

Replacement of Traditional Nursing Clinical With a Virtual Simulated Clinical Experience During the COVID-19 Pandemic

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Abstract

Background: In response to the COVID-19 pandemic, Indiana University (IU) South Bend nursing faculty created a virtual clinical day that included synchronous and asynchronous experiences to replace 50% of traditional clinical hours in a 1:1 exchange to realistically imitate an in-person clinical day. **Purpose:** The purpose of this study was to evaluate existing outcome data to support the replacement of a traditional clinical experience with a virtual clinical experience as a valid pedagogical strategy to meet clinical student learning outcomes. **Methods:** Descriptive statistics were used to measure mean values of evaluation data for students who participated in the virtual simulated clinical experience (VSCE). Additionally, aggregate final course grades were compared between the group of students who participated in the VSCE and those who did not. **Results:** When compared with a traditional clinical day, all respondents believed that the VSCE was equal to or better than the traditional clinical setting for promoting critical thinking and meeting course outcomes. Evaluation of final course grades in the corequisite didactic course demonstrated equal or better performance than students in the traditional clinical setting only. **Conclusion:** Even though this experiment resulted in a successful outcome, it is essential to continue with rigorous research to demonstrate the effectiveness of a virtual clinical experience as a substitute for face-to-face clinical or simulation hours.

Keywords: simulation, virtual simulation, clinical experience, virtual clinical experience

1. Introduction

In March 2020, the need for IU South Bend School of Nursing to find a solution to replace traditional clinical hours with a virtual experience became urgent with the COVID 19 Shelter in Place orders. Although the School of Nursing and both hospital systems in the community worked tirelessly to create a safe process for IU South Bend nursing students to continue to meet clinical requirements in most traditional clinical settings, there was a need to create an acceptable replacement for 50% of required clinical hours in the pediatrics course due to low patient census. With a short two-week deadline, simulation faculty were able to create a virtual simulated clinical experience (VSCE).

To create an intentional online virtual clinical experience, simulation faculty completed a review of the literature and attended webinars with simulation experts before the development of the virtual simulated clinical experience (VSCE). The VSCE was designed using unfolding patient case studies in Elsevier's Sim Chart© and recorded simulation videos with faculty in the role of the nurse. Intending to imitate an in-person clinical day as closely as possible, simulation faculty created a daily timeline that included synchronous and asynchronous modalities that would replace traditional clinical hours in a 1:1 exchange with virtual clinical hours. VSCE clinical days and virtual simulations were designed following the NLN/Jeffries simulation framework (Jeffries & Rogers, 2012) that has long guided clinical simulation at the IU South Bend School of Nursing.

2. Literature Review

2.1 Simulation

Development of the virtual simulated clinical experience (VSCE) for this clinical cohort was based on the National Simulation Study published in 2014. This landmark study found that up to 50% of traditional clinical hours could be substituted with simulated clinical experiences without a change in measurable student outcomes such as skill attainment and licensure exam pass rates (Hayden et al., 2014). Rigorous simulated clinical experiences require an appropriate environment, administrative support, and faculty preparation. The IU South Bend School of Nursing has long met criteria set forth by the National Council of State Boards of Nursing (Alexander et al., 2015) for rigorous face-to-face simulated clinical experiences. However, due to the Shelter in Place orders, it became imperative to develop a new strategy for virtual simulated experiences outside the comfort zone of the simulation lab.

2.2 Virtual Learning Environments

According to Duff et al. (2016), diagnostic and clinical reasoning can be gained from virtual clinical experiences when there is thoughtful preparation behind the technology and real-time feedback for the learners. Learner engagement is high with virtual simulation and can be conveniently accessed to eliminate barriers such as time and geography (Duff et al., 2016). Additionally, Padilha et al. (2018) found that the current generation of students perceive virtual clinical simulators to be useful and are prepared to use virtual technology as a learning resource.

In determining the mode of delivery for the VSCE, simulation faculty were also interested in the value of adding synchronous interactions between students and faculty throughout the virtual clinical day. Scarbrough (2015) highlighted that synchronized online learning environments were found to increase faculty support and improve student-faculty interactions. In a study on the effect of synchronous versus asynchronous discussion forums on the cognitive presence, Molnar and Kearney (2017) found that participants were more likely to achieve the highest phase of cognitive presence, the resolution phase, during the synchronous discussion.

The review of the literature found rich data to support the replacement of traditional clinical experiences with simulation to meet clinical learning outcomes; however, the research is scarce regarding a virtual clinical simulated experience to replace traditional clinical hours. There is also a need for more evidence on a synchronous versus asynchronous presence in the virtual learning environment. This led to the purpose of this study which was to evaluate existing outcome data to support the replacement of a traditional clinical experience with a virtual clinical experience as a valid pedagogical strategy to meet clinical student learning outcomes. This study was approved as an exempt protocol through the IU Institutional Review Board.

