

# EFFECTS OF VIRTUAL REALITY ON ANXIETY IN PEDIATRIC PATIENTS



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## PRACTICE PROBLEM

- Evidence had shown that 50-80% of children report anxiety during hospitalization (Liu et al., 2022).



- Twenty percent of the world's children had mental health disorder (The World Health Organization, 2023).
- Globally one in seven 10-19-year-olds experienced a mental disorder including anxiety, accounts for 13% of the global burden of disease in this age group (The World Health Organization, 2023).
- It was estimated that 30% of children were hospitalized at least once and 5% more than once (Zamani et al., 2022).
- Virtual reality (VR) distraction has been studied domestically and internationally and proved effective to reduce the clinical practice problem of anxiety in 50-80% of pediatric perioperative patients' (Liu et al., 2022).



**Project Aim:** The reduction of anxiety in the pediatric perioperative patients with virtual reality distraction.



## METHODOLOGY



### Translational Science Model:

The Knowledge to Action Model

- Setting** 40 bed urban pediatric preoperative surgical unit, at a tertiary free-standing academic children's hospital in West Central Florida.
- Population:** Hospitalized pediatric surgical patients, total participants 39.
- Inclusion:** Eight-to-eighteen-year-old surgical patients.
- Exclusion:** Nausea, visual or hearing impairment.
- Intervention:** There was substantial evidence that suggested the reduction of anxiety, pain, and stress improved from baseline with a virtual reality intervention and an improvement in the level of happiness (Bernaerts et al., 2022).
- Formative evaluation:** Checklists and biweekly huddles for fidelity.
- Summative evaluation:** Evaluation of base line anxiety levels pre and post implementation.
- Outcome:** The reduction of anxiety in the hospitalized child.
- Data Collection:** Visual Analogue Scale (VAS) pre and post intervention scores (Hawker et al., 2011)



