Transforming Healthcare Education: The Efficacy of Simulation-Based Learning

SimTutor

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Introduction

Healthcare education must evolve if it seeks to create highly competent, confident, and collaborative practitioners who are prepared to face the demands of the modern healthcare landscape. Traditional educational methods often fall short in providing the practical, hands-on experience necessary for students to feel prepared by the time they begin interacting with patients. Newly graduated healthcare professionals frequently report encountering a "reality check" upon entering the workforce as their academic training leaves them unprepared for the full scope of their responsibilities. A qualitative study in *BMC Medical Education* revealed a consistent pattern of recent nursing graduates who experienced a significant gap between their theoretical knowledge and practical application, leading to decreased confidence and increased stress during their transition to professional practice.

> “I'm ashamed to say this, but after I started working in clinical practice, I finally realized what nursing actually is. **Clinical practice during studies doesn't show you or prepare you enough for all the tasks you'll have to do as a nurse**. As a student, you just do not see things in the 'background', but when you are employed as a nurse you suddenly must deal with all kinds of tasks. You are shocked every day.
>
> **Recent Nursing Graduate**
> *BMC Medical Education, 2021*

Simulation-based learning has emerged as a transformative approach, offering a risk-free environment where students can practice and refine their skills as many times as they need to both in a classroom setting and beyond. By bridging the gap between theory and practice, simulations have been shown to enhance students' readiness for real-world challenges by improving both their confidence and competence. This whitepaper explores the efficacy of simulations in healthcare education based on extensive research, case studies, and expert opinions.

The Need for Improved Training Methods

Gaps in Traditional Education

Traditional healthcare education primarily relies on theoretical knowledge and limited hands-on practice due to the expense and time constraints of in-person lab and clinical time. The dynamic and high-stakes nature of healthcare requires practitioners to possess both strong clinical skills and the ability to make quick, informed decisions that are based on practical experience. As increasing numbers of aspiring healthcare professionals turn to online-only programs to earn their degrees, the number of graduates who haven't been offered the chance to build that practical experience is increasing.

A report on the shortcomings of nurse practitioner education highlights significant issues in clinical training. In response to increased demand, unstandardized nurse practitioner programs have sprouted up across the nation. However, dozens of nursing students and professors told *Bloomberg Businessweek* that many of these online-only programs are graduating thousands of students who are not properly trained to care for patients. Although nurse practitioners are required to log 500 hours in clinical training time, those hours are unregulated and many online programs don't assist students in finding relevant clinical site opportunities. A 2021 research article from the *Journal of Nursing Regulation* noted that in surveys of new nurse practitioners, graduates "reported uncertainty in their role, including self-doubt and feeling minimally prepared in caring for patients with complex problems."

Current and Projected Shortages of Healthcare Professionals

The ongoing pressures of the COVID-19 pandemic took an unprecedented toll on the health and wellbeing of healthcare professionals across the world. Thousands of healthcare workers left their positions, leading to staffing shortages across multiple specialities in the U.S. In just the span of 2021-2022, **145,213 healthcare professionals left the profession.**