3. Methods

3.1 VSCE Design

The synchronous portion of the VSCE was conducted on the Zoom® video conferencing platform and included a 30-minute group pre-briefing of the virtual patient at the beginning of the clinical day, a 30-minute mid-conference, and a 60-minute debriefing at the end of the clinical day. The synchronous debriefing phase of each experience was congruent with standard debriefing techniques of the School of Nursing which are built on the Debriefing for Meaningful Learning model (Dreifurst, 2015) and the advocacy/inquiry debriefing method (Littlewood & Szlyd, 2015). Between synchronous group meetings, students worked asynchronously to assess, prioritize, make clinical decisions, evaluate patient outcomes, and document the findings of the virtual patients. Clinical faculty were available by phone, text, or Zoom® for any student needs during the asynchronous portion of the day. Unfolding case studies were chosen in collaboration with pediatric didactic and clinical faculty to ensure that student learning outcomes (SLOs) would be met. Clinical paperwork employed in the traditional clinical setting to promote prioritization and reflection was duplicated for the VSCE to promote fidelity to the traditional clinical experience. Students were expected to use encounters with virtual patients in the unfolding case studies as exemplars of how SLOs were met and documented in the clinical journal.

3.2 Study Design

3.2.1 Sample/Setting

A convenience sample of 13 traditional baccalaureate nursing students from a regional midwestern university campus was assigned to take part in the virtual simulated clinical experience by lead faculty for the pediatric clinical course and the interim Assistant Dean of Nursing. All participants were female. Although participation in the experience was required, completion of the post-experience evaluation survey was voluntary.

3.2.2 Measurement

A survey with 15 Likert style questions and two open-ended questions was created for quality improvement purposes to gain student perceptions about how well course outcomes were achieved. A link to the survey was sent to students after completion of the full clinical rotation. Descriptive statistics were used to measure the mean values of survey data and aggregated final course grades. Clinical journals were reviewed by faculty to ensure course outcomes were met.

4. Findings

The post-course survey had a 62% response rate. When compared with the face-to-face clinical experience, 22% of students felt the VSCE provided a “much better” opportunity to develop critical thinking and clinical reasoning while 39% rated the VSCE as better and 39% rated it the same as the traditional face to face clinical experience (see Figure 1). Achievement of student learning outcomes during the VSCE was rated as equal to or better than the face-to-face clinical experience. Most respondents agreed that the VSCE challenged their thinking, kept their attention, and allowed them to meet student learning outcomes. As shown in Figure 2, 100% agreed that the VSCE promoted critical thinking and clinical reasoning.

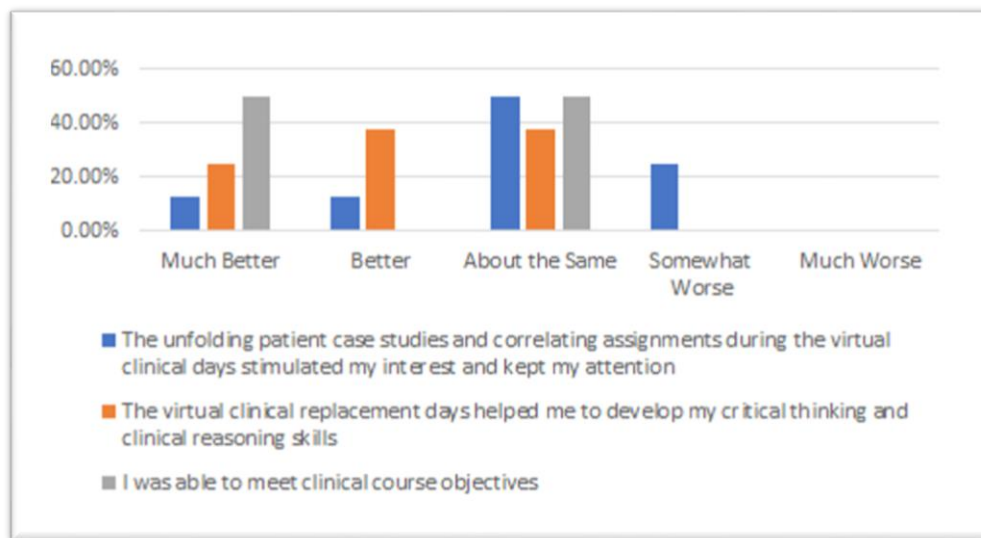


Figure 1. Student comparison of VSCE when compared with traditional clinical

A review of aggregated course grades from the co-requisite didactic pediatrics course revealed that students who completed 50% of clinical hours through the VSCE had a mean final grade that was 8% higher compared with those in the same cohort who completed all clinical hours in the traditional setting. A review of student journals showed that VSCE exemplars were appropriately applied to learning outcomes.

