hour evening event. The simulations were conducted in six multi-use problem-based learning rooms designed for student collaboration. Volunteer students and faculty decorated the rooms and hallway with beach-themed and travel abroad décor. Each 15-minute scenario was conducted six times to allow 55 students to participate in groups of 8–10, and the remaining time was used for Prebriefing, survey completion and an informal reception that served as a forum to encourage further information sharing, collegiality and networking. Groups were intentionally mixed to consist of interprofessional students from different disciplines.

Each simulation scenario began with students and facilitators introducing themselves and identifying their profession. Next, volunteer simulated participant actors conducted a 1- to 2-minute skit/vignette that set the stage for the scenario's objectives. Simulated participant actors were trained for role portrayal prior to the activity following the Association of Standardized Patient Educator Standards of Best Practice [23]. Table 1 outlines each scenario vignette.

Acknowledging that some of the students who participated in the simulations were from other universities, involving their faculty in the simulation was necessary to further build collaboration and community. Faculty from other universities were invited to attend virtually using an online video platform attached to a telepresence robot. The robot is essentially a tablet device on a segway that allows the virtual guests to travel from room to room with the in-person students.

**Table 1:** Simulation scenarios, objectives and interprofessional collaboration activities

Scenario: Health event	Objectives: Upon completion of this activity, students will collaborate on interprofessional teams to:	Scenario/vignette	Student interprofessional collaboration activities:
Fun in the Sun: Heat Stroke	<ul style="list-style-type: none"> <li>• Define heatstroke.</li> <li>• Identify abnormal findings related to heatstroke and sunburn.</li> <li>• Demonstrate initial care protocol for heatstroke.</li> <li>• Discuss their professions' role in heatstroke prevention, management and rehabilitation.</li> </ul>	Two hikers in Mexico without adequate water, food and directions, lost in the Mexican desert, develop symptoms of heatstroke.	Worked in teams to identify symptoms of heatstroke, developed and executed a treatment plan to get the hikers to safety.
Shark Bite: Stop the Bleed Initiative	<ul style="list-style-type: none"> <li>• Demonstrate how to effectively apply pressure to a wound.</li> <li>• Implement the correct method of packing a wound to control bleeding.</li> <li>• Demonstrate the correct application of a tourniquet.</li> <li>• Discuss alternatives for a tourniquet when none is available.</li> <li>• Discuss their professions' role in managing trauma.</li> </ul>	Students are relaxing on a beach in South Africa when a shark bites a surfer.	Worked in teams using 'Stop the Bleed' skills to treat a shark bite victim.
Pour It Up: Alcohol Awareness	<ul style="list-style-type: none"> <li>• Define binge drinking.</li> <li>• Describe increased health risks associated with excessive alcohol consumption.</li> <li>• Identify abnormal findings related to binge drinking.</li> <li>• Demonstrate initial care protocol for binge drinking.</li> <li>• Discuss their professions' role in alcohol use/misuse, prevention, management and rehabilitation.</li> </ul>	Students attend a party on a Caribbean cruise ship.	Played a simulated drinking game and collaborated in an online gameshow designed to increase awareness of alcohol volume, concentration, binge drinking, symptoms of and management for, an alcohol overdose.
Pardon My French: Cultural awareness and respect for travel abroad	<ul style="list-style-type: none"> <li>• Identify strategies to develop cultural awareness/respect/humility.</li> <li>• Identify potential safety hazards related to travelling abroad.</li> <li>• Discuss strategies to minimize risk related to travelling abroad.</li> </ul>	Students are sitting in a Paris café. The students are unable to speak French to order food.	Collaborated to devise strategies to be better prepared to respectfully engage when travelling abroad.
Heart on the Court: CPR and AED skills and awareness	<ul style="list-style-type: none"> <li>• Identify signs and symptoms of a Sudden Cardiac Arrest.</li> <li>• Demonstrate high-quality chest compressions.</li> <li>• Demonstrate the application of an AED.</li> <li>• Discuss their professions' role in cardiac emergency management.</li> </ul>	Fans are cheering at a basketball game, and suddenly one fan suffers a cardiac event	Students collaborated to identify pulselessness, begin high-quality CPR and apply an AED.
'Yes, I can Say No': empowering students to say 'no' when they find themselves in uncomfortable and/or unsafe circumstances	<ul style="list-style-type: none"> <li>• Identify how one can say 'no' in uncomfortable situations.</li> <li>• Discuss their professions' role in empowering students/patients to say 'No'.</li> </ul>	Students sitting on picnic blankets around a campfire enjoying friendship and conversation.	Students practiced communication skills by saying 'No' to one another in a series of increasingly complex scenarios.

