Integration of Simulation into Nursing Education

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Outline

By the end of the lecture students will be able to:

- Define Simulation and simulator
- History of simulation
- Simulations in Nursing
- Identify Types of simulation
- Determine principles of simulation selection
- Determine the aims / Benefits of Simulation technology

Continue…

- Know role of Simulation
- Determine rationale of using simulation
- Know Simulation characteristics (Rooms; Simulation scenarios; Debriefing)
- Identify advantages/disadvantages of simulation as a teaching strategy
- Recommendations & Implications

Simulation

Simulation:

- –"…as a strategy –not a technology –being used to amplify real situations with guided experiences in a fully interactive way."

Simulator:

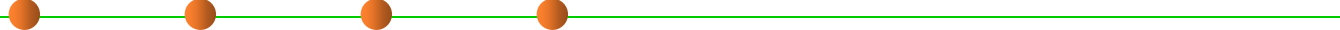- –"…replicates a task environment with sufficient realism to serve a desired purpose"

(AHCQ)

National Council of State Boards of Nursing Definition of Simulation

- "Simulations are activities that mimic the reality of a clinical environment & are designed to demonstrate procedures, decision-making & critical thinking through techniques such as role-playing and the use of devices such as interactive mannequins."

(NCSBN, 2004)

History of Simulation

- Simulation has been gaining momentum in education for the last 40 years.

- The first simulator were computer based and were used by industry (e.g. aircraft and the military).

- Mrs Chase™, (1950s) the first simulator to teach physical assessment to student nurses in the UK, (Peteani, 2004).

- Harvey™ (late 1960s) allow medical students to determine heart and lung sounds and is still in use today (Peteani, 2004).

Simulation & Nursing Education

- The use of simulators in nursing has been growing from the 1980s onwards (Rystedt and Lindstrom, 2001)

- Increased use of learning technology

- More emphasis on outcome-based than process-based education

- More evidence-based education strategies

Simulation & Nursing Education

- Will add to the clinical curriculum by augmenting

  what students learn in class

- Prepare students for their clinical experiences

Types of simulation

- Low fidelity: A device that does not respond to interventions or is unable to be altered in real time to create a response

- Medium-fidelity: provide more realism, with the addition of heart sounds and lung sounds

- High fidelity: A device with lifelike features, either whole body or partial body, that is able to respond to a learner's actions or interventions

Principles of Selecting Type of Simulation to Use

- Should be driven by the educational goal
- Should match the level of the student

Aims

- Afford safe, controlled & realistic training environment

- Offer cost-effective training for the improvement of understanding and acting in complex environment.

- Contribute to more effective and advanced learning by providing simplified model

The Role of Simulation

- A teaching strategy
- An evaluation tool

Rationale

- Provide student with opportunity to be involved in patient care experiences may not experience in actual clinical settings
- Allow students to critically analyze their own actions
- Simulation promotes active learning
- Improve skills and reduce errors.
- Training take place in a safe and realistic context
- Overcome some of the education issues as lack of clinical site availability, and nursing faculty shortage
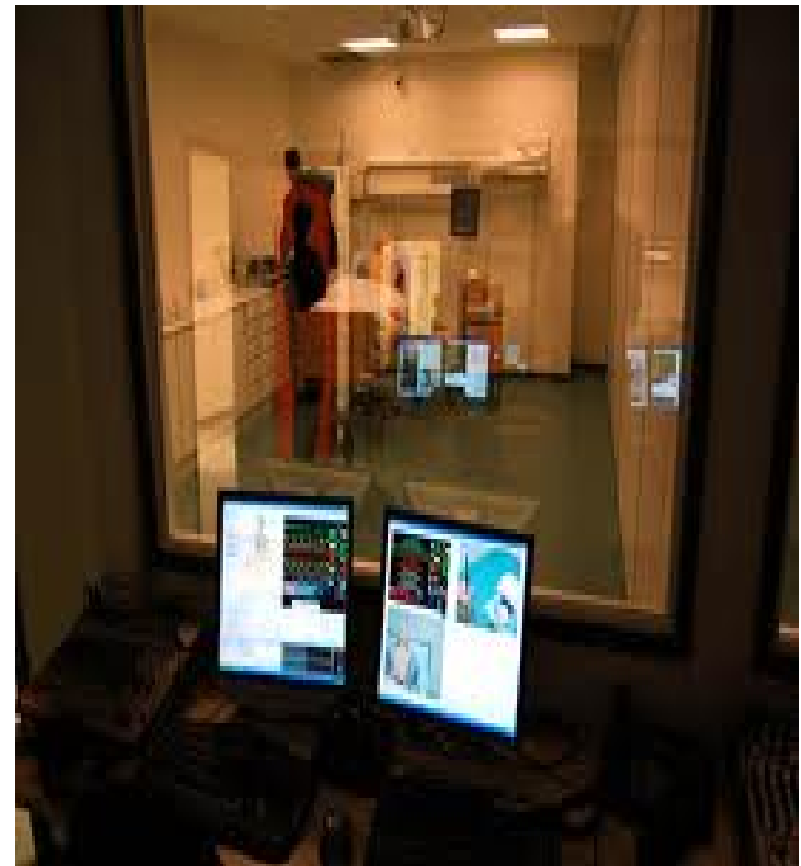
Simulation characteristics

