

College of Medicine

MSc in Leadership in Health Professions Education

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Word count: 1475 words

1. **Title:**

Action research: Introducing Simulation-based Training for female urinary catheter insertion and its implementation.

**Description of the organization and current scenario:**

I have considered my organization for my research, and all the elements related to a nursing service are considered. My organization is a hospital which is offering surgical, pediatric, and critical care units. In addition, it also offers short courses and refresher courses for professional nurses with classrooms and facilities and a simulation-based training unit newly established.

1. **The nature and significance of change:**

The healthcare sector has shifted rapidly in recent years, which has had an impact on nursing education. The foundation of a robust medical system is patient care [1] which should be practiced based on information. The required information is scientific and is obtained when the practitioner has certain skills like urinary catheterization. Clinical reasoning is a skill that improves with training, and the effort is to incorporate clinical information into classroom instruction [2]. Recently, teaching using simulations has become more popular as a way to narrow the gap between practical implications and theoretical training. In [3], it is also discussed that an instructional approach in which a specific set of characteristics is generated or recreated to simulate actual scenarios which are achievable in practice. First few lifelike person mannequins were created for medical training-specific applications. Resuci Anne, for example, was created in 1960 by a Norwegian corporation for the training of heart-related treatment [4,5]. Since then, pedagogical methods and modern technological developments have enabled realistic learning activities to be created in a stable environment, closing the gap between theoretical and practical nursing education. Before moving further, it is necessary to address some of the important concepts which will enhance the understanding of skill development, the importance of simulations, and their implementation.

**What are psychomotor expertise and simulations?**

To execute certain skills, psychomotor abilities are synchronized muscle movements regulated by aware mental activities [6]. Nurses can build psychomotor abilities in the lab by putting theoretical concepts into real-time practice. The process starts with the trainers who show the skills first, then enable the learners to practice them on their own while providing comments on their performance until they become proficient in urinary catheterization skills.

**What are the kinds of simulations available for the training of nurses?**

In nursing training, there are two different forms of simulations: high-fidelity and low-fidelity [7]. 3D body parts, lifelike models of humans, synthetic mannequins, and models of animals are examples of low-fidelity simulations. On the other hand, graphical, lifelike, engaging patient simulations, VR, and sensory devices are examples of high-fidelity simulations [7]. Graphical simulations are visual-based simulations that allow students to independently study and improve rational analysis and judgment abilities. Partially functional trainers, also known as realistic and interactive simulations, mimic body components to teach pupils certain capabilities.

**Available knowledge:**

The major experimental work about the use of clinical simulation has been undertaken in the field of medical and anesthesiology contexts, according to a review of the literature on the subject. Whereas it was highlighted that research like this has to improve for better accuracy and quality, facts to support the use of simulation as a teaching methodology in clinical training are evident [8]. A comprehensive examination of the clinical studies on simulation was done in a study, which showed that simulation in nursing study shows promising results when done in a repetitive manner and in a real patient environment [9] especially digital simulation fulfills the purpose of training very well [10].

**Rationale:**

Different studies were conducted in the past which show that the use of simulations for the training of nurses is very beneficial and increases the performance efficiency of nurses [11],[12].

The findings revealed that training using simulation boosted not only self-confidence but also professional medical abilities and reasoning and that trainees learned the value of interpersonal skills and teamwork in an environment of a hospital. Nurses' morale increased when simulations were used in the teaching environment [13], [14].

**Aim of the study:**

This study aims to introduce simulation-based training for nurses for urinary catheterization in acute healthcare facility by the end of March 2023.

**Objective:**

By the end of implementing the simulation-based training (March 2023), the learner will be able to:

1. Understand Urinary catheterization insertion and maintenance based on the facility policy and guidelines.
2. To practice safe urinary catheterization correctly.
3. Improve the staff satisfaction with the training using a simulation setting through a certain checklist
4. **Evaluation:**

**Context and background:**

Medical education for nursing aims to enhance their analytical reasoning skills by combining theoretical knowledge into a skill-based laboratory environment. In clinical practice, training using simulations can be utilized to simulate medical situations in a harmless setting, enhancing medical reasoning abilities, analytical skills, decision-making, and interdisciplinary collaboration [15]. Increased simulation-based training in nursing education has shown potential effects in studies [16].

