The Functionality and Effectiveness of Virtual Reality Training in Nurse Anesthesia Programs

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Purpose

- To address the didactic and clinical educational gaps between virtual reality (VR) and its functionality in nurse anesthesia training.
- Incorporate VR into nurse anesthesia courses to enhance anesthesia knowledge, increase patient safety, and improve clinical preparedness of anesthesia students.

Background

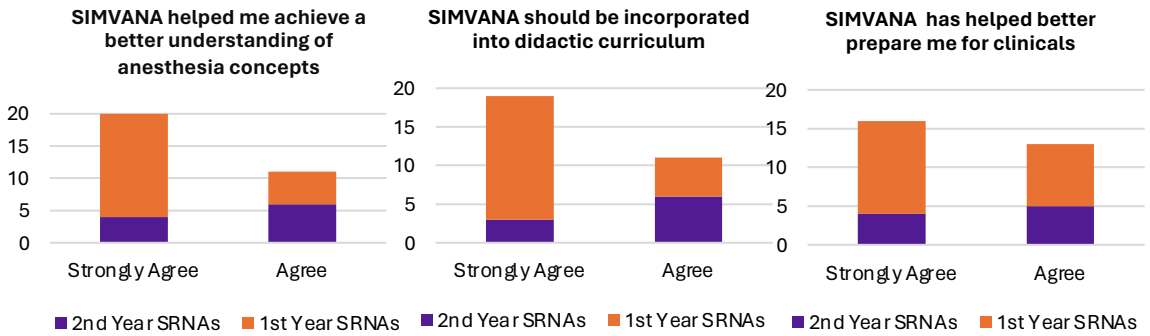
- Realistic distractions and tasks implemented in VR simulation allows trainees to be better prepared and adapt to real life scenarios.[1]
- The positive learning environment created within VR revealed increased student motivation[2,3] and significant improvement in understanding course content.[4]
- VR stimulation showed to have higher satisfaction scores[2,3,5] and be a more favorable experience[6-8] than alternative learning methods.
- The immersion effects within VR have been shown to be more effective in learning outcomes[6,9] and providing a better understanding of learning objectives.[8]
- Being able to practice and perform tasks within VR has enhanced individuals' self-confidence when managing skills.[3,8,10]
- An increase in competence and improved performance were evident[10-13] when VR training was used.

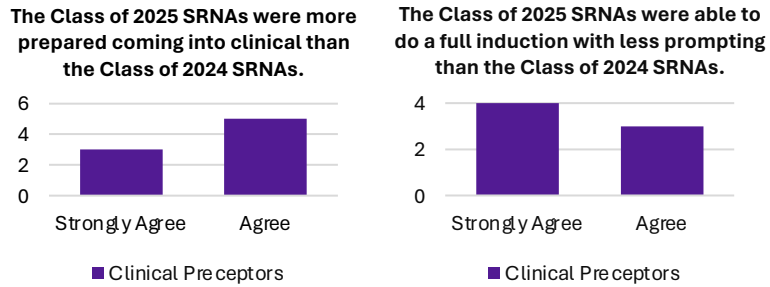
References

Method

- SIMVANA is a VR educational platform used for anesthesia training which allows for interactive tactile engagement and the learning of accurate anesthesia concepts in a safe and prompted learning environment.[14]
- 21 first year student registered nurse anesthetists (SRNA) completed SIMVANA learning lessons related to anesthesia lecture material.
- 11 second year SRNAs utilized SIMVANA, but it was not incorporated into their didactic curriculum.
- 12 third year SRNAs completed one survey and were not involved with VR.
- SRNAs received pre/post SIMVANA surveys responding to a variety of questions.
- Clinical preceptors at hospital sites evaluated second year SRNAs via a survey.
- IRB approval from the University of Evansville was obtained for this project (30FA2023).

Results





Limitations

- This study was limited to the University of Evansville Nurse Anesthesia program resulted in smaller sample size.
- SIMVANA was selected by default as no other VR anesthesia training platform existed.
- 1st year SRNAs were not included in the preceptor clinical evaluation as they have not started their clinical curriculum.
- VR induced motion sickness occurred in varying degrees.
- Survey response rate amongst students and preceptors.

Conclusion

- VR training in anesthesia is a highly effective educational tool that enhances SRNAs anesthesia knowledge base. 97% (31) responded that it directly increased their knowledge.
- 83% (40) of SRNAs responded that VR training would reduce their anxiety upon entering clinical training.
- 100% (32) of SRNAs said SIMVANA enhanced their anesthesia machine knowledge.
- Students are more prepared for the clinical setting that required less prompting by preceptors with the anesthesia machine, induction sequence and pharmacological agents.