- Sim Room (where the Manikins are suited

- manikins / different probe / connection cable / necessary equipment to simulate patient care / audio and surveillance equipment)

Control Room

- To create & run simulations
- Equipped with one-way glass, which allows faculty to observe students as they participate in the simulation without the students seeing and being distracted by their presence /
- procedures can be viewed, manipulated, recorded and replayed / equipped with camera and microphones)

Debriefing Room

- Students come together with their faculty instructor after running a simulation or to observe their colleagues in simulation

- The room has a projector, a white board, and a round table with chairs to facilitate dialogue

Debriefing

- Integral element of simulations
- Indicates that some kind of briefing happened prior.
- provide opportunities for students to discuss what they have learned, ensure that activities are not left unfinished, identify what they accomplished, and provide an opportunity to critique the learners' performance

Debriefing

- Utilize a circle formation with all participants and facilitator at same eye level
- Videotape session
- Encourage participants to talk and discuss feelings, events, and transfer of knowledge
- Conduct in a different area than the simulation where students are out of the role which they played for simulation

Plan for developing simulation lab

- Develop a vision to show what is to be achieved, who will be involved, and how the laboratory will be used.
- Generate a business plan to outline initial and annual fiscal obligations.
- Identify and seek support from stakeholders.
- Construct the facility or laboratory, as defined in the vision and the business plan, including the equipment purchase.
- Provide training for all individuals who will be involved.
- Develop the curriculum.
- Faculty training.
- Determine policies and procedures

(Seropian et al. 2004)

Simulation scenarios

- Simulation scenarios should be realistic with active learning, facilitate teamwork and collaboration, encourage critical thinking, provide safe environment, and improve clinical judgment

Benefits

- Risk free training

Provides learning opportunities without fear of personal failure or comprising client welfare

- Brings learning alive

- Increases confidence

Leading to competence, improved clinical judgment, & facilitates independence and skills development.

- Friendly environment for learning

Possess more sophisticated basic and advanced psychomotor skills

- It provides planned and gradual increase in the difficulty of the problem to be solved
- Unlimited repetition with immediate feedback
- Provides additional assessment strategy such as peer review
- Capturing the physiologic response that is considered challenging to be grasped in lectures
- Encourage Team work
- Critical Thinking

- Risk free training
- Lessens the number of clinical sites required for training
- Allows teaching of multiple objectives

Advantages/ Disadvantages

- Depends on the type of simulation

High fidelity

- Interactive experience
- Animating theoretical knowledge within the context of clinical reality
- Using emotional and sensory components of learning
- Good for critical thinking, decision-making and delegation
- Good for knowledge integration and higher levels of students

Limitations

- Costly
- Limited access
- Dependent on availability of human instructors/operators
- Limited realistic human interactions

Low Fidelity

- Easy, flexible and unlimited access
- Useful for knowledge acquisition and critical thinking
- Accommodating to individual pace of learning
- Good for lower/entry level students
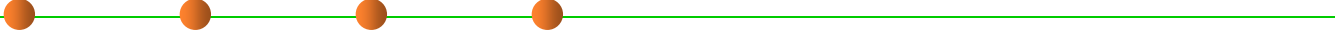- Relatively low cost

Limitation

- No physical interaction
- No experiential learning

Generally, Advantages are

- Reducing training variability and increases standardization
- Guarantees experience for every students
- Can be customized for individualized learning
- Is more accurate reflective learning especially with HPS
- Is student-centered learning

- Allows independent critical-thinking and decision-making, and delegation
- Allows Immediate feedback
- Offers opportunity to practice rare and critical events
- Can be designed and manipulated
- Allows calibration and update
- Can be reproduced; Occurs on schedule

- Offers opportunities to make and learn from mistakes
- Is safe and respectful for patients
- Allows deliberative practice
- Also uses the concept of experiential learning

Disadvantages

- Not real
- Limited realistic human interaction
- Students may not take it seriously
- No/incomplete physiological symptoms

Recommendations

- Advocate for improvement and availability of simulation-based modalities for education and research.
- Increase the innovative application of simulation technology in research.
- Use the grant funding to increase the acquisition of and effective use of simulation by those who educate health professionals
- Increase awareness about its use and benefit among multidisciplinary profession

- The educator role is considered the most effective factor to ensure effective simulation-based education. However, planning, implementation and evaluation of simulation training should be done in collaboration with students.

- This technology should be supervised by a qualified faculty member who provides feedback and facilitates reflection.