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► To cite this version:

Inas Redjem, Arnaud Huaulmé, Jérôme Chapoul, Mathieu Risy, Florian Nouviale, et al.. Virtual Training for Inexperienced Nursing Students in the Operating Room: Reducing Stress while Enhancing Knowledge and Self-Efficacy. European Conference on Cognitive Ergonomics, Oct 2024, Paris, France. 2024. hal-04616198

HAL Id: hal-04616198

<https://hal.science/hal-04616198v1>

Submitted on 18 Jun 2024

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Virtual Training for Inexperienced Nursing Students in the Operating Room: Reducing Stress while enhancing Knowledge and Self-Efficacy

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The operating room (OR) is a demanding and high-pressure environment, yet, students often have limited exposure during their training, leaving them ill-prepared for clinical practice¹. This study aims to use immersive virtual reality (iVR) to introduce nursing students to the OR environment in a controlled and immersive way, exploring its impact on anxiety, stress, self-efficacy, and knowledge acquisition through an experimental design with pre-post measures.

METHOD

Pedagogical material

We have developed an iVR training tool allowing students to immerse themselves in the OR; navigate through and interact with the environment; obtain detailed information about aseptic areas, medical staff, and OR equipment.

Two conditions

Participants either explored the OR environment using a **slideshow** (n = 16) or through **iVR** (n = 24).

