MEASURING EFFICIENCY IN NURSING STUDENT PATIENT CARE SKILLS USING VIRTUAL PATIENT SIMULATION

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CONFLICT OF INTEREST

- The authors of this presentation are employed by a publishing company specializing in scientific, technical, and medical content, including simulations for nursing education.
- No additional funding was received for this project.

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CHALLENGES FOR RECENT GRADUATES

- Face the responsibility of providing patient care **without the safety net** of their nursing program faculty.
- Struggle with developing **efficiency in their patient care** as the responsibility shifts from learning under clinical faculty to the reality of caring for their own patients.
- Nurses feel that **time pressure** prevents them from **identifying patient needs** (Vinckx et al., 2018), and the patients of time-pressed nurses have a **lower-quality care** experience (Teng et al., 2010).
- **Appropriate and efficient communication** can improve the quality of nursing care while allowing nurses to manage their time (Bundgaard et. al, 2019; Jones, 2010).

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RESEARCH QUESTION

- Do learners become **more efficient** in the collection of subjective and objective data, therapeutic communication, and care planning as they go through a virtual patient simulation?

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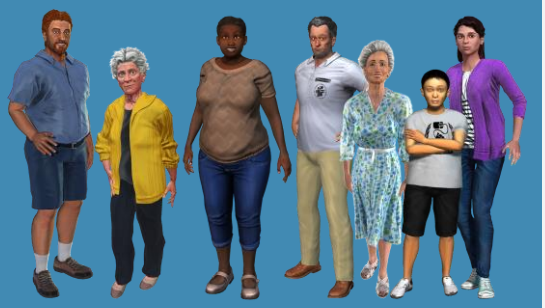
VIRTUAL PATIENT SIMULATION



- Virtual patient simulation (VPS) is the use of partial immersion through a digital learning environment to foster a perceived lived experience for an intended outcome (Foronda, 2021).
- Compared with traditional education, VPS can effectively improve knowledge, clinical reasoning, procedural skills, and a mix of procedural and team skills (Kononowicz et al., 2019).
- Effectively supports several student learning outcomes and skills in nursing education (Foronda et al., 2020).
  - History taking (Luo et al., 2019).
  - Empathy (Strekalova et al., 2016).
  - Diagnostic reasoning (Duff et al., 2016).
  - Debriefing (Verkuyl et al., 2020).
  - Cultural humility and competence (Chae et al., in press; Tyerman et al., 2021).
- Can be used to replace traditional clinical hours!

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DIGITAL CLINICAL EXPERIENCE

Pre-brief

- Provide learner with the context and information they may need before encountering scenario.
- Set up learner's role and expectations.
- Outline simulation objectives and what will be evaluated.

Assessment

- Interview digital standardized patient.
- Conduct physical assessments.
- Document findings in EHR.
- Apply therapeutic communication.

Care Plan

- Synthesize data collected.
- Develop a nursing diagnosis.
- Identify a treatment goal.
- Plan interventions and evaluations.
- Discuss care.
- Assess whether care goals were achieved.

Feedback

- Obtain assignment performance score.
- View score breakdown by learning activity.
- Review model responses.

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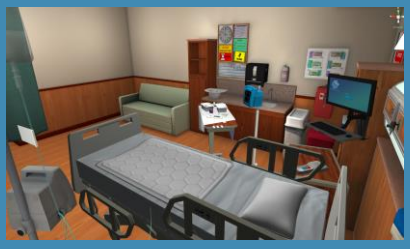
THE RESEARCH PROCESS



- Used a sample of 2,246 first-semester, pre-licensure nursing students enrolled in a health assessment course at a public university in the Southwestern United States.
- Health assessment course integrated the VPS in-simulation pre- and post-test with a cardiovascular focused assessment assignment in the spring of 2021.
- **Efficiency** was defined by the number of correct findings per minute spent with the **simulated virtual patient** across all components of learner performance, including subjective and objective patient data collection, therapeutic communication, and care plan creation.

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RESULTS I

Table 1: Averages and change in efficiency from the pre-test to the post-test

Measure	Pre-test average	Post-test average	Percentage change	Percentage of students showing positive change
Overall efficiency (findings per minute)	1.19	1.68	41%	82%
Time spent (in minutes)	68 min	58 min	15%	62%**
Education and empathy score	1	2	100%	67%
Care plan score	8	9	13%	68%

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RESULTS II

Table 2: Regression results using post-test overall efficiency as the criterion

Predictor	*b*	*b* 95% CI [*LL*, *UL*]	*r*
(Intercept)	1.40**	[1.31, 1.49]	
Pre-test efficiency	0.04**	[0.01, 0.06]	.29**
Time spent (post-test)	-0.03**	[-0.03, -0.03]	-.72**
Assignment performance (post-test)	0.04**	[0.03, 0.04]	.21**
Number of interview questions (post-test)	0.00**	[0.00, 0.00]	.04
Number of empathetic statements (post-test)	0.01**	[0.00, 0.01]	.03
Number of educational statements (post-test)	0.01**	[0.01, 0.02]	-.01
Model fit			R^2 = .812** 95% CI [.80, .82]

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CONCLUSION AND IMPLICATIONS FOR PRACTICE

- Learners demonstrated significant efficiency gains as measured by findings per minute from the pre-test to the post-test.
- These results indicate that VPS can be a useful tool for improving learners' practice readiness.
- As learners progress through VPS scenarios, they become more comfortable with how to collect data and determine how to dig deeper with their questions and uncover important data points.
- Developing the skill for efficient data collection in the simulated environment boosts learners' ability to become more efficient in their patient interactions while at the same time providing high-quality care.

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THANK YOU!

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