Perceived Effectiveness of Nursing Faculty of Clinical Video Simulation for Use in Nurse Practitioner Education

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Abstract:

Quality clinical placements for nurse practitioner students are increasingly challenging to locate and sustain, restricting faculty opportunities to assess student clinical competency. With the additional impact of COVID-19 restricting access to in-person clinicals and simulations, faculty began to incorporate virtual clinical simulation experiences. This cross-sectional design study examined nurse practitioner faculty's perception that by including videos with the accompanying faculty guides found at the University of North Carolina at Greensboro School of Nursing Clinical Video Simulation Series site, students' clinical decision making could be enhanced and that video simulation can be used to assess clinical competency.

Keywords: clinical competency | clinical video simulation

Article:

Nurse practitioner (NP) educators are often challenged with finding alternative means to facilitate the development of diagnostic reasoning skills of NP students while ensuring consistency in the acquisition of knowledge and skills for all students of select clinical situations.[1,2] The use of virtual or video simulation in NP education is an effective means of providing students with clinical experiences that mimic real-life situations while providing the acquisition of knowledge that is transferrable to actual clinical practice.[3, 4, 5]

At the same time, quality clinical placements for advanced practice nursing students are increasingly challenging to locate and sustain as well as for faculty to subsequently evaluate the effectiveness of students' clinical competency directly. The challenge escalated during the COVID-19 pandemic, when clinical placement sites could no longer accommodate students due to practice closures and restrictions, and face-to-face simulation experiences were discontinued.[4,6] Faculty incorporated virtual simulation experiences and counted the student engagement time as nondirect clinical hours.

Several published reviews have presented the value of virtual simulation in nursing education.[7, 8, 9] Smith et al[6] reported students' satisfaction with engaging in interactive clinical videos developed by the nursing faculty. No studies to date, however, have reported on faculty's perception of the use of clinical video simulation in NP education to gauge NP students' attainment of competence. Most studies on the benefit of virtual/video simulation for nursing students, NP students, or medical students have been limited to small convenience samples of one cohort of students or, at best, repeated testing of students from one university over a short duration of time.[4,9,10]

Early studies often used commercially available virtual simulation.[1] More recently, NP faculty working in collaboration with instructional developers created video-recorded simulations for use at a single institution.[3,5,6] The actual assessment instruments have varied from the use of existing tools developed for simulation by the National League for Nursing[1,11] or author-created tools that lacked testing for validity, as noted in study limitations.[6,12]

Because no studies could be found that addressed the faculty's perception of the effectiveness of using NP educator-developed clinical video simulations, an instrument was developed to gather this information. This instrument was created to evaluate specifically the clinical video simulations located on the University of North Carolina at Greensboro School of Nursing (UNCG SON) Clinical Video Simulation Series site (https://sites.google.com/uncg.edu/uncgschoolofnursinganewproject/home). The video simulations were developed by the faculty at UNCG SON with funding from a Health Resources and Service Administration Advanced Nursing Education Workforce grant.

The items on the instrument pertain to the faculty's perception of the effectiveness of incorporating any of the 23 faculty-developed clinical simulation videos. All of these videos were accessible on YouTube. Of the 23 videos, 12 were enhanced by making them interactive with short multiple-choice questions, with rationale provided for the incorrect answers. The interactive videos were created using H5P, an open-source, free-to-use HTML5 interactive content creator.[13] Whatever format is required for the learners to view the video, standard or interactive, the videos are designed to facilitate clinical decision making for NPs, thereby improving health outcomes for adults and older adults.

In 2019, Kennedy-Malone began sharing the link to the series of clinical video simulations created with identified NP competency areas[14] listed in each faculty guide with faculty members of the Gerontological Advanced Practice Nurses Association, the National Organization of Nurse Practitioner Faculties, and the National Hartford Center of Gerontological Nursing Excellence. The video simulations were also identified as a resource by the National League for Nursing as a Virtual Simulation Option for Nurse Practitioner Students.[15]

Purpose

The aim of this study was to determine whether NP faculty perceive that by including clinical simulation videos with the accompanying faculty guides found at UNCG SON Clinical Video Simulation Series site in the NP curriculum, students' clinical decision making could be enhanced and that students' completion of a video simulation assignment can be a means for NP faculty to assess student's clinical competency. Additionally, information was sought to ascertain whether faculty perceived the videos to be realistic of clinical situations and technically sound to facilitate learning by the students. Finally, the study sought to find whether nursing faculty who

participated in the study would recommend these videos to other faculty for inclusion in the NP curriculum.