## Debrief

At the end of each simulation, facilitators guided a debrief session to review the scenario content, emphasize key points and engage the students in discussions that highlighted how their respective profession would engage in and manage the scenario/vignette topic, and describe the typical places/environments the event might occur in their practice(s) how

and where their respective professions might be involved in the treatment of such an event.

## Data collection

At the end of the simulation activity, participants were asked to complete the Student Perceptions of Interprofessional Clinical Education-Revised Instrument, version 2 (SPICE-R2)



survey and answer open-ended response questions via Qualtrics. The SPICE-R2 is a psychometrically validated 10-question survey that assesses students' attitudes towards interprofessional healthcare teams and the collaborative approach to client/patient care using a 5-point Likert-like scale (1 = strongly disagree to 5 = strongly agree) (Cronbach alpha = 0.86) [10,24,25]. The survey was administered before and immediately following the simulations. Additional open-ended questions developed by the team were used to obtain more detailed reflection and feedback on students' perspectives of the simulations and their perspectives on the value of the interprofessional experience. The academic and clinical performance of the students during the simulation was not formally evaluated as this was a formative simulation experience.

### Quantitative data analysis

Descriptive characteristics of the students were summarized using appropriate univariate statistics: Mean  $\pm$  SD or *N* (%). Within-student change in SPICE-R2 scores was analysed using Student's paired *t*-test. Statistical significance was determined at  $p < 0.05$ . All analyses were conducted using SAS v9.4 (SAS Institute, Cary, NC).

### Qualitative data analysis

Content analysis was used to develop thematic findings. As a first step to content analysis, all open-ended response data were read line by line multiple times by the analysis team (JV, TA, SS, LHS). The analysis team began with no pre-existing assumptions or theories about the data [26,27] and proceeded with a systematic approach to reviewing and interpreting the data to illustrate student perspectives. Data were analysed using verbatim text, separated into initial codes and documented using an audit trail. Codes were sorted into categories and carefully interpreted into overarching themes [26,27]. Four peer debriefing sessions were conducted with the analysis team to enhance the validity of the qualitative findings.

## Results

### Quantitative findings

Fifty-five total students participated in the interprofessional simulations and Table 2 shows the breakdown by discipline. The 15 facilitators represented seven interprofessional areas of expertise (Table 3).

### Quantitative findings

Twenty-eight students completed pre- and post-simulation SPICE-R2 scores (51% survey response rate). The mean SPICE-R2 scores at pre- and post-simulation were  $41.0 \pm 3.9$  and  $44.4 \pm 4.5$ , respectively. The mean change in scores was  $3.4 \pm 3.3$ , which was statistically significant at  $p < 0.0001$ .

An unexpected finding that participants did not directly record responses for was related to the collegiality and social interaction the interprofessional activity provided. Our observations were substantiated with informal feedback, photos and video indicating the students enjoyed the interactions with one another.

**Table 2:** Participants' disciplines

Discipline	Number
Medicine	20
Athletic Training	19
Exercise Science	1
Nursing	11
Not enrolled in their major/undeclared	3
Other	1

**Table 3:** Facilitators' healthcare disciplines

Discipline	Number
Athletic Training	2
Biomedical Engineering	1
Nursing	5
Social Work	4
Recreational Therapy	1
Medicine	1
Trauma Expert	1

### Qualitative findings

Three overarching themes were identified: (1) participants gained an appreciation and knowledge of other healthcare professionals' roles, (2) participants gained an appreciation for the different healthcare professions' contributions to client/patient care and (3) participants gained an appreciation for being respectful of other cultures, being prepared when travelling and knowing how to improvise while travelling abroad.

