Journal of Interprofessional Practice and Collaboration

Volume 4
Issue 1 *JIPC Fall 2023 Issue*

Article 4

November 2023

Remote Clinical Skills Simulation for Nursing Students During COVID-19

Cari Granier
Nicholls State University, cari.granier@nicholls.edu

Lauren Boudreaux
Nicholls State University, lauren.boudreaux@nicholls.edu

Remote Clinical Skills Simulation for Nursing Students During COVID-19

Abstract

Introduction: Due to the COVID-19 pandemic, nursing educators have had to adapt and develop new teaching methods that abide by social distancing protocols. This left educators wondering how to accommodate all students with limited physical space and faculty while preserving the quality of instruction and allowing adequate time for practice (Bezerra, 2020). *Methods*: Bachelor of Science in Nursing (BSN) students enrolled in a sophomore level adult health course were instructed to gather supplies and create an at-home manikin box to practice clinical skills such as endotracheal suctioning, tracheostomy care, nasogastric tube insertion, nasogastric tube irrigation, nasogastric feeding administration, and nasogastric tube removal. To build the manikin box, students were given instructions along with example images. *Results*: This at-home manikin box gave students the opportunity to continue to meet course and program outcomes while adhering to social distancing guidelines. All skills that would have typically been practiced on campus were now able to be from home. Educators were also able to assess student competency in clinical skills via recording. *Conclusion*: The self-created manikin box allowed students and educators to continue to meet course outcomes amidst a global pandemic while being low-cost and easy to implement

Keywords

nursing clinical skills, remote clinicals, online nursing instruction, nursing student skills, nursing simulation

Remote Clinical Skills Simulation for Nursing Students During COVID-19

Cari Granier, Nicholls State University
Lauren Boudreaux, Nicholls State University

Introduction

The COVID-19 pandemic has and continues to impact nursing education. One consideration is the increasing need and desire for remote learning. In response, nursing educators have recognized the need for innovative teaching methods that abide by social distancing protocols and other COVID-19 restrictions to allow students to continue their education in a time when nurses are desperately needed. The novel coronavirus has paved the way for creativity and innovation in nursing education with the use of online learning and virtual simulation, but the challenge many faced was to bridge the gap between theory and practice. Nursing students missed vital skills training that led to loss of confidence when performing skills in the hospital setting (Dziurka et al., 2022).

Educators are charged with the task of producing resilient nurses to face the challenges and fulfill the crisis shortage many hospitals are facing (Yancey, 2020). Prior to the pandemic, students gathered in simulation labs with faculty and peers to practice clinical skills on manikins. However, new distancing protocols prohibited students from being closely gathered. If traditional face-to-face methods were utilized, students would be spread over multiple labs leaving educators wondering how to accommodate all students with limited physical space and faculty while still preserving quality of instruction and allowing adequate time for practice (Bezerra, 2020). A viable option is remote learning, but not without its own challenges to consider. Remote learning presents educators with the challenge of adapting to new methods of instruction delivery and evaluation that maintain academic integrity and ensure student success (McLaughlin et al., 2020). In the fall of 2020, nursing educators utilized an inventive, low-cost,

minimal preparation method that provided students enrolled in a Bachelor of Science in Nursing (BSN) program with practice opportunities and assessment measures that could be completed from the safety of the students' homes. This novel concept was developed out of necessity to bridge the gap in the clinical setting and meet the needs of skills practice of tracheostomy care and suctioning; and nasogastric tube insertion, care, and maintenance during a time when resources were limited. The only previous information found involving do-it-yourself skills practice was tracheostomy suctioning utilizing the upper portion of a water bottle (Logacho, 2013).

Methods

BSN students enrolled in a sophomore level adult health course were instructed via Zoom meetings to gather supplies and create an at-home manikin box (see Appendix A). Instruction was also provided via a faculty recorded demonstration and a step-by-step tutorial posted in the course delivery page. With this manikin box, students were able to meet course outcomes of providing endotracheal suctioning, tracheostomy care, nasogastric tube insertion, nasogastric tube irrigation, nasogastric feeding administration, and nasogastric tube removal. Students were also able to practice skills from the previous semester such as urinary catheter insertion. Prior to COVID-19, students were required to complete each of these skills satisfactorily through an in-lab demonstration with their assigned clinical educator, but this was not a viable option with new social distancing protocols.