How well knowledge is transitioned from simulation-based training to clinical practice relies on the architecture of the simulation program and how academic professionals and clinical practice staff give metacognitive support in debriefing and clinical settings. This study aims to design and implement simulation-based learning and assessment methods for the training of nurses and to measure their effectiveness.

1. **Change Management**

**HSE change model:**

Change management is a process to ensure the safe implementation of the changes. It uses the HSE change model, as this model is flexible and easy to change in steps that are useful for all the stakeholders [17].

**Team and stakeholders for the implementation of SBL:**

In the team responsible for implementing this research, I am working as a Clinical Resource Nurse (CRN). My task is to guide all the team members during the implementation of this mode of teaching. Following are some roles which are essential in this team.

**Coordinator for SBL:**

At this stage in the hospital's development, a Clinical Resource Nurse with the authority to influence change, inspire, and excite educators from all healthcare is critical. A CRN would give vision, clarity, and strategy when all these things are needed to further the hospital's integration and efficacy of high-fidelity simulation.

**Simulation Program review committee:**

This team will comprise subject experts and be headed by the hospital's Assistant Director of Nursing Affairs (ADNA). I will be part of this team as a CRN and expert to guide in terms of SBL. The purpose of this team is to design the SBL program and then monitor its progress and effectiveness after the implementation. Also, this team is responsible for continuous monitoring, getting feedback, and then improving the program to comply with the cycle of continuous quality improvement.

**Preceptors and computer programmers:**

A team of CRNs and preceptors is also an integral part of this implementation. Their responsibility is to design the simulations and maintain the equipment necessary for the training.

**Quality assurance:**

A training and development unit in the hospital will be appointed to ensure that all the procedures and SOP, s for the simulation-based training are being followed and complied with.

**Evaluation and performance measurement approach:**

To evaluate the Impact of this research and its implementation, some questionnaires will be developed to measure the Frequency Distribution of Simulation Satisfaction Assessment by nurses using the questions like teaching pedagogies, learnings tools, appropriateness of simulations, content coverage, and satisfaction.

Key performance indicators and their targets will be decided to measure the performance, like the percentage of a pass and failed nurses, and the percentage of course and lab outcome achievement; I will get direct feedback from nurses and indirect feedback from their leaders.

1. **Limitation:**

Limitations in this project may include the availability of different manikins and linking practice with reality and the availability of teaching videos.

1. **Conclusion:**

Simulation-based training has grown in popularity and has become an integral aspect of nursing education. This study transferred nurses' learning through simulation-based training to clinical practice; they improved their self-confidence, skills, clinical judgment, and their grasp of the value of communication and teamwork. Nurses' simulation-based training experiences serve as enduring and conscious learning even after completing clinical practice. The program's structure and integration within nursing education are critical for learning outcomes and how knowledge is transferred to clinical practice.

**Gantt Chart**

**Project Title:** Design and implement simulation-based training for urinary catheterization for the nurses in the hospital and assess the effectiveness of the new teaching pedagogies.

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| **Identify the problem** |  |  |  |  |  |  |  |  |  |
| **Collect data** |  |  |  |  |  |  |  |  |  |
| **Identify the stakeholders** |  |  |  |  |  |  |  |  |  |
| **Present the project to stakeholders** |  |  |  |  |  |  |  |  |  |
| **implementation** |  |  |  |  |  |  |  |  |  |
| **Analyze the impact of the project on the organization** |  |  |  |  |  |  |  |  |  |
|  | **April** | **May** | **June** | **July** | **August** | **Sept** | **October** | **Nov** | **Dec** |

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