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Morgen Allain

Jessica Dupler

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Morgen Allain & Jessica Dupler

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Project team

- Morgen Allain
Morgen.Allain@mainehealth.org
- Jessica Dupler
Jessica.Dupler@mainehealth.org
- Amanda Bennett
amanda.bennett@mainehealth.org
- Lynne Keller
Lynne.Keller@mainehealth.org
- Sara Moon
Sara.Moon@mainehealth.org

Project background

Area of focus:

The use of virtual reality to manage pain.

Problem description:

Pharmacologically managed pain is a substantial component of inpatient, bedside nursing. Many of these drugs have side effects that are counterproductive to health and healing. Technological advancements have made virtual reality available on the consumer market, could they help manage pain without side effects?

Project background

Population	Inpatients adults with pain
Intervention	Virtual reality
Comparison	Effectiveness of alternative treatments
Outcome	Successful management of pain with use of virtual reality
Timeframe	

PICOT Question

In the adult inpatient population does engaging in virtual reality manage pain in a significant way?

Summarize findings

Summary:

The use of Virtual Reality (VR) in the inpatient setting to manage pain in adult populations has been shown to be effective in multiple settings including but not limited to; acute pain management, IUD insertion, surgical pain management, chest tube removal in patients undergoing CABG surgery, patients undergoing coronary angiography, during pelvic examination, in hospitalized patients with cancer, post surgical pain management as well as relief of pain with various medical procedures.

Determine if there is sufficient evidence

Although more studies are needed, particularly among historically marginalized populations, the evidence strongly supports the use of VR technologies in the management of pain for inpatient adult populations.

Summarize findings

Given the evidence is this a priority?

Considering the strong evidence, as well as side effects associated with pharmacological pain management, implementing the use of VR technologies in hospitals and facilities should be a clinical priority.

Barriers in bringing this initiative forward

Technology is expensive and implementing VR technology would generate costs to facilities as well as patients. The equipment itself will need to be able to be sanitized after use if used for multiple patients. Certain patient populations may be hesitant to undergo VR treatment such as older adult populations who have less experience and interest in technologies. Patients who are visually impaired or hard of hearing may not benefit from this style of treatment.

Project development

Describe how you might make this change

Implementing the use of VR for pain management in inpatient adult populations would be complex and would require buy-in from all members of the care team including educators, providers, nursing and support staff as well as hospital administrators and the patients themselves.

The first step would be the facility purchasing the equipment and creating policies regarding the use of equipment including sanitization and education on use and maintenance. Nurses would most likely be responsible for applying the technology to patients or educating the patients on how to utilize the equipment themselves.

Project development

Stakeholder Table

Stakeholder	Role	Deliverable
Hospital Administration	Ensuring proper resources	Purchasing & maintaining equipment
Providers	Diagnosing, ordering	Determining whether a patient is appropriate for VR technology and putting in orders for treatment
Nursing	Implementing treatment and educating patients on treatment	Administering VR technology for pain management
Patient	Participation in their care	Utilizing VR, rating pain

Project development

Alignment with strategic initiatives

- Care delivery effectiveness
- Patient satisfaction

Alignment with Magnet domains

- New Knowledge, innovation & improvements

References

- Dalir, Z., Seddighi, F., Esmaily, H., Abbasi Tashnizi, M., & Ramezanzade Tabriz, E. (2024). Effects of virtual reality on chest tube removal pain management in patients undergoing coronary artery bypass grafting: a randomized clinical trial. *Scientific Reports*, 14, 2918. <https://doi.org/10.1038/s41598-024-53544-9>
- Dreesmann, N. J., Su, H., & Thompson, H. J. (2022). A Systematic Review of Virtual Reality Therapeutics for Acute Pain Management. *Pain Management Nursing : Official Journal of the American Society of Pain Management Nurses*, 23, 672–681. <https://doi.org/10.1016/j.pmn.2022.05.004>
- Dy, M., Olazo, K., Lisker, S., Brown, E., Saha, A., Weinberg, J., & Sarkar, U. (2023). Virtual Reality for Chronic Pain Management Among Historically Marginalized Populations: Systematic Review of Usability Studies. *Journal of Medical Internet Research*, 25, e40044. <https://doi.org/10.2196/40044>
- Girishan Prabhu, V., Stanley, L., Morgan, R., & Shirley, B. (2024). Designing and developing a nature-based virtual reality with heart rate variability biofeedback for surgical anxiety and pain management: evidence from total knee arthroplasty patients. *Aging & Mental Health*, 28, 738–753. <https://doi.org/10.1080/13607863.2023.2270442>
- Groninger, H., Violanti, D., & Mete, M. (2024). Virtual reality for pain management in hospitalized patients with cancer: A randomized controlled trial. *Cancer*, 130, 2552–2560. <https://doi.org/10.1002/cncr.35282>
- Kurt, G., & Ozcan, N. K. (2024). The Effect of Virtual Reality On Pain and Anxiety Management During Pelvic Examination: A Randomized Controlled Trial. *Journal of Midwifery & Women's Health*, 69, 543–549. <https://doi.org/10.1111/jmwh.13587>
- Lier, E. J., de Vries, M., Steggink, E. M., Ten Broek, R. P. G., & van Goor, H. (2023). Effect modifiers of virtual reality in pain management: a systematic review and meta-regression analysis. *Pain*, 164, 1658–1665. <https://doi.org/10.1097/j.pain.0000000000002883>
- Lier, E. J., Smits, M. L. M., van Boekel, R. L. M., Vissers, K. C. P., Maandag, N. J. G., de Vries, M., & van Goor, H. (2024). Virtual reality for postsurgical pain management: An explorative randomized controlled study. *Surgery*, 176, 818–825. <https://doi.org/10.1016/j.surg.2024.06.011>
- Lo, H. H. M., Zhu, M., Zou, Z., Wong, C. L., Lo, S. H. S., Chung, V. C.-H., Wong, S. Y.-S., & Sit, R. W. S. (2024). Immersive and Nonimmersive Virtual Reality-Assisted Active Training in Chronic Musculoskeletal Pain: Systematic Review and Meta-Analysis. *Journal of Medical Internet Research*, 26, e48787. <https://doi.org/10.2196/48787>
- Öz, T., & Demirci, N. (2024). The effect of virtual reality glasses applied during intrauterine device insertion on pain, anxiety and satisfaction: Randomized controlled study. *Scottish Medical Journal*, 69, 37–44. <https://doi.org/10.1177/00369330241234688>
- Teh, J. J., Pascoe, D. J., Hafeji, S., Parchure, R., Koczoski, A., Rimmer, M. P., Khan, K. S., & Al Wattar, B. H. (2024). Efficacy of virtual reality for pain relief in medical procedures: a systematic review and meta-analysis. *BMC Medicine*, 22, 64. <https://doi.org/10.1186/s12916-024-03266-6>
- Turan, G. B., Gür, F., Özer, Z., & Tarkan, Ç. (2024). Effects of Virtual Reality on Pain, Anxiety, Patient Satisfaction in Coronary Angiography: A Randomized Trial. *Pain Management Nursing : Official Journal of the American Society of Pain Management Nurses*, 25, e177-e185. <https://doi.org/10.1016/j.pmn.2023.11.009>
- Yamashita, Y., Aijima, R., & Danjo, A. (2023). Clinical effects of different virtual reality presentation content on anxiety and pain: a randomized controlled trial. *Scientific Reports*, 13, 20487. <https://doi.org/10.1038/s41598-023-47764-8>