Design

The base of the manikin was a cardboard box with a print-out or drawing of a manikin face secured to the box. The box used in the example was twelve inches tall and nine inches wide. There was no requirement on depth; however, the box must be large enough to fit a sheet of letter-sized paper for the manikin face. Holes were cut to serve as openings for the nostrils and tracheostomy stoma. Each student was supplied with needed equipment to perform the

skill. Faculty prepackaged supplies for students to pick up on campus. When feasible, this was lab-grade demonstration supplies such as tracheostomy suction kits, tracheostomy care kits, sterile gloves, feeding bags and tubing, needleless syringes, gauze, basins, and a pH test strip. For other components, everyday items were used such as plastic lids, pieces of cardboard, tissues, and string. All items mentioned above were provided to the students with the exception of the cardboard box.

To build the manikin box, students were given instructions along with example images. Instructions were to start by taping or gluing the printed out or drawn manikin face to the cardboard box and covering it with a clear protective layer such as a page protector or contact paper. Next, carefully cut holes to simulate the manikin's nostrils and tracheostomy stoma. The tracheostomy hole must be large enough to fit the barrel of the ten mL syringe, and the nostril holes should be similar in size to a human nostril to accommodate the nasogastric tube placement. Next, create the tracheostomy cannulas by removing the plunger from a ten mL syringe and stuffing the barrel with tissue to the four mL mark. Then, remove the plunger from a five mL syringe and place the five mL barrel inside of the ten mL barrel. This should rest on the tissue. Next, create the tracheostomy collar. To do this, cut a piece of cardboard in the shape of a trapezoid and punch a hole on each side with a standard hole puncher. Also, cut a hole in the middle that will align with the previously created hole serving as the tracheostomy stoma. The cardboard used for this manikin box measured four inches (top) by two and a half inches (sides), by three inches (bottom). After aligned, insert the ten mL syringe barrel through the hole. The five mL syringe will act as the inner cannula. Next, place the split gauze under the trach collar. To secure the trach collar, use a shoelace, string, or ribbon. Thread the string through one side of the collar, bring the ends even, wrap around the back of the box, pull string through the other side, and tie a square knot two inches away from the cannula. For the last step, cut a

plastic to-go cup lid or something similar to serve as the oxygen delivery device. The lid used in the example was an eight-ounce dome lid and was cut in half with scissors.

Assessment

While students were not required to complete a video demonstration of ostomy care skills, they were encouraged to utilize the manikin box for practice. For this, students were instructed to attach a Lifesavers® gummy candy or something similar to the box to serve as the ostomy stoma. Gummies are preferred over hard candies because they are more realistic in comparison to an actual ostomy. The students were also able to practice urinary catheter insertion.

Skill instruction was provided via virtual lecture and video demonstration for tracheostomy care, tracheostomy suctioning, and nasogastric tube insertion, irrigation, feeding, and removal. Implementation, best practices, rationales, associated nursing judgment, and management of care in relation to the skills were discussed. Afterwards, students were instructed to watch a recording of course faculty performing the skill on their own manikin box. The recorded video followed the skill steps as listed on the standardized skill rubric that was used to assess student competency. Tracheostomy and gastric tube skills were taught and assessed separately, so students recorded and submitted two different videos for assessment.

The first rubric assessed competency of tracheostomy skills and included both endotracheal suctioning and tracheostomy care. The second rubric assessed competency of nasogastric tube skills and included insertion, irrigation, feeding administration, and tube removal. A detailed video was provided instructing students how to record and upload the skills videos. Videos were submitted via Google Drive.

Results

This at-home manikin box gave students the opportunity to continue to meet course and program outcomes while adhering to social distancing guidelines. This manikin box allowed each student to essentially take the skills practice lab home. All skills that would have typically been practiced on campus were now able to be mastered from home.