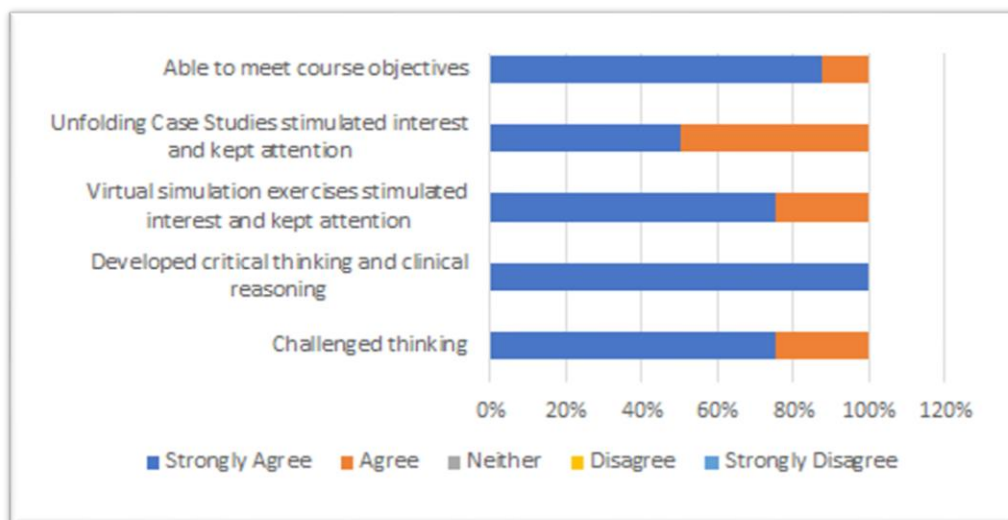


Figure 2. Student evaluations of VSCE

5. Discussion of Findings

Findings from this small-scale study add to the existing body of knowledge in the literature supporting up to 50% replacement of traditional clinical experiences with simulated clinical experiences (Hayden et al., 2015) and concur with findings of positive student perceptions of a virtual simulated clinical experience from a similar study conducted during the pandemic (Palancia Esposito & Sullivan, 2020). Data from the post-VSCE survey found that this teaching strategy was able to challenge thinking, engage learners, and meet clinical course outcomes. When compared with a traditional clinical day or a face-to-face simulation experience, all respondents believed that the VSCE was equal to or better than the traditional clinical setting for promoting critical thinking and meeting course outcomes. A review of student journals by both traditional clinical faculty and VSCE faculty found appropriate student exemplars that demonstrated achievement of student learning outcomes. In the open-ended comments section of the survey, students identified several valuable aspects of the VSCE. The diversity and variety of the simulated patients were appreciated, as well as the ability to align the clinical patient experience with what they were learning in the classroom.

In alignment with the research (Duff et al., 2016), our study illustrates that students can meet course outcomes in the virtual clinical setting through a combination of synchronous pre-briefing and debriefing sessions and asynchronous virtual patient care. Checking in with students throughout the clinical day to pause and discuss their findings, reorganize their priorities, and evaluate their interventions allowed students to work together to understand the scope of the clinical experience. This teamwork approach enabled lively discussions and thoughtful considerations of care when applying clinical judgment to a virtual patient. Students also appreciated the opportunity for synchronous debriefing after completing a virtual clinical day. As one student stated in their evaluations of the VSCE, "I think the debriefing and discussions that we had were most valuable."

This approach to replacing traditional clinical experiences during Covid-19 mirrors the approach taken by other schools of nursing (Palancia Esposito & Sullivan, 2020). A unique feature of our study was the comparison of final course grades in the co-requisite didactic course. While the sample size was too small for discussion of statistical significance, a mean difference of 8% in final course grades was noteworthy for the researchers and course faculty in demonstrating the student's ability to use clinical judgment while taking a high-stakes exam. Our goal was that the VSCE would allow students to meet course outcomes equally in comparison with completion of the traditional clinical experience. It was encouraging that students not only met course outcomes equally but achieved better mean final grades.

6. Implications, Recommendations, and Limitations

Opportunities for use of the VSCE to augment clinical experiences are exciting. The success of the VSCE has provided a teaching strategy to augment traditional clinical experiences in a variety of situations. The IUSB School of Nursing does not anticipate the need for 50% replacement of clinical hours as a regular need of the curriculum but look forward to using this teaching strategy as a replacement of lost clinical hours due to absences or instead of

alternative assignments, such as observations days, where student experiences may not be as rigorous in promoting clinical judgment and decision making. For future consideration, we found it to be highly beneficial to collaborate with expert clinical faculty for thoughtful consideration of patient assignments to align with didactic and clinical student learning outcomes. In addition, higher fidelity virtual patients would enrich the experience. A limitation identified was the small convenient sample size.

7. Conclusion

Despite the short preparation time, IU South Bend nursing faculty developed an effective evidence-based teaching strategy for a virtual clinical experience. Although the sample was limited to only one cohort during the pandemic, the success of the VSCE is an important addition to existing knowledge for the replacement of traditional clinical hours. We are excited to have a viable alternative to promote the achievement of clinical learning outcomes when clinical hours cannot be met in the traditional setting. Moving forward, it will be important to continue to conduct more rigorous research to demonstrate the effectiveness of a virtual clinical experience as a substitute for face-to-face clinical or simulation hours.

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