## Discussion

Providing students with opportunities to participate in interprofessional activities during their education can foster a more profound understanding of other disciplines' roles in healthcare, increase awareness of and respect for different healthcare roles, and strengthen their collaboration and communication skills necessary to work with diverse healthcare professionals [28,29]. Activity Theory served as the theoretical framework for this interprofessional simulation activity. Figure 1 highlights the attributes of the framework as they relate to the activity.

Previous studies show that students participating in interprofessional education report increased confidence, improved attitudes towards teamwork and enhanced communication skills [8,10]. Interprofessional education is essential for strengthening future practice and optimizing client/patient outcomes and, as such, should be introduced while students are in their programs [8,30–33].

We used spring break as a theme for the interprofessional activity to encourage student interest and participation. Events that could occur while students are on spring break provided ideas for engaging and relevant scenarios. The spring break theme created a fun, interactive learning environment that may make learning more memorable. One

objective for the interprofessional activity was to increase awareness and preparedness for adverse/preventable events that can occur over spring break, while another aim was to foster appreciation and respect for other cultures for students travelling abroad. Students noted they learned tips, practical skills and ways to be prepared when travelling, and importantly, they were reminded to be intentional to make an effort to respect the customs of other cultures. Travel opportunities can foster the development of cultural competence and global citizenship when students are aware and intentional.

Activity Theory stresses that learning occurs as students collaborate to achieve mutual goals and our simulation scenarios allowed students to actively engage with one another as they learned. Students learned about one another's professions (skills, roles, workplaces) by actively working alongside one another. Exposure to the tools, decision-making strategies and treatment modalities used by each profession, combined with engagement and collaboration, made the learning more impactful.

Our findings aligned with work done by Battista, which indicated students learned as they engaged in simulated activities [17]. In our interprofessional activity, the students' SPICE-R2 scores were statistically significant, and we gained a deeper understanding of what made the learning valuable. Students noted that they gained appreciation and knowledge of other healthcare professionals' roles and their contributions to healthcare as they collaborated in the scenarios. Comments such as 'I have a better appreciation of what athletic training education focuses on and how that enhances their job', 'I learned that athletic training students have good practical skills' and 'We are all great at different things, and it helps us to complement each other to improve patient care' highlight the knowledge gained.

In addition to students benefiting from working with one another, the interprofessional simulation activity was designed and facilitated by a diverse group of faculty/community partners representing the many schools, programs and healthcare arenas. Their expertise led to the development of realistic and evidence-informed simulation scenarios and importantly provided faculty and community partners with an opportunity to get to know one another, socialize with and collaborate with other professionals in a fun, engaging activity. This may lead to future partnerships and interprofessional activities across the college and within the community.

### Implications for practice

Interprofessional education is an essential component of healthcare education as it has been shown to improve teamwork and enhance client/patient outcomes. As such, finding effective and impactful ways to introduce students to interprofessional practice during their education must be a priority for healthcare programs. In addition, despite barriers such as timing, scheduling and logistical planning, interprofessional education should involve both academic and community members to foster collaboration and optimize stakeholders' expertise. Our interprofessional activity serves as one exemplar of how this can be achieved.

### Limitations

This study was conducted at a single academic institution using a small convenience sample; hence, the findings may not be generalizable to other institutions. In addition, the survey response rate was only 51%; thus, limited data may impact the interpretation of the findings. Based on the reports, it was clear that for future interprofessional simulations, more time is necessary for all activities and data collection.

### Conclusion

Spring break is a wonderful opportunity for students to have a reprieve from their studies before the end-of-semester stretch. Facilitating interprofessional simulation activities prior to spring break is a novel approach to preparing students to stay safe while travelling. These opportunities allow students to learn from facilitators and one another about situations they usually do not discuss with others outside of their immediate friend circle. The simulation activities were intended to promote safety awareness, improve knowledge of managing adverse and/or preventable situations, enhance cultural competence development and provide a global perspective for students travelling domestically and/or abroad during spring break. Participating in such simulations provides students with diverse approaches to challenging situations.

Following participation in the multiple simulations, students reported learning about one another's professions, appreciation for other healthcare professions' roles, contributions of others' roles to care, respect for other cultures and how to improvise during challenging encounters while travelling.