To assess the effectiveness of instruction delivery, averages of student performance scores on recorded demonstration during the academic year of fall 2020 and spring 2021 were compared to previous performance scores on in-person demonstrations during the previous academic year of fall 2019 and spring 2020. The same skill rubrics were used during all four semesters.

The average of scores was comparable with both methods of instruction delivery. Averages for tracheostomy skills were as follows: fall 2019, in-person, 96.02%; spring 2020, in-person, 93.43%; fall 2020, virtual, 94.79%; spring 2021, virtual, 95.46% (see Table 1).

Averages for nasogastric skills were as follows: fall 2019, in-person, 95.31%; spring 2020, in-person, 96.32%; fall 2020, virtual, 96.84%; spring 2021, virtual, 98.74% (see Table 2). The number of students in each semester ranged from 34 to 38. To determine if competency on the skills checkoff was translated into clinical practice, all students were divided among five clinical educators, who assessed the students' performance in the clinical setting. All educators reported that students were competent in the clinical setting and skill performance was as expected when compared to the performance of previous students who had received in-person instruction.

Table 1

Average Student Scores for Tracheostomy Skills

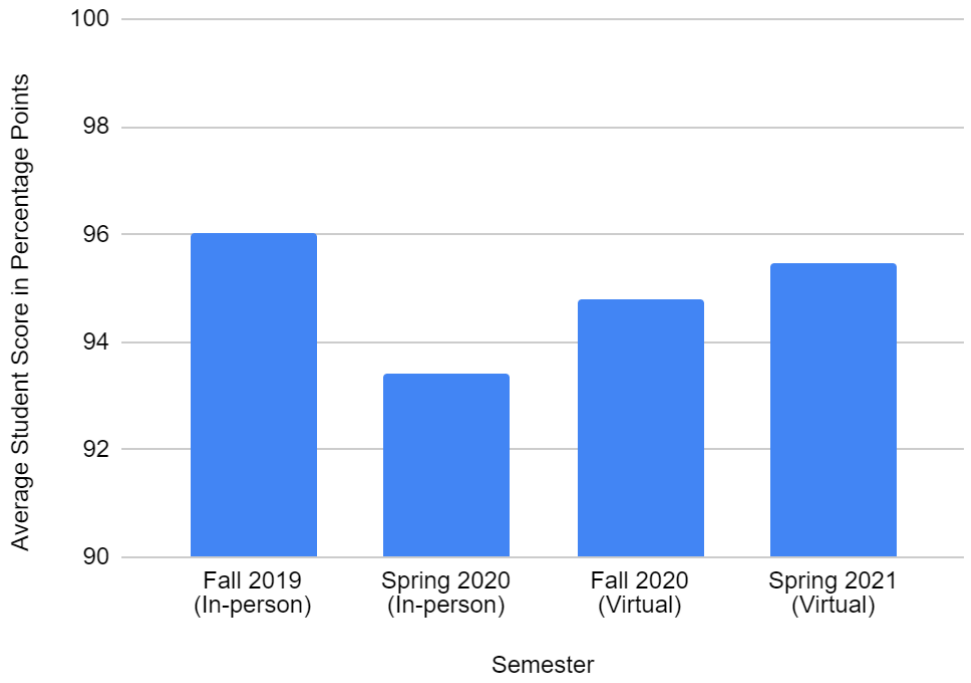
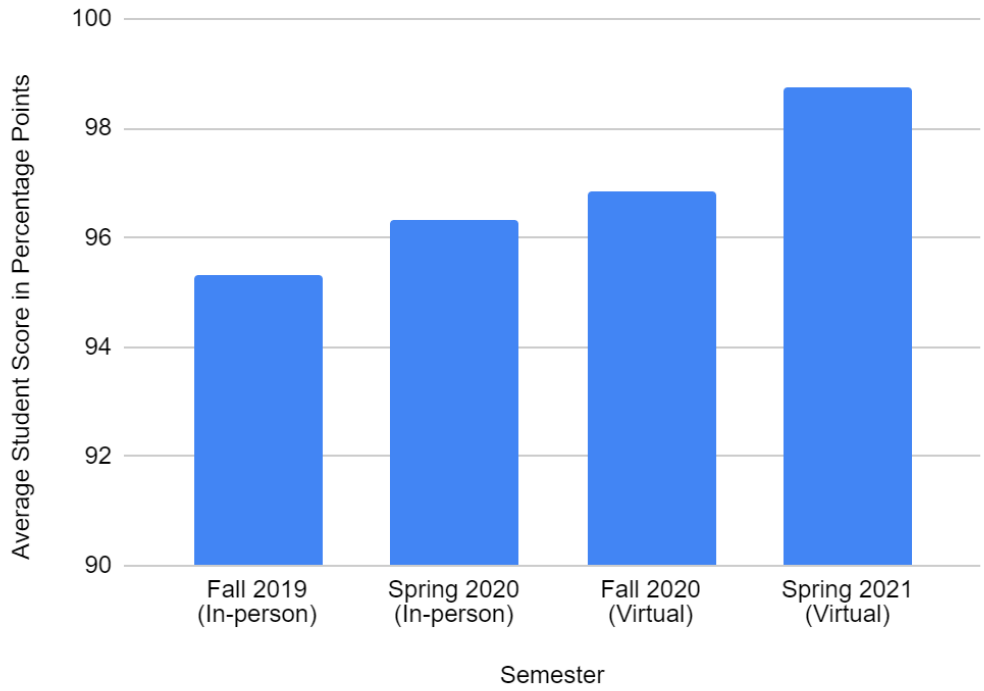