Method

This study used a descriptive, cross-sectional survey design. The researchers designed the electronic survey via Qualtrics. After an extensive review of the literature about the assessment of video simulation, video interactive simulation, virtual simulation, and simulation in NP education, a brief instrument was developed. Content areas included the ability to transfer knowledge gained in simulation to clinical situations, use to assess national NP competencies, determination of technical ease, realistic portrayal of a case scenario, and recommendation to other faculty to incorporate the video simulations in the NP curriculum.

The survey contains demographic questions, a drop-down menu listing the specific videos, and 18 Likert-type questions (Table 1). Five content experts who are nurse educators with experience in developing video simulations for NP education were selected to participate in the survey validation. Comments from the reviewers were used to revise the survey. The survey was deemed to have face and content validity. Likert items that reached 100% consensus on the relevance of the item were included in the survey.

Table 1. Clinical Video Simulation for Use in Nurse Practitioner Education Survey

Q1	Are you a Nurse Practitioner Faculty?
Q2	Indicate the type of Nurse Practitioner educational program in which you currently teach (check all that apply):
Q3	How often do you work as a Nurse Practitioner Faculty?
Q4	What state or country is the location of your current employment?
Q5	Please indicate which video(s) you asked students to view (check all that apply):
	Fatigue and Headaches
	Elevated Cholesterol
	Vaginal Itching
	Shortness of Breath
	Well Woman Physical with Medical Interpreter
	Type 2 Diabetes Mellitus
	Pharyngitis
	Progressive Fatigue
	End of Life
	How to Handle an Agitated Patient
	A Belligerent Person
	Provider Safety
	An Armed Man
	Clinical Pearls for Managing the Care of Older Adults in Long-Term Care
	Treating in Place in Long-Term Care Adult Patients
	Preceptor Expectations for Nurse Practitioner Students
	Advice for Novice Preceptors
	Social Determinants of Health
	Type 2 Diabetes Case for Preceptor Development
	Pharyngitis Case for Preceptor Development
	Well Woman Physical with Medical Interpreter Case for Preceptor Development
Q6	Video source:
	YouTube
	H5P
	Both
Q7	This viewing was:

	Required
	Recommended
	Both
Q8	Type of course:
	Face-to-face
	Hybrid/blended
	100% online
Q9	Instructions: Please read the following 18 statements regarding the video(s) which is required or recommended. For each statement, please fill in the appropriate circle to indicate whether you strongly agree, agree, are neutral, disagree, or strongly disagree.
	Learners were prepared to provide specific rationales for their actions during the simulation scenario.
	Learners demonstrated their ability to obtain pertinent subjective and objective data and report their findings.
	Learners demonstrated their clinical decision-making skills learned through the program during the simulation.
	Learners could transfer the knowledge, gained through the simulations, to the clinical setting.
	The clinical scenarios were realistic.
	Cases were at the appropriate level of difficulty for the students' level of training.
	This video simulation can be used to assess national nurse practitioner role-specific competencies.
	The video simulation experience achieves comparable learning outcomes for assessing competency as traditional one-on-one preceptor.
	The video simulation experience achieves comparable learning outcomes for assessing competency as traditional self-evaluation strategies.
	Video simulation enhances experiential clinical learning for nurse practitioner students.
	Video simulation enhances the traditional assessment of clinical competency.
	Video simulation is an effective way to provide population-specific competency-based education to nurse practitioner students.
	There were no technical problems using the simulation.
	The visual quality of the video was clear.
	The pace of the 'action' was sufficient.
	The audio quality of the video was clear.
	The simulation will be a useful addition to clinical experience for students.
	I would recommend this simulation resource to other faculty members.
Q10	Any comments and/or suggestions for future development you would like to share?
Q11	Would you like to enter the drawing to win a $50 gift card? Your response will still remain anonymous.
	Yes
	No

Before the study was conducted, approval from the UNCG Intuitional Review Board was obtained. Participants for this study were recruited from several professional nursing organizations who received a targeted email from the professional organizations or had read a paid advertisement for the study. Faculty who had experience incorporating clinical video simulation in the curriculum were contacted by the researcher and sent information on how to participate in the study.