These interprofessional multi-simulation spring break activities could easily be replicated with students earlier in their educational journey, regardless of their major. It would benefit students to participate in these activities to prepare them for their first spring break as college students. Each specific simulation activity could also be offered independently of the others as stand-alone simulations. In addition, some of the activities may be adapted depending on the audience. For example, the 'Yes, I can Say No' simulation can be altered for medical students to prepare them for having difficult conversations with patients.

It's essential to have a diverse planning committee when organizing an interprofessional simulation event. Each faculty's unique lens can help view all the options and weigh the pros and cons to determine the best course of action. Having experienced facilitators at the interprofessional event is also a good idea to help the students understand its themes. Finally, have fun and get creative while planning an interprofessional simulation event, which will translate to the students and lead to a successful event with positive outcomes.

### Declarations

### Authors' contributions

JV, SS, LHS, KG, TE, JP, SK, TA, AC-R, SF, ATM, NR, CD and JP (2) contributed to the conceptualization and successful

implementation of project. JV, TA, AC-R, SS and JP contributed to the methodology. JP, TE, JV, MJP, TA and SS acquired and formally analysed the data. JV, SS, TA, LHS, SK, NR and ATM contributed to data interpretation. JV, SS, TA, LHS, SK, SF, NR, AC-R, ATM, MJP and KB contributed to writing and revising initial draft. JV, SS, LHS, KG, SF, TE, JP, SK, TA, AC-R, SF, ATM, NR, CD and JP (2) critically reviewed and revised the initial draft and all revisions. All authors approved the final version for submission.

## Funding

This work was supported by two institutional internal grants: 'Spring Break is Here! Swing into Spring Safely Simulations'. Sponsored by University of North Carolina Wilmington College of Health and Human Services Cultural Activity Grant. 'Together We Make a Difference: CHHS Initiative for Interprofessional Collaborative Education and Practice'. Sponsor is the UNCW Applied Learning Strategic Initiatives.

## Availability of data and materials

None declared.

## Ethics approval and consent to participate

None declared.

## Competing interests

The authors declare no conflicts of interest or disclosures.

