

# Virtual Reality: A Promising New Strategy for Hospital-based Violence Interventions for Spanish-speaking Patients and in Latin America

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Virtual reality (VR) technology is advancing rapidly and is becoming a more accessible and cost-efficient means of learning for youth and adults.<sup>1</sup> Research demonstrates that immersion using VR technology has the potential to improve learning outcomes through a variety of approaches and benefits, including gamification and experiential learning, in a variety of different situations and contexts.<sup>2</sup> Additionally, VR has the potential to further engage learners by sustaining attention when attention-based resources are low. Prior research has found, for example, that VR technology helps to sustain attention in children and adolescents diagnosed with attention deficit disorders.<sup>3</sup> The application of VR technology is increasingly garnering interest as a potentially effective tool and modality for hospital-based mental health interventions to improve patient outcomes for both youth and adults in different contexts. Virtual reality may provide additional benefits within the learning environment aimed at reducing violence and may be particularly beneficial to use in teachable moments during hospitalization, such as in-hospital violence interventions, that promote behavioral activation and change among high-risk, violently injured patients.

Trauma-informed care is necessary for the hospital setting,<sup>4</sup> particularly in emergency rooms for victims of violence, yet hospitals are becoming increasingly unable to provide critical mental health services and are facing increasing numbers of barriers and challenges, including inadequate resources (e.g., personnel and financial), and a lack of buy-in, training, and implementation strategies within the healthcare setting.<sup>5</sup> Similarly, widespread and rising rates of violence-related admissions in the hospital (e.g., emergency and trauma admissions, etc.), particularly as it relates to firearm-related violence hospitalizations as a result of COVID-19 pandemic policies,<sup>6</sup> and widespread rates of aggression and violence reported against healthcare workers are problematic.<sup>7</sup> Given the surge in violence-related admissions in emergency departments nationwide, the exploration of innovative, tech-based solutions to address immediate challenges related to limited resources (e.g., financial, personnel, etc.) within hospitals could also leverage the potential impact in reducing violence- and crime-related outcomes (e.g., the incidence of future violence-related injuries) for high-risk, target populations who experienced violence-related victimization.

Cutting-edge VR technology is becoming more realistic, immersive, easy to use, accessible, and affordable, providing an effective alternative to traditional behavioral and mental health interventions. This is demonstrated by overall levels of

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acceptability of VR use, particularly within a gaming context,<sup>8</sup> and the concomitant versatility and portability of the use of this type of technology (e.g., headsets can be used during hospitalization or remotely postdischarge). VR technology is already being deployed for various forms of violence interventions in both forensic and community settings for specific violence prevention and intervention initiatives (e.g., intimate partner violence).<sup>9</sup> Virtual reality solutions are effective for myriad reasons—some of which include the potential development of a personalized treatment environment, real-life interactions and simulations, and customization for culturally relevant experiences based on the target population. Additionally, VR-based interventions can be administered in a variety of different languages to cut through language barriers (e.g., low-level language proficiency) in the hospital in a way that translation technology used to facilitate communication or translation purposes cannot account for. This is particularly salient for Spanish-speaking patients seeking emergency care who may encounter challenges and barriers to services and treatment in communicating with healthcare providers with limited proficiency in Spanish. Although interpreter services may be provided for medical services and treatment for Spanish-speaking patients, the potential use of a mental or behavioral

health intervention during these teachable moments remains untenable within trauma centers in the United States today. This creates a missed opportunity for high-risk patients with limited English proficiency. As such, the adoption of VR technology within the emergency department for violently injured patients with limited English proficiency may be an effective tool to leverage the teachable moment during hospitalization, promote positive behavioral change, and reduce the risk of future violence victimization and perpetration among violently injured patients.

This also prompts the discussion of the potential for VR implementation to be used as a low-cost, effective solution in places in the developing world, in which the implementation of VR for violence prevention may hold significant potential for addressing the region's violence perpetration and victimization-related challenges. Latin America and the Caribbean, for example, continue to serve as one of the most violent regions in the world, with historically high rates of homicide linked to high rates of organized crime.<sup>10</sup> Despite the high costs of violence, there remains a lack of rigorous and robust research study designs to evaluate the effectiveness of hospital-based violence intervention strategies in this region. However, preliminary research demonstrates the benefits of adapting VR technology for victims of violence within the treatment context in this region, including the reduction of posttraumatic stress disorder symptoms.<sup>11</sup> This further highlights the adaptability of VR for victims of violence to include safe, immersive experiences within the virtual environment and demonstrates the untapped potential in scaling customized, language, and culturally adapted VR experiences to underserved populations that do not have access to adequate behavioral and mental health treatment options. Indeed, although the current use of VR in the context of hospital-based violence intervention programming in Latin America is not well-studied or understood, given the current lack of language and cultural adaptation of these interventions to the region, VR technology has the potential to reshape the landscape of current approaches geared toward violence intervention globally in this region. The experiences in VR can be customized and tailored to reflect Latin America's specific violence-related challenges (e.g., organized crime and gang violence scenarios, characters, etc.). As such, the cost-effective nature of VR violence-related interventions can be used to scale-up innovative, tailored violence prevention strategies and applications to address the critical treatment gap for behavioral and mental health interventions in Latin America.