A response to the survey indicated intent to participate. Participants who provided an email address were placed in a drawing for a gift card. The survey remained open for 5 months. Data collected through the online survey were anonymous and contained no identifiable information. Data were stored in a password-protected electronic file on a secure, password-protected network system, with access limited to the research team.

Results

Descriptive statistics were used to analyze the data obtained from the surveys, allowing viewing patterns of responses, video use, and effectiveness levels with frequencies, means, and

proportions (Table 2). Of the 29 participants who began the survey, 16 completed the entire survey. Most of the respondents who completed survey are adult-gerontology NP faculty working full-time. The most popular videos that were required or recommended for viewing were Recognizing Frailty in Primary Care, Clinical Pearls for Managing the Care of Older Adults in Long-Term Care, Progressive Fatigue, and End of Life. These videos featured an older adult patient. Faculty indicated that they had the students watch the video in its entirety, either recommended or required, with a small percentage indicating both (19%). Most of the faculty (56%) indicated that their course is taught in a hybrid format.

Table 2. Sample Characteristics of Participants Who Completed the Survey

Variable	No. (%) / (N = 16)
Full-time	15 (94)
Part-time	1 (6)
Type of nurse practitioner educational program[a]	
Family	7 (37)
Adult/gerontology primary care	11 (58)
Adult/gerontology acute care	0 (0)
Other	1 (5)
How viewed	
YouTube	8 (50)
H5P	4 (25)
Both	4 (25)
Viewing	
Required	7 (44)
Recommended	6 (37)
Both	3 (19)
Type of course	
Hybrid	9 (56)
Face-to-face	4 (25)
100% Online	3 (19)

[a] More than one specialty was indicated by 3 participants.

Although the number of faculty who participated in the study was small, overall, there was consensus among the participants of value in incorporating the clinical video simulations in the NP curriculum (Table 3). Faculty found the videos to be a means for students to demonstrate their clinical decision-making skills and gain knowledge that can be applied in the clinical area. There was total agreement that the clinical simulations were realistic and appropriate for the student's level of training. The videos were found to be technically sound, with a pace that was sufficient for learning.

More than 94% of the participants indicated that the simulation experience was comparable for assessing competency of NP students. All agreed that clinical video simulations can be an effective way to provide competency-based education to NP students and would be a useful method to enhance clinical experiences for students. Finally, all participants agreed that they would recommend the videos to other faculty members. An open-ended question at the end of the study allowed participants to provide feedback on using the videos. Overall, remarks were positive, and faculty were grateful to have this resource to provide nondirect clinical hour experiences. In addition to the positive feedback, the remaining comments suggested topics for future videos (Table 4).

Table 3. Survey Results

Question	Mean	SD	Variance	Strongly Agree, Agree (%)	Neutral, Disagree, Strongly Disagree (%)
1. Learners were prepared to provide specific rationales for their actions during the simulation scenario.	4.13	0.60	0.36	87.5	12.5
2. Learners demonstrated their ability to obtain pertinent subjective and objective data and report their findings.	4.13	0.60	0.36	87.5	12.5
3. Learners demonstrated their clinical decision-making skills learned through the program during the simulation.	4.25	0.66	0.44	87.5	12.5
4. Learners could transfer the knowledge, gained through the simulations, to the clinical setting.	4.25	0.56	0.31	93.75	6.25
5. The clinical scenarios were realistic.	4.63	0.48	0.23	100	0
6. Cases were at the appropriate level of difficulty for the students' level of training.	4.63	0.48	0.23	100	0
7. This video simulation can be used to assess national nurse practitioner role-specific competencies.	4.44	0.70	0.50	87.5	12.5
8. The video simulation experience achieves comparable learning outcomes for assessing competency as traditional one-on-one preceptor.	4.00	0.79	0.63	81.25	18.75
9. The video simulation experience achieves comparable learning outcomes for assessing competency as traditional self-evaluation strategies.	4.38	0.60	0.36	93.75	6.25
10. Video simulation enhances experiential clinical learning for nurse practitioner students.	4.44	0.61	0.37	93.75	6.25
11. Video simulation enhances the traditional assessment of clinical competency.	4.38	0.48	0.23	100	0
12. Video simulation is an effective way to provide population-specific competency-based education to nurse practitioner students.	4.50	0.50	0.25	100	0
13. There were no technical problems using the simulation.	4.69	0.46	0.21	100	0
14. The visual quality of the video was clear.	4.75	0.43	0.19	100	0
15. The pace of the 'action' was sufficient.	4.75	0.43	0.19	100	0
16. The audio quality of the video was clear.	4.69	0.58	0.34	93.75	6.25
17. The simulation will be a useful addition to clinical experience for students.	4.75	0.43	0.19	100	0
18. I would recommend this simulation resource to other faculty members.	4.75	0.56	0.31	93.75	6.25

