

VR: Transforming Healthcare Education, SANE Training

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Abstract

This compilation of reviews highlights virtual reality's profound impact on healthcare education. VR consistently enhances knowledge acquisition, clinical skills, critical thinking, and communication across various health professions. Its immersive simulations offer safe, realistic environments for practicing complex procedures and developing empathy, crucial for sensitive areas like *Sexual Assault Nurse Examiner* (SANE) training. VR improves clinical performance, confidence, and psychomotor skills, proving its versatility from undergraduate nursing to specialized medical training. This technology is indispensable for preparing competent, empathetic healthcare professionals capable of advanced care, particularly for demanding roles like SANEs.

Keywords

Virtual Reality; VR; Healthcare Education; Nursing Education; SANE Training; Clinical Skills; Simulation; Medical Training; Empathy; Critical Thinking

Introduction

The landscape of healthcare education is continually evolving, demanding innovative approaches to prepare professionals for increasingly complex and sensitive roles. Virtual Reality (VR) has emerged as a transformative technology, demonstrating significant potential across various medical and nursing training programs [1].

Its application in nursing education is particularly impactful, consistently showing improvements in knowledge acquisition, clinical skills, and critical thinking capabilities, which establishes a strong groundwork for specialized areas like Sexual Assault Nurse Examiner (SANE) training [1].

Indeed, a thorough examination reveals that VR positively affects several key learning outcomes in nursing, including significantly enhanced clinical skills, a reduction in cognitive load, and a measurable improvement in self-efficacy among students [2].

These specific benefits are absolutely crucial for mastering the highly complex procedural and interpersonal skills that are undeniably essential for effective performance in SANE roles [2].

Furthermore, VR simulations provide an excellent and safe platform specifically designed for training emergency nurses in the nuanced care of patients who have experienced a sexual assault [3].

Such tailored simulations effectively address many inherent challenges in traditional SANE education, primarily by offering realistic yet entirely safe environments for crucial skill practice and the vital development of empathy required in such sensitive interactions [3].

The widespread adoption of VR simulations across a multitude of healthcare education settings further solidifies its undeniable value as a pedagogical tool [4].

It consistently proves effective in enhancing vital components of comprehensive SANE training, specifically bolstering clinical skills, refining critical decision-making capabilities, and improving essential communication proficiency [4].

Here's the thing: VR also serves as an innovative and highly effective tool for training nurses and other healthcare professionals, particularly in high-stakes critical care scenarios [5].

It is particularly adept at developing complex procedural and diagnostic skills, which are directly transferable and applicable to the detailed, sensitive, and often time-critical work demanded of SANEs in demanding environments [5].

A broader systematic assessment of VR's role in training diverse health professionals consistently underscores its general effectiveness in developing both clinical skills and foundational knowledge across the board [6].

This collective evidence provides a strong foundational basis for its seamless and purposeful integration into specialized training programs meticulously tailored for sexual assault nurse examiners, ensuring high competency [6].

What this really means is that VR is a powerful and valuable tool within undergraduate nursing education, consistently showing significant improvements in knowledge retention, psychomotor skills, and overall student satisfaction with their learning experience [7].

The unique ability of VR to offer foundational skills training within a safe, immersive, and controlled environment prepares future SANEs with essential competencies long before they face real-world scenarios [7].

Moreover, robust and compelling evidence from randomized controlled trials further confirms the profound effectiveness of virtual reality simulations in the education of nurses and allied health professionals [8].

These rigorous studies consistently demonstrate significant improvements in clinical performance and confidence levels among trainees, directly supporting VR's extensive utility for advanced and sensitive training like that precisely required by SANE professionals [8].

The implementation of VR in medical practitioner training offers valuable insights that are highly transferable, especially concerning its benefits in enhancing complex surgical skills, detailed anatomical understanding, and critical clinical decision-making processes [9].

These insights are extremely valuable for developing SANE

training modules that effectively and harmoniously combine intricate technical skills with the essential patient interaction elements, fostering holistic care [9].

Looking back, a comprehensive literature review of virtual reality applications across various facets of healthcare education highlights the technology's remarkable versatility and adaptability [10].

This inherent versatility allows for training across an exceptionally wide range of medical scenarios, from fundamental procedural skills to highly complex patient interactions, making it profoundly relevant for developing comprehensive and deeply empathetic training modules specifically designed for sexual assault nurse examiners [10].

The collective body of evidence from these studies unequivocally points to Virtual Reality as an indispensable tool for advancing and modernizing healthcare education. Its inherent capacity to provide immersive, practical, and inherently safe learning experiences is fundamentally transforming how healthcare professionals, particularly those in sensitive and demanding roles like SANEs, acquire and refine essential competencies. By fostering a rich learning environment that meticulously simulates real-world challenges without actual patient risk, VR empowers trainees to develop the nuanced skills required for compassionate, legally sound, and clinically effective care. This innovative pedagogical approach ensures that future generations of healthcare providers are not only clinically proficient but also exceptionally adept at critical thinking, ethical decision-making, and empathetic communication, paving the way for superior patient outcomes. The continued and thoughtful integration of VR into healthcare curricula promises to elevate the standard of training, making education more accessible, engaging, and ultimately, more effective in preparing professionals for the multifaceted complexities of modern healthcare provision.