Table 2

Average Student Scores for Nasogastric Tube Skills



Student feedback on the skills checkoffs performed via recorded assessments was overwhelmingly positive. Many students reported practicing more than they would have for an in-person assessment because they wanted the recording to be perfect. Some students did report initial anxiousness with using technology, but this number was small and there were no reports of this ultimately hindering performance. Students reported they appreciated the flexibility of practicing at home and felt like this method decreased the chance of exposure to COVID-19. Internet access became a challenge post-hurricane Ida for students living in affected regions; however, instructors were able to accommodate those students, and scores were not significantly affected. Overall, repetition of skills practice has been proven to promote the mastery of skills, and allowed the students to gain confidence (Palmer et al., 2021). Some students may require more practice time than others to achieve proficiency in skills (Palmer et al., 2021). The at-home manikin gave students the opportunity to practice as much as they needed to achieve proficiency. The instructors found no differences in the performance of students who practiced in person compared to the students who practiced at home.

Conclusion

The self-created manikin box allowed students and educators to continue to meet course outcomes amidst a global pandemic. In addition to meeting course objectives, this resource serves to be even more valuable to nursing educators since it requires minimal preparation, is budget friendly, and can be quickly and easily implemented. Students are able to gain confidence in skills in the comfort of their own homes and receive relevant feedback from their instructors. The outcome of this project proves nursing programs could deliver quality instruction virtually without compromising student outcomes.

References

Bezerra, I. (2020). State of the art of nursing education and the challenges to use remote technologies in the time of coronavirus pandemic. *Journal of Human Growth and Development, 30*(1). 141-147. doi: 10.7322/jhgd.v30.10087

Dziurka, M., Machul, M., Ozdoba, P., Obuchowska, A., Kotowski, M., Grzegorczyk, A., Pydys, A., & Dobrowolska, B. (2022). Clinical training during the COVID-19 pandemic: Experiences of nursing students and implications for education. *International Journal of Environmental Research and Public Health, 19*(10). https://doi.org/10.3390/ijerph19106352

Logacho, D. (2013). *Try this at home! DIY nursing skills simulators.* Retrieved from https://www.chamberlain.edu/blog/try-this-at-home-diy-nursing-skills-simulators

McLaughlin, M., Saffold, T., Johnson, S. (2020). Teaching nursing students during COVID-19. *New Jersey Nurse*, *50*(3). 12.