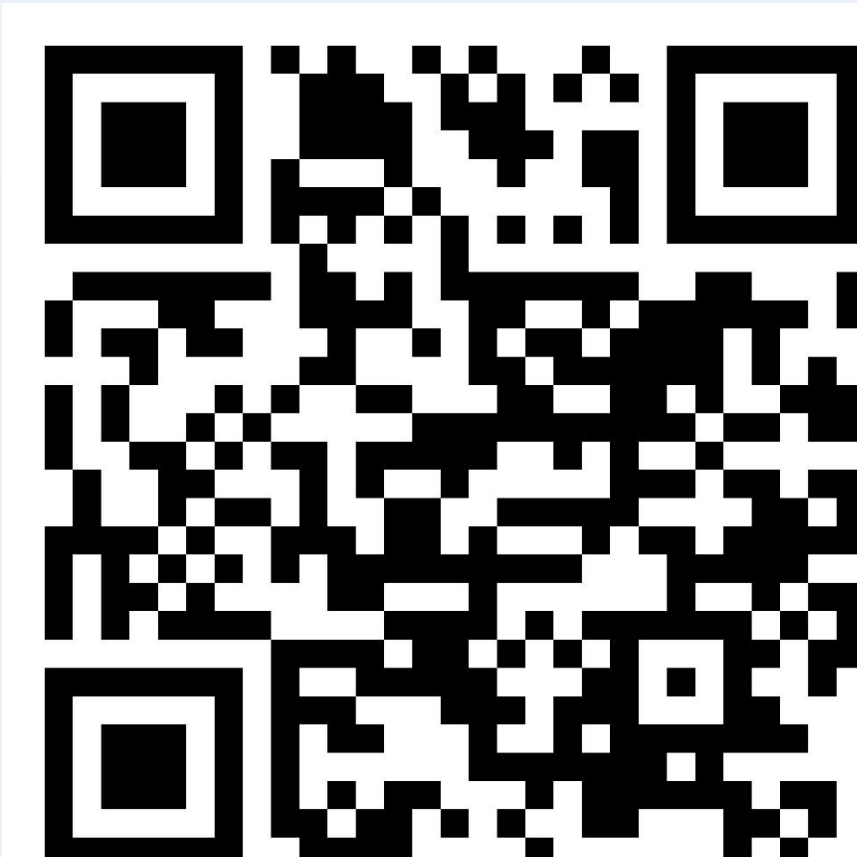
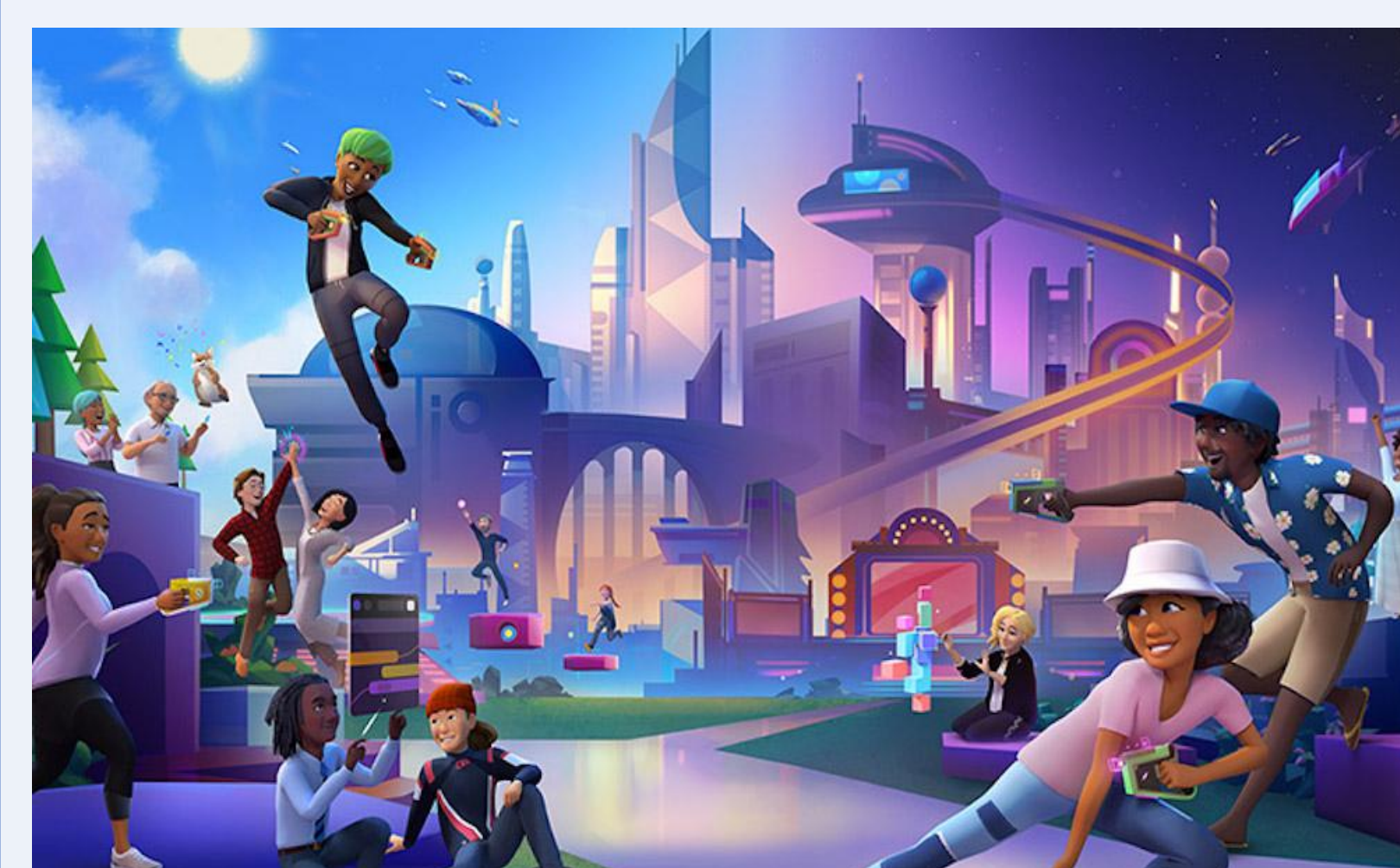
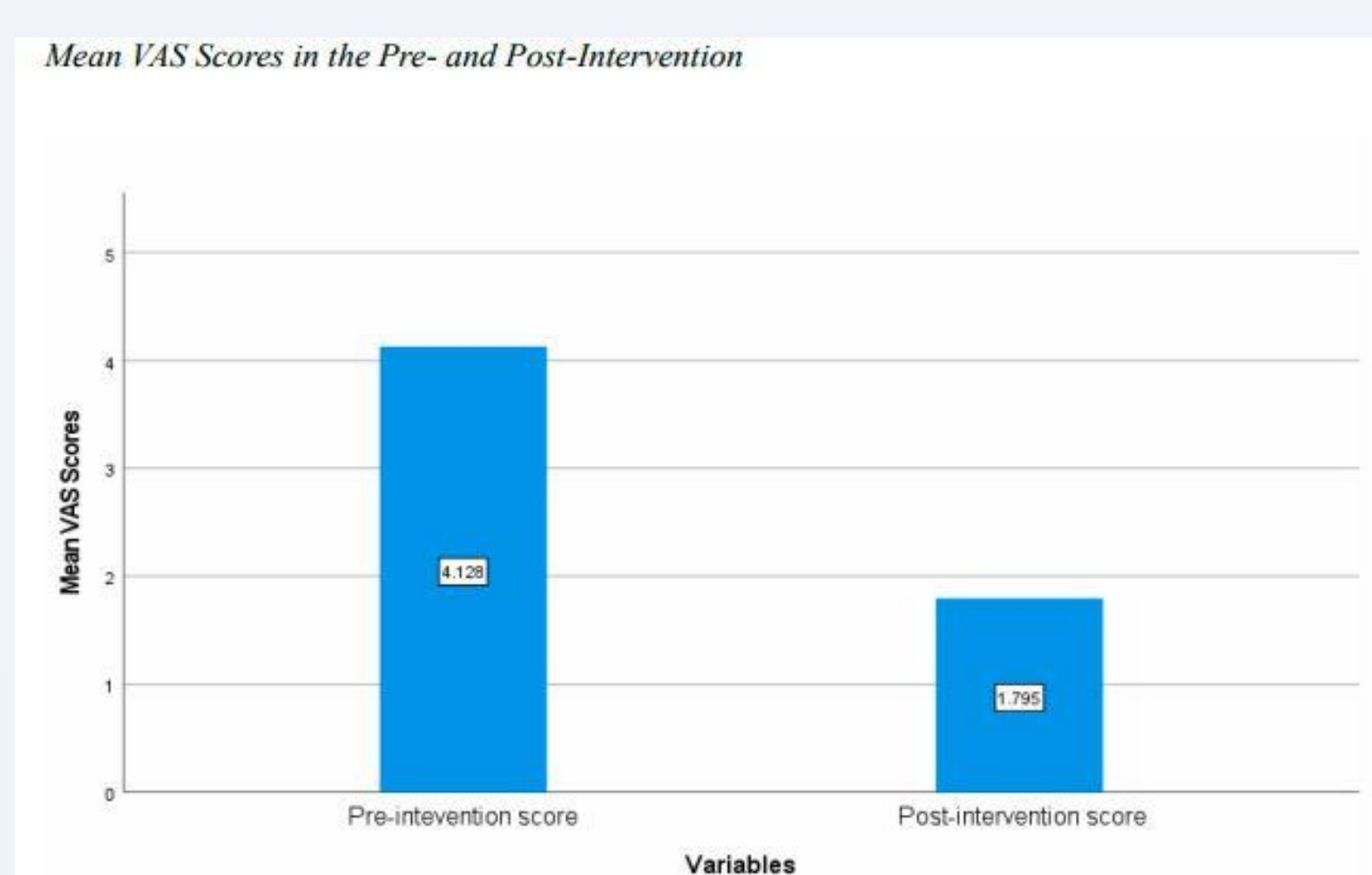
- Data analysis:** VAS and descriptive statistics, paired-t test.
- Time frame:** Total implementation nine weeks, intervention eight weeks.