Description

Virtual Reality (VR) technology is rapidly gaining traction as a pivotal tool in modern healthcare education, particularly for its ability to simulate complex scenarios and enhance critical skills. This growing adoption is robustly evidenced across numerous comprehensive reviews and meta-analyses. For instance, VR has been shown to significantly improve knowledge acquisition, overall clinical skills proficiency, and critical thinking abilities within nursing education programs [1]. This creates a powerful educational foundation, especially for highly specialized fields such as Sexual Assault Nurse Examiner (SANE) training, where precise and sensitive interventions are paramount. Beyond foundational knowledge, VR

positively impacts a broader spectrum of crucial learning outcomes in nursing, including the consistent development of advanced clinical skills, a measurable reduction in cognitive load, and a notable increase in self-efficacy among students [2]. These specific elements are vital for mastering the intricate procedural and interpersonal skills inherent to effective SANE practice.

The specific utility of VR extends significantly to addressing unique and often challenging educational requirements. It is remarkably effective in specialized contexts, such as training emergency nurses to proficiently care for sexual assault patients [3]. These VR simulations offer incredibly realistic yet entirely safe environments, essential for practicing sensitive interview techniques, physical examination protocols, and fostering deep empathy—qualities paramount in SANE roles where establishing patient trust, ensuring comfort, and adhering to legal protocols are crucial. The broader application of VR simulations across diverse healthcare education settings consistently underscores its profound capacity to enhance core competencies such as refined clinical skills, complex decision-making abilities under pressure, and highly effective communication strategies, all indispensable for comprehensive SANE training [4]. This integrative and holistic approach ensures that trainees are not only technically proficient but also capable of navigating the profound emotional, psychological, and ethical complexities inherent in patient care.

Moreover, VR is proving to be an innovative and indispensable instrument for training healthcare professionals in high-stakes, demanding environments, including critical care units. Here, it expertly facilitates the development of complex procedural and diagnostic skills that are directly applicable to the meticulous, highly sensitive, and often time-critical work performed by SANEs [5]. This exceptional capability to prepare professionals for intensely demanding situations is further supported by a wealth of evidence highlighting VR's general effectiveness in developing a wide array of clinical skills and foundational knowledge across a broad range of health professions [6]. Such compelling findings provide a strong justification for strategically integrating VR into specialized training programs for sexual assault nurse examiners, thereby ensuring they are exceptionally well-equipped to competently handle diverse and challenging scenarios encountered in practice.

For undergraduate nursing students, VR plays a particularly significant role, consistently demonstrating improvements in knowledge retention, psychomotor skills, and overall satisfaction with their educational experience [7]. The immersive nature of VR creates a secure and supportive space for acquiring foundational skills, which is utterly crucial for preparing future SANEs who re-

quire a strong and practical skill base before transitioning to real-world encounters. Furthermore, rigorous systematic reviews and meta-analyses of randomized controlled trials unequivocally confirm VR's profound effectiveness in educating both nurses and allied health professionals across various specialties [8]. These studies consistently highlight significant improvements in clinical performance and confidence levels among trainees, directly supporting VR's extensive utility for advanced and highly sensitive training, such as that specifically mandated for SANE professionals, where precision and empathy are equally important.

Even in the realm of medical practitioner training, VR offers valuable and transferable lessons. It demonstrably enhances complex surgical skills, deepens intricate anatomical understanding, and refines critical clinical decision-making processes under pressure [9]. These insights into VR's practical implementation are highly beneficial for crafting sophisticated SANE training modules that seamlessly and effectively combine the necessary technical examination skills with highly effective and compassionate patient interaction strategies. Collectively, the extensive literature presents a compelling and undeniable case for VR's remarkable versatility and adaptability across the entire spectrum of healthcare education. It effectively trains for a vast array of medical scenarios, from fundamental procedural skills to intricate and nuanced patient interactions [10]. This inherent versatility is particularly relevant for developing comprehensive and deeply empathetic training modules specifically designed for sexual assault nurse examiners, ensuring they are thoroughly prepared for the multifaceted demands of their critical role, providing sensitive, competent, and profoundly compassionate care to survivors of sexual assault.

Conclusion

Virtual Reality (VR) is widely recognized as a highly effective and versatile educational tool across various healthcare disciplines, with significant implications for specialized training programs like those for Sexual Assault Nurse Examiners (SANEs). A collection of systematic reviews, meta-analyses, and scoping reviews consistently highlights VR's capacity to enhance critical learning outcomes. Specifically, VR applications demonstrably improve knowledge acquisition, clinical skills, and critical thinking among nursing students and other healthcare professionals [1, 2, 6, 7]. It also plays a crucial role in developing complex procedural and diagnostic skills, especially valuable in high-stakes environments such as critical care settings [5]. Beyond technical proficiency, VR simulations effectively foster improvements in clinical performance, decision-making, communication, and self-efficacy [2, 4, 8]. The immersive

nature of VR provides realistic yet safe environments for skill practice and empathy development, directly addressing key challenges in specialized SANE education by offering an effective platform for sensitive training scenarios [3, 7]. This technology proves beneficial across different educational levels and professional groups, including undergraduate nursing education, allied health professionals, and medical practitioners, improving psychomotor skills, anatomical understanding, and even surgical proficiency [7, 8, 9]. The broad utility of VR in diverse medical scenarios, ranging from fundamental procedural training to complex patient interactions, underscores its immense potential to create comprehensive and empathetic training modules for SANEs. This prepares professionals for advanced and sensitive roles demanding both technical expertise and profound interpersonal understanding [10]. Overall, the compelling evidence firmly establishes VR as an innovative and impactful solution for modern healthcare education, poised to transform how future healthcare providers are trained.

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