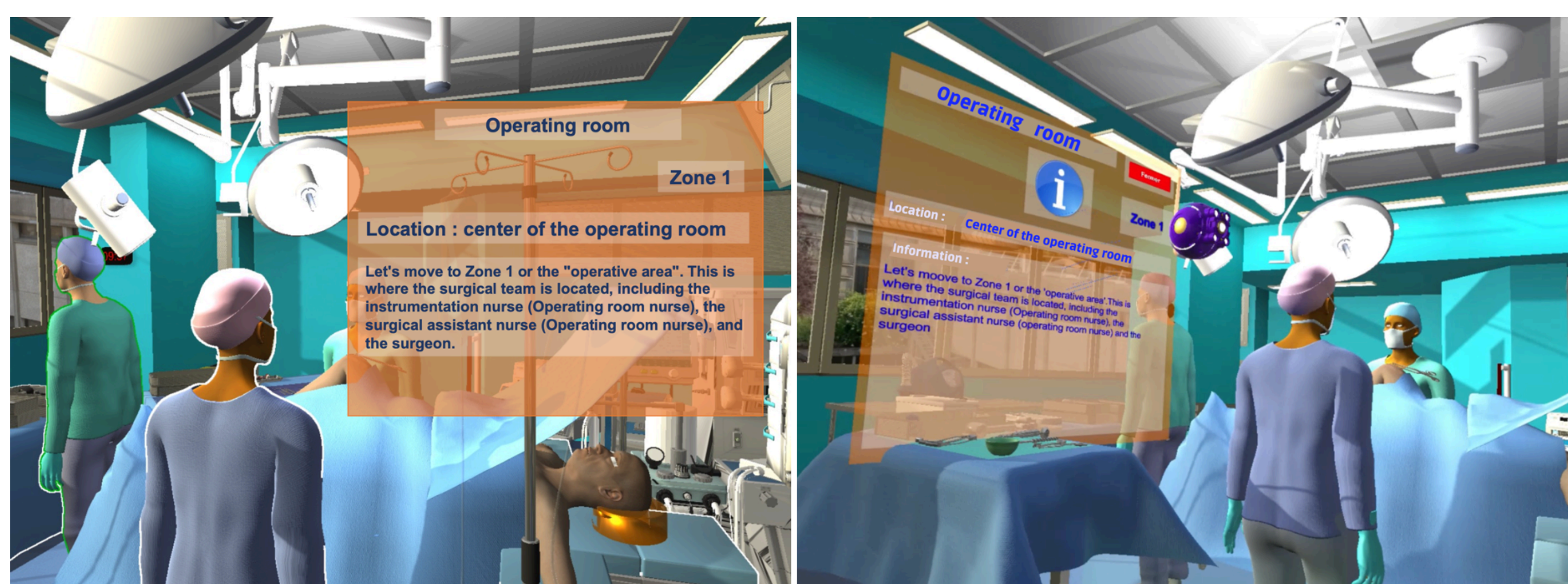


Figure 1. Slideshow (left) and iVR (right) OR experience

Participants

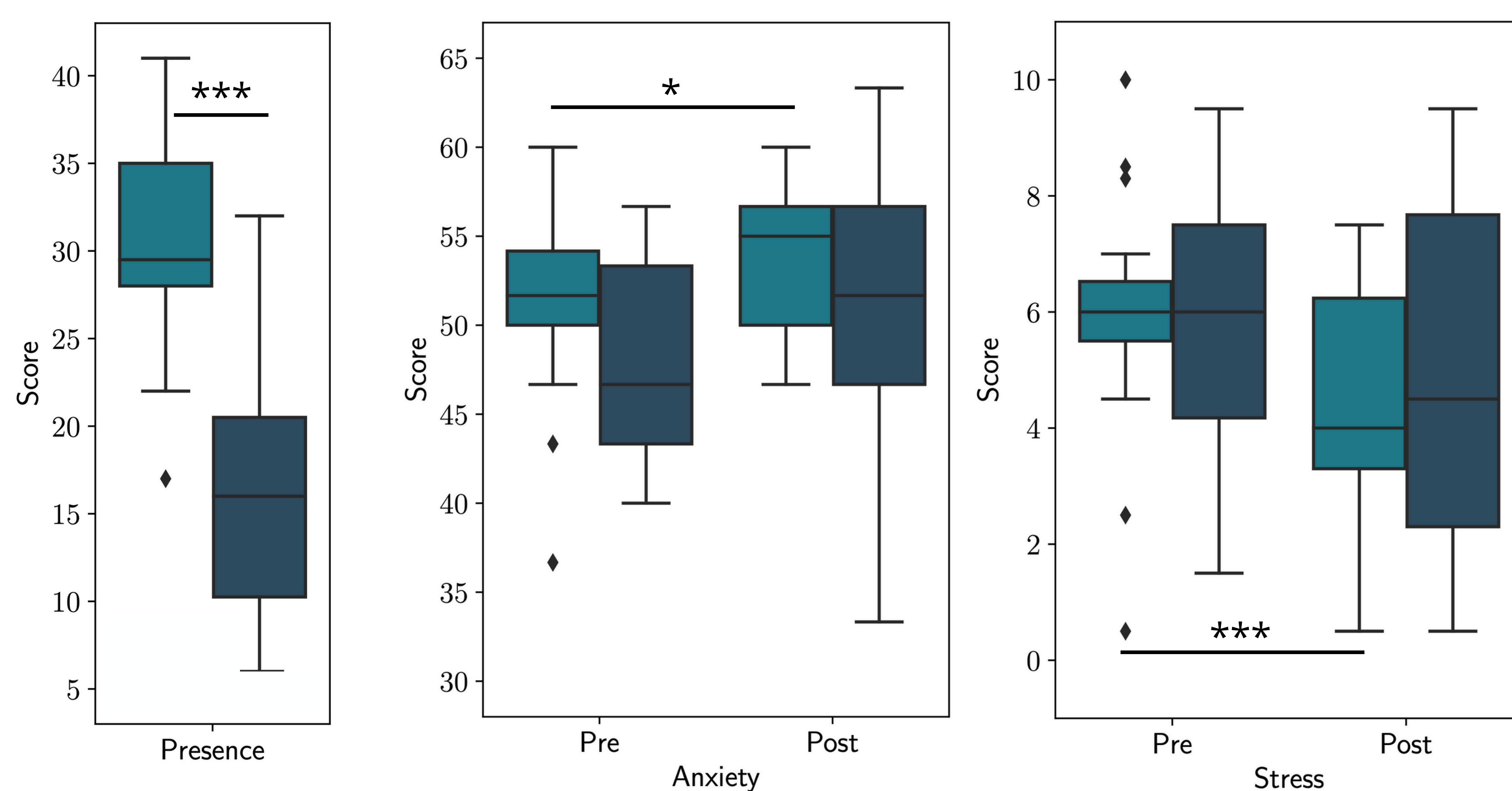
40 second year nursing students **without prior OR experience** were recruited (M age = 23; SD = 6.5). 87% of participants were female, 32% had previously used VR and 60% were not familiar with video games.