Table 4. Summary of Contents

Generic positive feedback (ie, outstanding, excellent, etc.) (5)
Request for more complex situations (2)
Wonderful resource…as case to discuss and review in didactic class but also as resource for clinical simulation hours in time of COVID-19 (2)
Add some specific geriatric disease competencies with simulation of assessment techniques not frequently encountered
Would love to see more topics, especially with integrated health
Continue to offer these videos for NP students. Even those who are BSN-DNP would benefit from the clinical scenarios.
AGPCNP/NP students evaluated the video simulations…strongly agreed with continued use…appreciated the progressive changes over the older adult lifespan…and enjoyed this learning strategy

AGCNP = adult-gerontology primary care nurse practitioner; BSN = bachelor of science in nursing; DNP = doctor of nursing practice; NP = nurse practitioner.

Discussion

This was the first study known to the researchers to address faculty perception of the effectiveness of using noncommercial clinical video simulations as a means of assessing the clinical competency of NP students. Using video simulation can be a way to provide specific NP population competency-based educational opportunities for NP students. Faculty found the technical quality of the videos very favorable for learners and would recommend these clinical video simulations to their colleagues.

A limitation of this study was the small sample size involving NP educators throughout the United States, and the instrument was used for the first time in this study. The faculty who responded to the survey may only require select clinical video simulations from the site; thus, they may not be familiar with all of the videos available. It is important to note, however, all of the videos were created by the same group of faculty, film, and technical crew, implying the consistency of the production of all videos. Although the findings cannot be generalized, this study was unique in that it asked nurse faculty from various programs across the country to determine the effectiveness of faculty-developed noncommercial clinical video simulations with accompanying faculty guides to enhance NP education.

Future Implications

With increasing demands for NP faculty to engage students in competency-based educational experiences while finding cost-effective means of delivering experiential learning experiences, NP faculty are encouraged to consider incorporating the clinical video simulations along with the accompanying faculty guides as a means of enhancing clinical NP education. Creating case-based interactive learning activities for NP students is a means to deliver competency-based education in which the students can receive immediate feedback on their decision-making skills.[2] Faculty can then allow students to further engage in clinical decision making by incorporating the suggested discussion questions in class or for an online group activity.

Whereas the consensus-based 2022 National Task Force on Nurse Practitioner Education Standards for Quality Nurse Practitioner Education stipulates that simulation may support but cannot replace direct patient care experiences, it suggests that simulation can be a means for

assessing students' competency before beginning precepted clinical practicum experience as detailed in Criterion III.G.16(p14) NP faculty that incorporate the free web-based clinical video simulations along with the information in the faculty guides found on the UNCG SON Clinical Video Simulation Series now have access to vetted faculty-guided learning experiences that have been recommended by NP faculty that may be used to prepare students for their clinical experiences, justifying the use of the videos as a mean of meeting this criterion.

Finally as NP faculty engage in the process of aligning curricular assignments with the American Association of Colleges of Nursing The Essentials: Core Competencies for Professional Nursing Education,17 the Nurse Practitioner Role Core Competencies,18 and the anticipated revision of the National Organization of Nurse Practitioner Faculties population competencies, having access to the clinical simulation videos with the faculty guides on the UNCG SON Clinical Video Simulation Series site developed by NP faculty and later evaluated by other NP faculty as part of this study may serve as a valuable resource for curricular mapping.