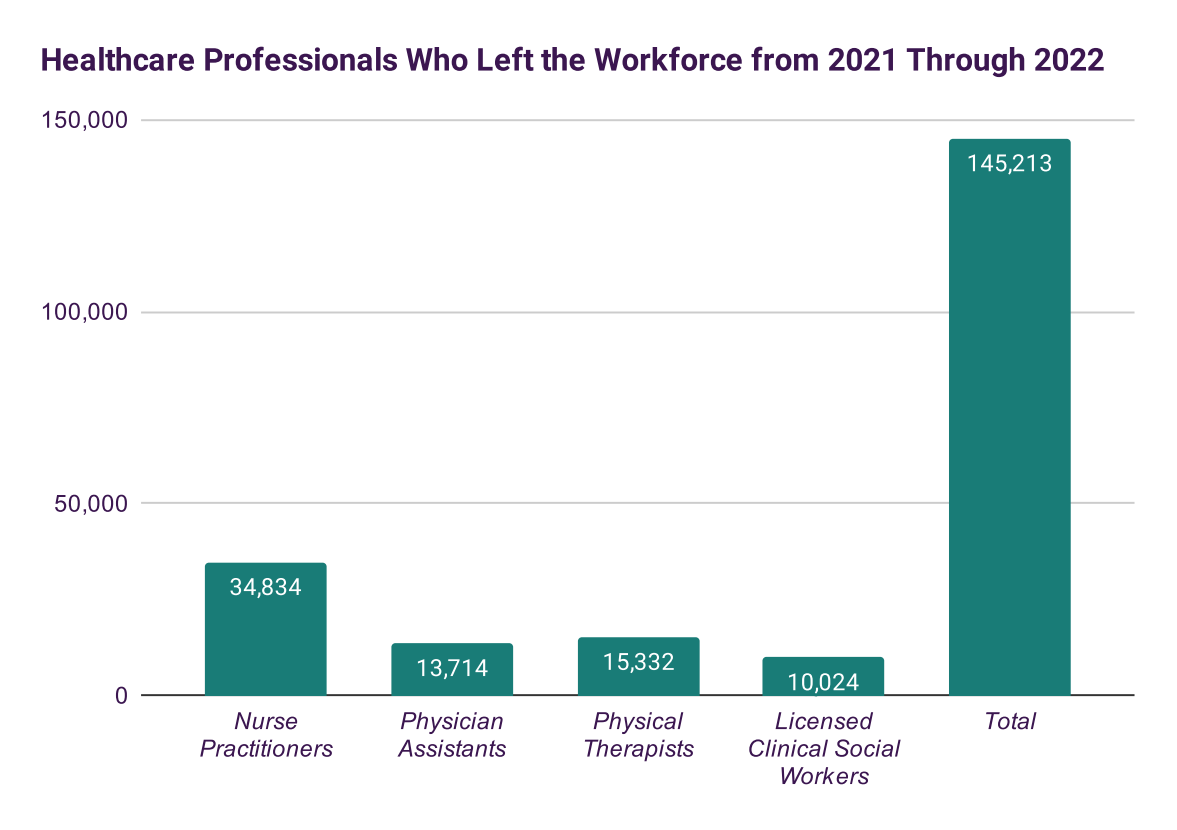


Fig 1: Data is from Definitive Healthcare's Atlas All-Payor Claims and PhysicianView products. Data sourced from a stable panel of billing organizations from Q1 2021 through Q1 2023. Physicians deemed as dropped out practiced in 2021 and ceased activity by Q4 of 2022. Data accessed September 2023.

The shortage of healthcare workers in the U.S. is projected to worsen. The National Center for Health Workforce Analysis projects shortages by 2036 in many key healthcare occupations including a gap of:

23,320
dental hygienists

337,970
registered nurses

68,020
primary care physicians

The demand for healthcare workers continues to increase year-over-year due to the country's growing and aging population. According to the U.S. Census Bureau, the nation's population is estimated to grow by more than 10% by 2032, with those over age 65 increasing by 48%. The aging population will also affect the current healthcare worker supply, with estimates indicating that one-third of all currently active doctors will be older than 65 in the next decade.

Rural areas are likely to experience more problems than urban areas because of the healthcare worker shortage. According to current data, mostly-rural states such as Utah, Vermont, Tennessee, as well as remote territories like Guam and the Northern Mariana Islands, have the highest shortages in medical professionals per capita.

The Benefits of Simulation-Based Learning

Simulation-based learning addresses a lack of hands-on experience opportunities by providing students with a controlled, realistic environment where learners can practice clinical skills, decision-making, and interdisciplinary collaboration without risking patient safety. This approach bridges the gap between theoretical knowledge and practical application, ensuring that healthcare professionals are better prepared for real-world scenarios.

Enhanced Clinical Skills and Confidence

Simulation-based education significantly improves clinical skills and boosts the confidence of healthcare students by enabling students to experience and manage clinical scenarios, fostering a deeper understanding and retention of practical skills. A study by The University of Connecticut School of Dental Medicine on the use of virtual reality simulators in dental education found that **students who used VR simulators demonstrated improved confidence and competence in performing dental procedures** (*ADA News*, 2023). This hands-on experience is crucial for dental students, as it allows them to develop the technical skills needed for successful patient care.

