Simulation in nursing education

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Part of becoming a working professional always involves applying knowledge and trying out skills in carefully controlled and monitored settings to get feedback on our first attempts at practice. For many years, nurses have practiced taking BP readings on each other, learned to provide certain kinds of physical care on mannequins, and rehearsed giving injections with oranges. With advances in technology, learning labs in nursing schools now include standardized patients (actors), various kinds of life-like models, and full-scale simulators (mannequins that manifest symptoms and respond to treatment decisions and other actions). The use of simulation in nursing education has grown to the point where it’s now a common element in the preparation for practice. We review what should you know about simulation and how it’s shaping the education of nursing students and graduate nurses coming to your units and settings.

Safe realism

In its most general sense, simulation is the replication of real-world scenarios, allowing trainees to perform skills and learn actively. One common way of talking about simulation relates to fidelity, or how closely a simulation experience reflects or mimics reality. Today, there are many options available for simulation equipment, from low-fidelity anatomical models used by students to practice injections and other skills to high-fidelity mannequins that reproduce physiologic functions and are programmed to react to interventions in real time. Audio-video recording devices enable learners to review their performance, and medical equipment and care furniture enhance the realism and authenticity of simulation. Virtual reality
Applications offer new possibilities for developing immersive clinical experiences, with many software packages that run on a variety of platforms available.

Simulation presents opportunities to reproduce both rare and frequent clinical events in a realistic manner as often as needed. Nurses can hone their abilities and skills—and commit every possible error—without harming real patients. Simulation has long been utilized to train nurses and other providers in cardiopulmonary resuscitation; it’s now used in most nursing specialties for a variety of purposes, including health assessment, communication, and collaboration.

Many clinicians, educators, and leaders believe that simulation promotes patient safety and raises the quality of patient care when used for both the basic education of nurses and continuing education purposes. Not surprisingly, given the challenges many nursing programs are having finding clinical placements, some have begun thinking of simulation as a lifesaver. A few years ago, research appeared suggesting that up to 50% of clinical hours in a prelicensure RN program may be replaced by simulated experiences without negative impacts on learning outcomes. Clearly, students can build clinical skills and knowledge in settings other than live clinical placements. However, many factors must be kept in mind when deciding how to make the best use of simulation.

The best approach

Simulation isn’t always cheaper than traditional clinical placements. Considerable faculty time is needed to develop a simulation and although students don’t necessarily require the same intensity of faculty-student contact required for placements in practice settings, it can turn out to be the same. If equipment and technology are used, expenses build quickly. The
costs of setting up a simulation environment can swiftly rise and reach hundreds of thousands of dollars.

Sparse data are available about what types of simulation equipment build student learning at the most reasonable costs, and studies have sometimes reached contradictory conclusions about methods and approaches. To date, there’s no compelling evidence that investing in the highest end of simulation equipment produces better learning outcomes. In fact, there’s some evidence that favors cheaper solutions. Similarly, video recording hasn’t been shown to produce noticeably better learning. Although it’s possible that future studies may produce different results, schools and programs need to choose equipment on the basis of their student learning goals and not assume that greater expenditures will pay off.

Above all, simulation is just one of many educational tools. As such, it’s important to consider what kind of learning it’s expected to produce. Research has shown that students often view simulation favorably, and anecdotal evidence suggests that they prefer simulations that are low-risk learning experiences to those that are high-stakes tests. In general, students feel that it promotes an environment for the improvement of self-confidence, knowledge, and skills. Nonetheless, despite tremendous enthusiasm from students and many faculty members and community leaders, much is still unknown about how learning carries over from simulation to clinical practice. It’s also unclear how much simulation is needed to produce learning outcomes and high-level performance in real practice, and how long learning through simulation persists.

Many questions about the best way to use simulation are still being addressed. Experts agree that it’s essential to provide learners with a safe, trusting, and supportive environment for learning in which they feel at ease to engage fully in the simulation. Simulation must start with a clear
definition of learning goals and be designed to directly allow students to meet them.

It’s notable that whereas much effort must be placed on the simulation’s content, providing students with feedback after a stimulation event and giving them time to review and reflect on their performance (also known as debriefing) require as much, if not more, attention. Research suggests that debriefing is essential to simulation-based learning and should be closely tied to the expected outcomes of a particular simulation10.

If you’re a manager interested in simulation as a tool for staff development, identifying clear learning goals, creating a safe learning space, and ensuring carefully planned debriefing apply equally to simulations used for orientation, competency assessment, and continuing education. Other tools and strategies, such as problem-based learning, case studies, and concept mapping, may be more appropriate for some purposes.

**Taking its place**

Simulation can be extremely engaging and “wow” many in the community; however, everyone involved, including the clinical agencies receiving students in the placement phase of their education and at graduation, need to understand how resource-intensive it can be. In the end, simulation is but one approach in the nurse educators’ arsenal--its wider use is neither a panacea nor a disaster in the making. You’re sure to hear more discussions about simulation as it finds its rightful place in helping students acquire the knowledge and skills needed for nursing practice.


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