References

1. R. Bryant, C.L. Miller, D. Henderson. Virtual clinical simulations in an online advanced health appraisal course. Clin Simul Nurs, 11 (10) (2015), pp. 437-444

2. J. Ridgway, C. Sennett, D. Vasquez, N. McClure. Interactive, case-based teaching design strategies for nurse practitioner students. J Nurse Pract, 17 (6) (2021), pp. 737-739, 10.1016/j.nurpra.2021.01.021

3. L.S. Merritt, A.N. Brauch, A.K. Bender, D. Kochuk. Using a web-based e-visit simulation to educate nurse practitioner students. J Nurs Educ, 57 (5) (2018), pp. 304-307

4. A.D. Pal, F. Bowler, M. Beth, F. Makic, K.R. Estes. Virtual simulation for advanced practice registered nurse students: adapting to shortage of clinicals. J Nurse Pract, 18 (5) (2022), pp. 563-586, 10.1016/j.nurpra.2022.02.005

5. S.H. Kays, G. Wodiuk. Formative learning for nurse practitioner students in pre-clinical simulation. J Nurse Pract, 18 (4) (2022), pp. 417-419, 10.1016/j.nurpra.2022.02.006

6. T.S. Smith, J. Jordan, P. Li. Video-based interactive clinical simulation: preparing nurse practitioner students for clinical. J Nurse Pract, 18 (9) (2022), pp. 995-998, 10.1016/j.nurpra.2022.07.014

7. E. Duff, L. Miller, J. Bruce. Online virtual simulation and diagnostic reasoning: scoping review. Clin Simul in Nurs, 12 (9) (2016), pp. 377-384

8. C.L. Foronda, M. Fernandez-Burgos, C. Nadeau, C.N. Kelley, M.N. Henry. Virtual simulation in nursing education: a systematic review spanning 1996 to 2018. Simul Healthc, 15 (1) (2020), pp. 46-54, 10.1097/SIH.0000000000000411

9. R. Cant, S. Cooper, C. Ryan. Using virtual simulation to teach evidence-based practice in nursing curricula: a rapid review. Worldviews Evid Based Nurs, 19 (5) (2022), pp. 415-422, 10.1111/wvn.12572

10. K. Dahri, K. MacNeil, F. Chan, et al. Curriculum integration of virtual patients. Curr Pharm Teach Learn, 11 (12) (2019), pp. 1309-1315, 10.1016/j.cpt1.2019.09.007

11. K. Powers. Bringing simulation to the classroom using an unfolding video patient scenario: a quasi-experimental study to examine student satisfaction, self-confidence, and perceptions of simulation design. Nurse Educ Today, 86 (2020), Article 104324, 10.1016/j.nedt.2019.104324

12. E.K. Herron, K. Powers, L. Mullen, B. Burkhart. Effect of case study versus video simulation on nursing students' satisfaction, self-confidence, and knowledge: a quasi-experimental study. Nurse Educ Today, 79 (2019), pp. 129-134, 10.1016/j.nedt.2019.05.015

13. R. Singleton, A. Charlton. Creating H5P content for active learning. Pac J Technol Enhanced Learn, 2 (1) (2020), pp. 13-14, 10.24135/pjtel.v2i1.32

14. National Organization of Nurse Practitioner Faculties and American Association of Colleges of Nursing. Adult-Gerontological Acute Care And Primary Care NP Competencies. https://cdn.ymaws.com/www.nonpf.org/resource/resmgr/files/np_competencies_2.pdf

15. National League for Nursing. Virtual Simulation Options for Nurse Practitioner Students. https://www.nln.org/docs/default-source/uploadedfiles/professional-development-programs/virtual-simulation-options-for-nurse-practitioner-students.pdf?sfvrsn=bd50a70d_0

16. National Task Force on Nurse Practitioner Education. Standards for Quality Nurse Practitioner Education, 6th ed. https://cdn.ymaws.com/www.nonpf.org/resource/resmgr/2022/ntfs_/ntfs_final.pdf

17. American Association of Colleges of Nursing. The Essentials: Core Competencies for Professional Nursing Education. 2021. https://www.aacnnursing.org/Portals/42/AcademicNursing/pdf/Essentials-2021.pdf

18. National Organization of Nurse Practitioner Faculties. Nurse Practitioner Role Core Competencies. 2022. https://cdn.ymaws.com/www.nonpf.org/resource/resmgr/competencies/nonpf_np_role_core_competenc.pdf