## RESULTS

- Virtual reality distraction had a significant impact in pediatric perioperative patients over the 8-week implementation period.
- VAS was used to measure anxiety before and after the intervention.
- The higher the score the more anxiety the participant was reporting.
- The pre-intervention mean score was 4.13 (n = 39, SD = 2.546) and the post-intervention score was 1.79 (n = 39, SD = 1.542).
- The mean difference was found to be 2.33 (SD = 1.951) and was statistically significant at  $t(38) = 7.468, p < .001$ .
- The intervention had a significant impact in lowering the anxiety scores in the post-intervention (Figure 1).



Figure 1



## IMPLICATIONS

- Empirical data supported VR as an evidence-based intervention in decreasing anxiety levels in children.
- Patient outcomes-** Anxiety has been reduced in the vulnerable pediatric perioperative patient.
- Nursing practice-** Nurse led intervention assisted patients with non-pharmacological comfort measures.
- Healthcare organization-** Improvement have been achieved in patient outcomes.



## CONCLUSIONS

VR offered a non-pharmacological intervention options for the nurse to facilitate coping in the pediatric perioperative patient and enhance the patient experience and clinical outcomes.

### References

- Bernaerts, S., Bonroy, B., Daems, J., Sels, R., Struyf, D., Gies, I., & van de Veerdonk, W. (2022). Virtual reality for distraction and relaxation in a pediatric hospital setting: An interventional study with a mixed-methods design. *Frontiers in Digital Health*, 4, 866119-866119. <https://doi.org/10.3389/fdgth.2022.866119>
- Liu, L., Xu, R., Jia, J., Shen, Y., Li, W., & Bo, L. (2022). Research progress on risk factors of preoperative anxiety in children: A scoping review. *International Journal of Environmental Research and Public Health*, 19(16), 9828. <https://doi.org/10.3390/ijerph19169828>
- World Health Organization, (n.d.). *Mental Health*. Retrieved September 29, 2024, from <https://www.who.int>