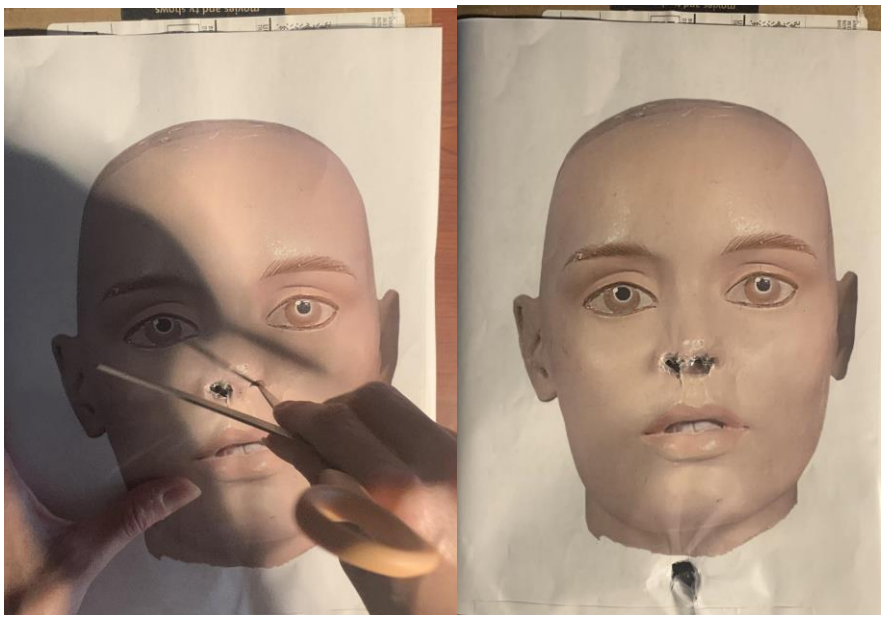
Palmer, T. J. Chisholm, L. J., Rolf, C. G., & Morris, C. R. (2021). Deliberate practice and self-recorded demonstration of skill proficiency: One baccalaureate nursing school's response to the COVID-19 pandemic. *Nursing Education in Practice, 53*. https://doi.org/10.1016/j.nepr.2021.103071

Yancey, N. R. (2020). Disrupting rhythms: Nurse education and a pandemic. *Nursing Science Quarterly, 33*(4), 299-302. https://doi.org/10.1177/0894318420946493

Appendix A: Manikin Box Creation Instructions

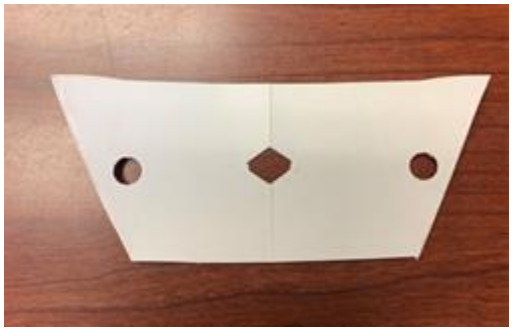
Step 1: Start by taping or gluing the printed out or drawn manikin face to the cardboard box and cover with a clear protective layer such as a page protector or contact paper.

Step 2: Carefully cut holes to simulate the manikin's nostrils and tracheostomy stoma.