## References

- Patrick ME, Morgan N, Maggs JL, Lefkowitz ES. "I got your back": friends' understandings regarding college student spring break behavior. *Journal of Youth and Adolescence*. 2011;40(1):108–120.
- Pedersen ER, Skidmore JR, Aresi G. Demographic and predeparture factors associated with drinking and alcohol-related consequences for college students completing study abroad experiences. *Journal of American College Health*. 2014;62(4):244–254.
- French MT, Gumus G. Fast times during spring breaks: are traffic fatalities another consequence? *Economic Inquiry*. 2015;53(1):745.
- Grekin ER, Sher KJ, Krull JL. College spring break and alcohol use: effects of spring break activity \*. *Journal of Studies on Alcohol and Drugs*. 2007;68(5):681.
- INACSL Standards Committee, Molloy MA, Holt J, Charnetski M, Rossler K. Healthcare simulation standards of best practice™ simulation glossary. *Clinical Simulation in Nursing*. 2021;58:57–65.
- Gamble AS. Simulation in undergraduate paediatric nursing curriculum: evaluation of a complex 'ward for a day' education program. *Nurse Education in Practice*. 2017;23:40.
- Thompson CE. The effects of high-fidelity simulation, low-fidelity simulation, and video training on nursing student anxiety in the clinical setting. *Nursing Education Perspectives*. 2020:1–3.
- Davis J, Zulkosky K, Ruth-Sahd L, Frank E. Health care professional students' perceptions of teamwork and roles after an interprofessional critical care simulation. *Dimensions of Critical Care Nursing*. 2021;40(3):174–185.
- Horsley TL, O'Rourke J, Mariani B, Doolen J, Pariseault C. An integrative review of interprofessional simulation in nursing education. *Clinical Simulation in Nursing*. 2018;22:5–12.
- Nichols A, Wiley S, Morrell B, et al. Interprofessional healthcare students' perceptions of a simulation-based learning experience. *Journal of Allied Health*. 2019;48(3):159–166.
- Congdon HB. Interprofessional education (IPE) practices at universities across the United States with an established IPE infrastructure in place. *Journal of Interprofessional Education & Practice*. 2016;5:53–58.
- Koukourikos K, Tsaloglidou A, Kourkouta L, et al. Simulation in clinical nursing education. *Acta Informatica Medica*. 2021;29(1):15–20.
- Cain J, Piascik P. Are serious games a good strategy for pharmacy education? *American Journal of Pharmaceutical Education*. 2015;79(4):47.
- Edwards T, Boothby J, Succeralli L. Escape room: using an innovative teaching strategy for nursing students enrolled in a maternity clinical course. *Teaching and Learning in Nursing*. 2019;14(4):251–253.
- Reed J, Ferdig R. Gaming and anxiety in the nursing simulation lab: a pilot study of an escape room. *Journal of Professional Nursing*. 2021;37(2):298–305.
- Battista A. Activity theory and analyzing learning in simulations. *Simulation & Gaming*. 2015;46(2):187.
- Battista A. An activity theory perspective of how scenario-based simulations support learning: a descriptive analysis. *Advances in Simulation (London)*. 2017;2:23.
- Robinson W, Chan P, Lau T. Finding new ways of creating value: a case study of servitization in construction: one company's journey toward servitization illustrates how systems integrators can capture value through long-term customer relationships. *Research-Technology Management*. 2016;59(3):37–49.
- Cheng A, Kessler D, Mackinnon R, et al. Reporting guidelines for health care simulation research: extensions to the CONSORT and STROBE statements. *Advances in Simulation*. 2016;1(1):25.
- INACSL Standards Committee, Miller C, Deckers C, Jones M, Wells-Beede E, McGee E. Healthcare simulation standards of best practice™ outcomes and objectives. *Clinical Simulation in Nursing*. 2021;58:40–44.
- INACSL Standards Committee, Persico L, Belle A, DiGregorio H, Wilson-Keates B, Shelton C. Healthcare simulation standards of best practice™ facilitation. *Clinical Simulation in Nursing*. 2021;58:22–26.
- INACSL Standards Committee, Decker S, Alinier G, Crawford SB, Gordon RM, Wilson C. Healthcare simulation standards of best practice™ the debriefing process. *Clinical Simulation in Nursing*. 2021;58:27–32.
- Lewis KL, Bohnert CA, Gammon WL, et al. The Association of Standardized Patient Educators (ASPE) Standards of Best Practice (SOBP). *Advances in Simulation (London)*. 2017;2(10):10.
- Brennan L, McBride A, Akinola M, et al. Improving health professions students' understanding of interprofessional roles through participation in a patient stabilization simulation. *American Journal of Pharmaceutical Education*. 2021;85(3):848116.

25. Zorek JA, Fike DS, Eickhoff JC, et al. Refinement and validation of the student perceptions of physician-pharmacist interprofessional clinical education instrument. *American Journal of Pharmaceutical Education*. 2016;80(3):47.
26. Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. *Qualitative Health Research*. 2005;15(9):1277–1288.
27. Vaismoradi M, Turunen H, Bondas T. Content analysis and thematic analysis: implications for conducting a qualitative descriptive study. *Nursing and Health Sciences*. 2013;15(3):398–405.
28. Burgess A, van Diggele C, Roberts C, Mellis C. Teaching clinical handover with ISBAR. *BMC Medical Education*. 2020;20(Suppl 2):459.
29. Mattsson J, Ostlund B, Bjorling G, Williamsson A, Eriksson A. Interprofessional learning for enhanced patient safety: biomedical engineering students and nursing students in joint learning activities. *Journal of Research in Interprofessional Practice and Education*. 2019;9(1):1–14.
30. Linder D, Cardamone C, Cash SB, et al. Development, implementation, and evaluation of a novel multidisciplinary one health course for university undergraduates. *One Health*. 2020;9:100121.
31. American Association of Colleges of Nursing. Position statement: interdisciplinary education and practice. *Journal of Professional Nursing*. 1996;12:119–123.
32. Vaughn J, Cunningham R, Schroeder LH, et al. An innovative interprofessional education simulation for athletic training and prelicensure nursing students: development, implementation, and student perspectives. *Nursing Forum*. 2022;57(6):1373–1380.
33. Vaughn J, Erichsen T, Peck J, et al. Engaging student learners in interprofessional simulations using Halloween-themed scenarios. *Health, Interprofessional Practice and Education*. 2023;5:1–11.