Overall, the barriers and challenges to services and treatment to limited English language proficiency suggest that there is significant potential for tailoring VR technology to address the linguistic needs of violently injured Spanish-speaking patient populations in trauma centers across the United States. Currently, the development and deployment of hospital-based violence VR interventions in Spanish is lacking. The increasing affordability and accessibility of VR-based interventions, coupled with the ability to embed culturally specific training (e.g., psychoeducation) and validated assessments (e.g.,

self-report), can be used to conduct studies related to feasibility, acceptability, and effectiveness to further develop and refine these interventions. Future research to advance the evidence base and enhance the existing literature on outcomes related to the deployment and use of VR technology within Latin America, particularly as it relates to violence intervention programming (e.g., rehospitalization, reduction of retaliatory violence-related attitudes, beliefs, behaviors, etc.), is needed.

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## REFERENCES

1. Rojas-Sánchez MA, Palos-Sánchez PR, Folgado-Fernández JA. Systematic literature review and bibliometric analysis on virtual reality and education. *Educ Inf Technol* 2023;28(1):155–192. DOI: 10.1007/s10639-022-11167-5
2. Maroukgas A, Troussas C, Krouska A, et al. Virtual reality in education: a review of learning theories, approaches and methodologies for the last decade. *Electronics* 2023;12(13):2832. DOI: 10.3390/electronics12132832
3. Romero-Ayuso D, Toledano-González A, Rodríguez-Martínez MDC, et al. Effectiveness of virtual reality-based interventions for children and adolescents with ADHD: a systematic review and meta-analysis. *Children (Basel)* 2021;8(2):70. DOI: 10.3390/children8020070
4. Stillerman A, Altman L, Peña G, et al. Advancing trauma-informed care in hospitals: the time is now. *Perm J* 2023;27(1):16–20. DOI: 10.7812/TPP/22.081
5. Huo Y, Couzner L, Windsor T, et al. Barriers and enablers for the implementation of trauma-informed care in healthcare settings: a systematic review. *Implement Sci Commun* 2023;4(1):49. DOI: 10.1186/s43058-023-00428-0
6. Strassle PD, Ko JS, Ponder M, et al. Impact of COVID-19-related policies on gunshot wound assault hospitalizations in the United States: a statewide time series analysis. *Inj Epidemiol* 2023;10(1):2. DOI: 10.1186/s40621-022-00412-7
7. McGuire SS, Finley JL, Gazley BF, et al. The team is not okay: violence in emergency departments across disciplines in a health system. *West J Emerg Med* 2023;24(2):169–177. DOI: 10.5811/westjem.2022.9.57497
8. Kari T, Kosa M. Acceptance and use of virtual reality games: an extension of HMSAM. *Virtual Real* 2023;1–21. DOI: 10.1007/s10055-023-00749-4
9. Bastardas-Albero A, Vall B, Pérez-Testor C, et al. Which effective virtual reality (VR) interventions exist for the prevention and rehabilitation of intimate partner violence (IPV)? *Front Virtual Real* 2023;4. DOI: 10.3389/frvir.2023.1263545
10. United Nations Office on Drugs and Crime. *Global Study on Homicide 2023*. United Nations; 2023. Available from: [https://www.unodc.org/documents/data-and-analysis/gsh/2023/Global\\_study\\_on\\_homicide\\_2023\\_web.pdf](https://www.unodc.org/documents/data-and-analysis/gsh/2023/Global_study_on_homicide_2023_web.pdf)
11. Cárdenas G, De la Rosa-Gomez A, Flores L, et al. A controlled trial for PTSD in Mexican victims of criminal violence. *Int J Disabil Hum Develop* 2013;41–45. DOI: 10.1109/ICVR.2013.6662102