# **Using Virtual Reality to Enhance Nursing** Students' Understanding of Social **Determinants of Health**

# Background

**Background:** A strong understanding of Social Determinants of Health (SDOH) is critical for nurses to address health equity. Yet, traditional classroom teaching often falls short in conveying the complexity of SDOH. Community-based clinical experiences, where students encounter patients navigating these barriers, offer meaningful insights but have become harder to secure, particularly after COVID-19. To bridge this educational gap, innovative approaches are needed to deliver experiential learning. Simulation, particularly with immersive Virtual Reality (VR), can provide a format for boosting experiential learning. VR allows a learner or group of learners to experience various auditory and visual stimuli showing increased student engagement, empathy, and creativity while participants see different perspectives and process new ways of thinking. In 2023, a VR and 360degree video simulation was developed with funding from the University of South Carolina College of Nursing. During the simulation, students experience a day in the life of a patient affected by SDOH such as housing insecurity, limited transportation, food deserts, and employment challenges. Students also explore broader environmental and social factors contributing to health disparities.

## Purpose

The purpose of this project was to create and implement VR 360-degree experiences for students in pre-licensure nursing courses.

Two key goals were to:

- > Develop and implement a VR 360-degree video experience for students based on the life of a patient who is reliant upon a wheelchair for mobility and experiencing negative impacts of SDOH
- > Determine how a VR 360-degree video experience impacts students' knowledge of and feelings towards the patient highlighted in the scenario.
- > Determine if there is a difference between students' knowledge of and feelings towards the patient when watching the video in VR or on a computer screen.

# Method

A total of 119 prelicensure students participated in a VR simulation in groups of 8-10.

- > Simulation development was guided by the NLN Jeffries Simulation framework.
- > The initial 360-degree video was viewed via VR headset or by computer and featured a patient with multiple comorbidities who uses a wheelchair. **INACSL** Standards provided directions for implementation.
- > Pre- and post-simulation surveys assessed student perceptions of the patient and technology usability.

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### **VR Technology**



# **Scenario Development & Implementation**

Created a "lived experience" video scenario based on a patient with multiple comorbidities who uses a wheelchair.

Followed INACSL simulation best practices

Used GoPro Max 360 and Insta360 Pro 2 cameras (mounted to a wheelchair and edited with Adobe Premiere Pro and CenarioVR®





### Patient transportation





360-degree camera wheelchair mount

### Useful for clinical simulation experiences

- Boosts experiential learning
- Heightens auditory and visual stimuli Increases student engagement and empathy
- Provides a 'sense of presence' by enhancing immersion and authenticity
- Intensifies perspectives

Started in January 2023 after receiving College

Delivered to prelicensure Population Health courses No commercially available products; developed the product from the ground up (filming, editing, and integration of interactive elements)

lired a videographer, an actor, and consulted with technical experts

360-degree view of home environment



Student in VR simulation

# **Preliminary findings**

Initial feedback from students was strongly in favor of continuing the project as well as expanding with additional videos and VR applications. Although analysis of survey data on the differences between VR and computer screen simulation is currently in process, preliminary findings indicate an increase in empathetic feelings towards the patient. Students also report high engagement and satisfaction with the VR experience, highlighting its realism and desire to incorporate VR into all simulations.





Means scores are on a 5-point Likert scale.

# Discussion

Developed solely by faculty, this project serves as a scalable model for future applications. Challenges included limited VR headsets, time constraints, and faculty training. This innovation lays the foundation for future VR education across the CON programs and positions the CON as a leader in advancing VR simulation technology.

# References



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