> “Our students have grown up playing video games. They are accustomed to a virtual world. Having the ability to learn dental procedures in this virtual world **provides the potential for students to become better clinicians.**
>
> **Linda C. Niessen, D.M.D.**
> *Professor and Founding Dean, Kansas City University College of Dental Medicine*

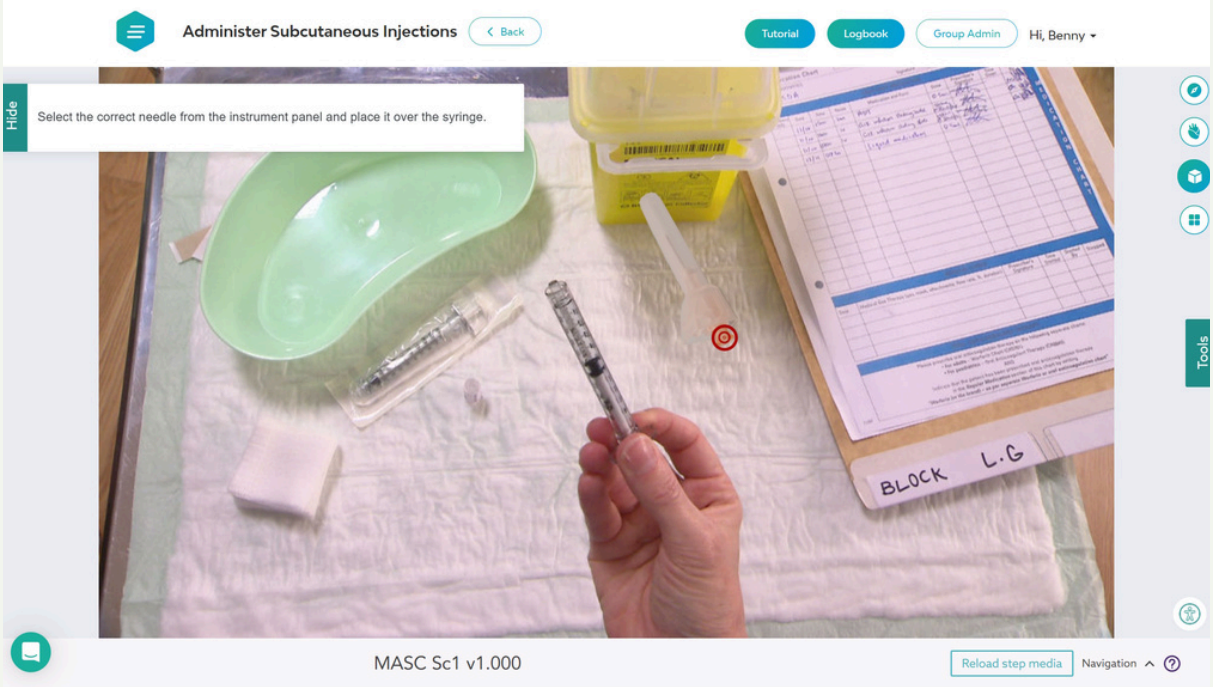
Research published in the *Journal of Nursing Simulation* supports the efficacy of simulation-based education in nursing. One study showed that **nursing students who participated in simulation exercises demonstrated improved clinical judgment, technical skills, and overall preparedness for clinical practice** (*Nursing Simulation*, 2024). These improvements are essential for nursing students to ensure that they are ready to provide high-quality care immediately upon entering the workforce.

> Clinicians of all stripes **must think on their feet all the time**. It's something that we must learn, and unfortunately it isn't just the natural byproduct of experience. It's a skill that can be learned and **we can use simulation to explicitly foster that type of growth.**
>
> **Samuel Owen Clarke, M.D., M.A.S., F.A.C.E.P.**
> *Associate Professor, Department of Emergency Medicine, UC Davis Health*

Improved Decision-Making and Critical Thinking

Simulations provide a platform for students to develop and refine their decision-making and critical thinking skills. A study by UC Davis Health emphasized the importance of simulation training in developing quick-thinking skills among healthcare providers. The study suggested that simulations that focus on real-time problem-solving and adaptive thinking better prepare students for the unpredictable nature of healthcare settings (*UC Davis Health*, 2023). By practicing these skills in a simulated environment, healthcare professionals can develop the ability to make quick, informed decisions in high-pressure situations.

Simulation-based learning has also been shown to be highly effective in helping students make better decisions for patients. The University of Texas Health Science Center conducted research showing that simulation-based learning helps dental students understand the impact of impairment on patient care. The study found that students who participated in simulation exercises were better equipped to recognize and manage impairments in clinical settings (*University of Texas Health Science Center*, 2023). The use of realistic simulations in healthcare education allows students to practice procedures in a highly realistic environment to improve both their technical skills and confidence.



A SimTutor simulation lesson in administering subcutaneous injections

Building Interprofessional Collaboration

Healthcare often involves multidisciplinary teams working together to provide comprehensive patient care, and simulation-based education has been shown to be particularly effective in promoting interprofessional collaboration.