Measures

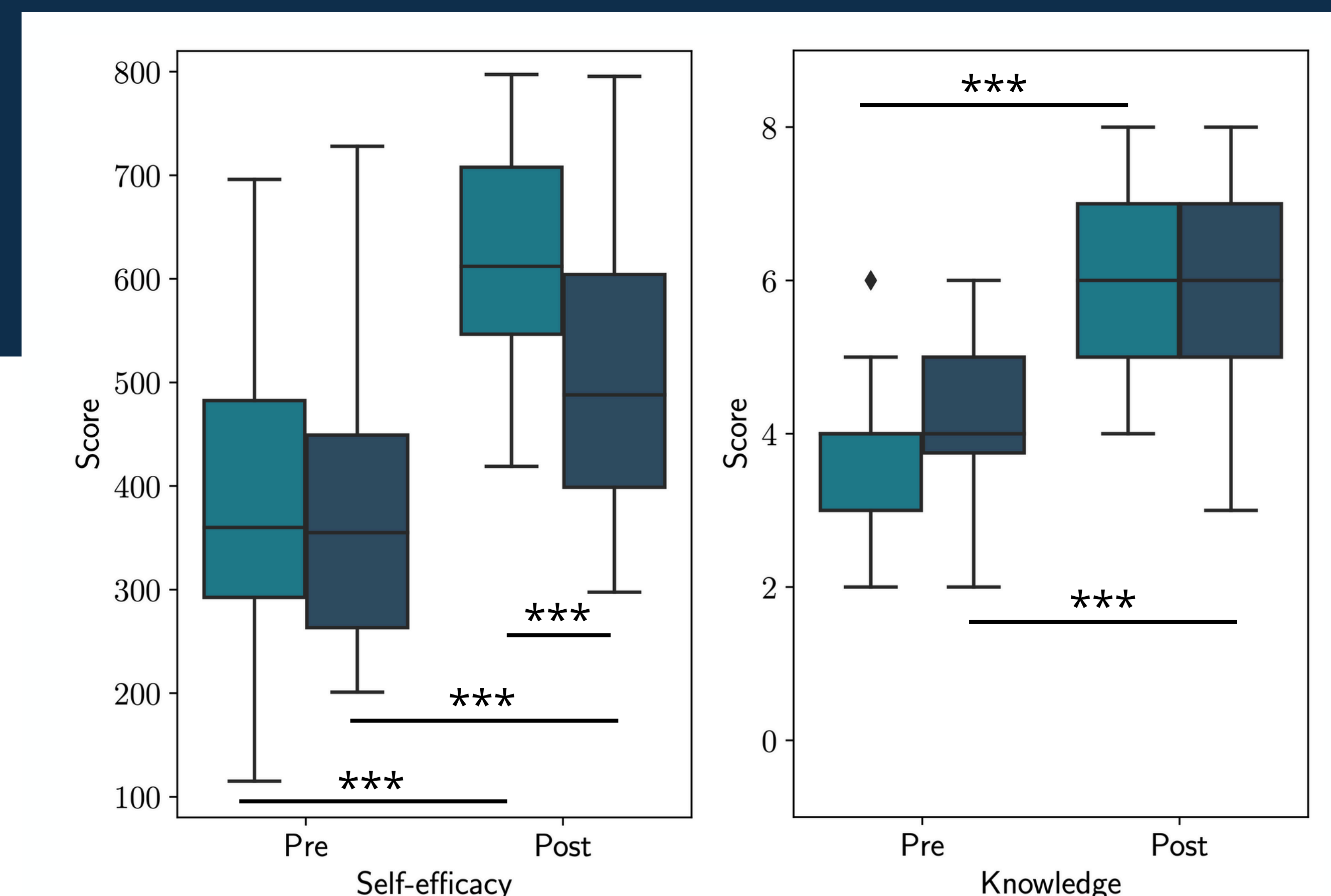
- **Presence** (Slater-Usuh-Steed Questionnaire)²
- **Anxiety** (STAI 6 items)³
- **Stress** (visual analog scale)
- **Self-efficacy** (9-items visual analog scale)
e.g. 'I feel confident recognizing some of the instruments used by the surgeon during knee surgery'
- **Knowledge** about OR equipment, medical staff and aseptic areas (9-items quiz)

RESULTS

Legend: iVR (teal), Slideshow (dark blue). *** p < .001. * p < .05.



The iVR group reported a significantly **higher level of presence** (immersion), an **increase in anxiety** levels from pre- to post-intervention, and a **reduction in stress** levels post-intervention.



The iVR OR experience was **more effective in enhancing self-efficacy**. Both slideshows and iVR equally **enhanced knowledge** without any significant difference between groups.

CONCLUSION

Implementing an iVR initial OR visit offers a practical and immersive solution to address the challenges associated with limited exposure to the OR. By reducing stress while enhancing self-efficacy and knowledge, this innovative approach has the potential to enhance healthcare education and ultimately contribute to improved patient care.

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