

Perceptions and experiences of nursing simulation education applying wearable display technology with integrated fidelity

Abstract

Background: This study developed and applied a nursing simulation program integrating fidelity using wearable display technology. Nursing students engaged in lowfidelity training with head-mounted displays (HMDs) and high-fidelity simulation with smart glasses. The study aimed to explore perceptions and experiences of both instructors and students.

Methods: A cerebrovascular and cardiovascular scenario was created, reviewed, and validated by experts. Low-fidelity training included medical device handling and health assessment via wearable displays, while high-fidelity stages involved solo simulation with smart glasses displaying scenario information to enhance realism. First-person recordings provided constructive feedback. In December 2023, two instructors and six senior nursing students participated in training and interviews, followed by qualitative content analysis. **Results:** Six themes emerged, including "authentic solo simulation experience," "integrated fidelity enhancing psychological safety," "improved clinical judgment through scenario information provided by wearable display technology," "first-person perspective debriefing," and "expectations for diverse applications of wearable display technology."

Conclusion: This study provides foundational data for wearable display-based simulation, recommending further research on wearable display technology nursing programs.

Highlights

Using only high-fidelity simulation may lack basic skill proficiency, while low-fidelity alone may limit clinical adaptation, indicating a need for integrated levels. This study developed a program where students train in low-fidelity settings with HMDs, then in high-fidelity simulations using smart glasses. Both instructors and students noted positive experiences in safety, judgment, and reflection, supporting wider application.

Learning objective

Upon completion, participant will be able to design a fidelity-level integrated simulation training. Upon completion, participants will be able to utilize wearable display technology to prebrief the simulation. Upon completion, participants will be able to utilize wearable display technology to run and debrief the simulation.

Jiyoung Kim, PhD – Associate Professor, School of Nursing, Inha University, Incheon, Korea, Republic of (South)







Figure. High-fidelity nursing simulation education using smart glasses