Simulations that involve interdisciplinary teams help improve communication, teamwork, and understanding among different healthcare professionals. Research published in *BMC Medical Education* highlights that interdisciplinary **simulation education significantly enhances the attitudes and outlooks of medical interns towards their colleagues** in other disciplines, leading to better teamwork and patient care outcomes. The study found that healthcare interns showed improved comfort levels with interdisciplinary learning, enhanced perceptions of interprofessional respect, and a greater belief in the benefits of such interactions after completing simulations (*BMC Medical Education*, 2021).

Addressing the Healthcare Worker Shortage

Simulation-based training can also play a crucial role in mitigating worker shortages by providing several benefits:

Accelerated Training: Simulations enable faster and more efficient training of healthcare professionals. By using high-fidelity simulations, students can gain essential skills and experience in a controlled, safe environment. This reduces the time needed to achieve proficiency compared to traditional methods.

Flexible Learning: Simulation-based education can be tailored to meet the specific needs of different regions and populations. For instance, rural areas facing acute shortages can benefit from targeted training programs that prepare healthcare workers for the unique challenges of those environments.

Retention and Recruitment: By improving the quality of training and job readiness, simulations can enhance job satisfaction and retention among healthcare workers. Additionally, offering advanced training opportunities can attract more individuals to the healthcare profession.

Future Directions and Recommendations

Expanding Access to Simulation-Based Education

To maximize the benefits of simulation-based education, it is essential to expand access to simulation resources. This can be achieved through increased funding for simulation labs, development of cost-effective simulation technologies, and partnerships between educational institutions and healthcare organizations. By making simulation-based education more accessible, we can ensure that more students have the opportunity to benefit from this transformative approach.

Enhancing Facilitator Training

Investing in the training and development of simulation facilitators is crucial for the successful implementation of simulation-based education. Educational institutions should prioritize the development of comprehensive training programs for educators, covering both the technical and pedagogical aspects of simulation-based learning. Additionally, ongoing professional development opportunities should be provided to ensure that facilitators remain up-to-date with the latest advancements in simulation technology and educational practices.

Integrating Simulation Across Curricula

To fully realize the potential of simulation-based education, it should be integrated across healthcare curricula.

This integration involves incorporating simulation exercises into various courses and clinical rotations, ensuring that students have regular opportunities to practice and refine their skills. By embedding simulation-based learning into the curriculum, educators can create a more cohesive and comprehensive training program that prepares students for the complexities of real-world healthcare.

Start Using Simulations to Enhance Healthcare Education

As the healthcare industry continues to evolve, the need for highly skilled and confident professionals is more critical than ever. Simulation-based learning stands at the forefront of this transformation, providing innovative and effective training solutions that bridge the gap between theoretical knowledge and practical application. SimTutor offers multiple solutions to enable learners to build real-world skills in a safe, controlled environment. This not only enhances their competence but also boosts their confidence, ensuring they are well-prepared to meet the demands of the healthcare field.

> “I’ve never seen anything like this product. The **simulated practice really helps students grasp the concepts we teach**. They not only learn more effectively but what they learn in the beginning is not forgotten because they can go back and practice each skill later, long after it was covered in class. [SimTutor simulations] will teach, remind, refresh…and **students can be better prepared to start their careers**

Cassie Belfancha
Dental Assisting Education Consultant

SimTutor's library of over 200+ pre-built healthcare simulations empowers educators to deliver comprehensive, flexible, and scalable learning experiences that can be accessed anytime, anywhere. Whether it's navigating a complex procedure or honing patient interaction skills, SIMTICS offers learners a safe environment in which they can learn, practice, and excel. By utilizing advanced tracking and reporting tools, instructors can monitor progress, identify areas for improvement, and provide targeted support, leading to better outcomes for both learners and institutions.

SimTutor Author offers educators a simple way to build customized simulations using the content they already have. Features like branching scenarios, built-in quizzes, controllable tools, and first-person perspectives allow educators to create realistic simulations that are tailored for their learners' unique context.

To see how SimTutor's simulation-based learning can transform your program and elevate your learners' skills, we invite you to get in touch with our team. Discover firsthand how our cutting-edge solutions can help you achieve your educational goals and ensure that your graduates are ready to excel in their roles. Contact us today to schedule a demo and explore how you might transform healthcare learning.

Partner With Us to Transform Healthcare Education

Start using simulation-based training to give healthcare professionals the skills and knowledge they need to excel in their roles.

Request a Demo

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