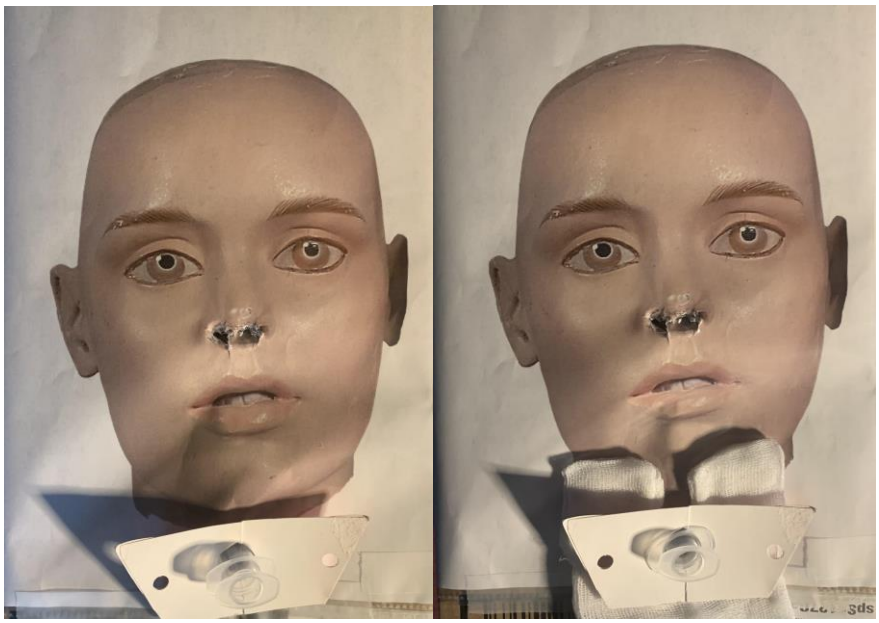


Step 3: Create the tracheostomy cannulas. Remove the plunger from a 10ml syringe and stuff the barrel with tissue to the 4ml mark. Then, remove the plunger from a 5ml syringe and place the 5ml barrel inside of the 10ml barrel. This should rest on the tissue.

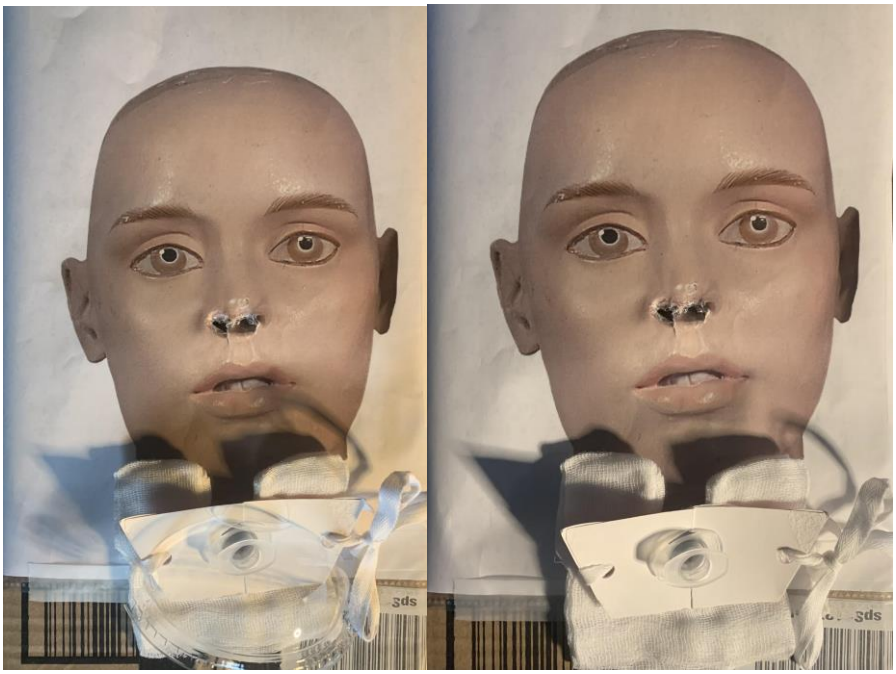
Step 4: Create the tracheostomy collar. To do this, cut a small piece of cardboard and punch a hole on each side. Also cut a hole in the middle that will align with the previously created hole serving as the tracheostomy stoma.



Step 5: After aligned, insert the 10ml syringe barrel through the hole. The 5ml syringe will act as your inner cannula. Next, place the split gauze under the trach collar.



Step 6: To secure the trach collar, use a shoelace, string, or ribbon. For the last step, cut a plastic to-go cup lid or something similar to serve as the oxygen delivery device.



Optional Step for Ostomy Care Practice: Attach a candy lifesaver to the box to serve as the ostomy stoma.