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Learning Through Practice: A Journey of Nursing Learners in Medication Administration

Prof. Ms. Mari Elaine Pablo Lorica[1], Zhiela Marie E. Abiva[2], Sabina L. Parinas[3]

[1]Assistant Professor, Nursing, College of Health Sciences, Mariano Marcos State University

Abstract

Background: Simulation-based learning is a critical component of nursing education, particularly in medication administration. It pictures the real-world scenario providing a controlled environment where learners can enhance their medication administration skills and build confidence before their actual clinical practice. However, challenges continue in its alignment with actual hospital set-ups to ensure that different degrees of simulation fidelity which are the low-, medium- and high-fidelity, effectively prepare learners in real patient care.

Objective: This study explored the lived experiences of nursing learners as to medication administration both in simulation and clinical practice.

Methods: A qualitative phenomenological approach was utilized, with face-to-face interviews among Level II, III, and IV nursing learners of Mariano Marcos State University. A purposive sampling technique was employed to determine the 16 participants using data saturation. Colaizzi's method guided the data analysis. Lincoln and Guba's trustworthiness ensured the rigor of the study.

Findings: Key themes emerged, including Connecting the Gap Between Simulation and Clinical Practice, Limitations in the Nursing Arts Laboratory as their simulation area, Stress and Anxiety in Medication Administration, Safe Medication Adherence and Aligning Simulation Scenarios with Real-World Clinical Practice

Participants reported that scripted simulations did not fully prepare them for the complexities of real patient care, emphasizing the need for more contextually relevant and low- medium- and high-fidelity simulations.

Keywords: Nursing education, simulation-based learning, medication administration, clinical practice, nursing students, low-fidelity simulation, medium-fidelity simulation, high-fidelity simulation

INTRODUCTION

Medication administration errors remain a significant concern in healthcare, contributing to patient morbidity and mortality and posing substantial risks to patient safety worldwide. According to Donaldson et al. (2017), unsafe medication practices not only result in adverse patient outcomes but also impose considerable financial burdens on healthcare systems. Addressing this persistent challenge necessitates a strong emphasis on educational and integrative strategies in nursing education, which play a crucial role in fostering safe medication administration practices (Santana et al., 2020). As future healthcare providers, nursing students must be equipped with the necessary knowledge, skills, and confidence to administer

medications safely, necessitating the integration of innovative educational methodologies within nursing curricula.

The World Health Organization (WHO) Patient Safety Curriculum Guide highlights the responsibility of nursing schools in instilling patient safety principles in future healthcare professionals (La Cerra et al., 2019). Among various teaching strategies, simulation-based learning (SBL) has been widely recognized as an effective tool for clinical training in nursing education. Simulation enables learners to engage in active, guided learning experiences that replicate real-world clinical scenarios in a controlled, risk-free environment, allowing for the development of essential skills and decision-making competencies. The effectiveness of simulation, however, is largely dependent on the level of fidelity incorporated within its design, with increasing fidelity fostering greater realism and immersion in clinical experiences (Presado et al., 2018).

Research supports the efficacy of SBL in preparing nursing students for clinical practice. Lee and Quinn (2019) assert that SBL not only enhances fundamental nursing skills but also alleviates anxiety and stress during clinical placements, thereby fostering confidence and competence among learners. Similarly, Unver et al. (2018) emphasize the positive impact of hybrid simulation experiences, which integrate varying levels of fidelity throughout the nursing curriculum, yielding favorable student outcomes as evidenced in simulation evaluations. By bridging the gap between theoretical learning and clinical practice, simulation-based training enhances nursing students' readiness for real-world patient care.

This study employed a phenomenological approach to explore nursing learners' experiences with medication administration in both simulation and clinical environments. Specifically, it sought to provide an in-depth understanding of their learning experiences during simulation-based medication administration and their subsequent experiences in actual clinical settings. The insights generated from this study are expected to inform nursing faculty and curriculum developers in enhancing Related Learning Experiences (RLE) to optimize the transition from simulated training to real-world clinical practice.

Objectives of the Study

The overarching goal of this study was to enhance the delivery of RLE by developing a simulation-based medication administration protocol that progressively integrates low, medium, and high-fidelity simulations. This protocol aimed to foster clinical competence, confidence, and satisfaction among nursing learners. Specifically, the study sought to:

a) Explore nursing learners' experiences with simulation-based medication administration.

b) Investigate nursing learners' actual experiences with medication administration in the clinical area.

By examining these experiences, the study aimed to generate evidence-based recommendations for improving nursing education, ensuring that students are adequately prepared to deliver safe and effective medication administration in clinical practice.

METHODS

This study employed a qualitative phenomenological approach to explore and understand nursing learners' experiences with medication administration in both simulation and clinical settings. The design was chosen to capture the essence of participants' shared experiences, providing insights into their learning journeys within these environments. A purposive sampling technique was used to recruit nursing students who met the inclusion criteria. Participants were second-, third-, and fourth-year nursing students from the College of Health Sciences at Mariano Marcos State University, Batac, Ilocos Norte. Data collection commenced upon obtaining ethical clearance from the university's research ethics review committee.

Semi-structured face-to-face interviews were conducted with nursing learners who had already undergone simulation-based learning and clinical practice. The interviews took place in a quiet room at the Nursing Arts Laboratory of Mariano Marcos State University and were audio-recorded with participants' consent to ensure accuracy. Data saturation was reached with 16 participants.

Colaizzi's method guided the data analysis process. Interview transcriptions were systematically reviewed through multiple readings to identify significant statements, cluster themes, develop exhaustive descriptions, and validate findings. Participant validation was conducted to confirm the accuracy of the interpreted data. To enhance the trustworthiness of the data, the study adhered to Lincoln and Guba's criteria. Credibility was established by allowing participants to review and confirm their statements through transcript summaries provided immediately after the interviews, ensuring the accuracy of their responses. Transferability was maintained by incorporating direct quotes from participants to illustrate key themes, offering a rich and contextual understanding of their experiences. Dependability was ensured through meticulous documentation of data collection, coding, and analysis processes, with three research experts from the university independently reviewing and validating the findings to confirm the accuracy of participants' narratives. Confirmability was achieved by having independent experts review the coding and generated themes, minimizing researcher bias and ensuring objectivity in the interpretation of data. These rigorous measures strengthened the authenticity and reliability of the study, reinforcing the credibility of its findings. These rigorous measures ensured that the findings authentically reflected the nursing learners' lived experiences, providing meaningful insights for enhancing Related Learning Experience (RLE) in nursing education.

Ethical principles were upheld throughout the study. Participants received detailed information about the study's purpose, procedures, and their rights, including confidentiality and voluntary participation, through an informed consent process. Pseudonyms were used to maintain anonymity, and participants were assured of their right to withdraw from the study at any time without repercussions. A safe and supportive interview environment was fostered, with referrals to counseling services available if needed. Collected data were securely stored in password-protected files, accessible only to the research team, and scheduled for deletion two years after study completion.

RESULTS

Study Themes

Sixteen (16) nursing learners participated in this study (Table 1). The face-to-face interviews which were conducted analyzed themes that described the experiences of the participants in administering medication. It has five major themes and subthemes which represented participants' experiences on simulation-based activities and in a real-world scenario done in clinical areas (Figure 1).

Table 1. Sample Characteristics

Characteristics		**Number (%)**
Sex	Female	10 (62.5)
	Male	6 (37.5)
Year Level	II	6 (37.5)
	III	6 (37.5)
	IV	4 (25)

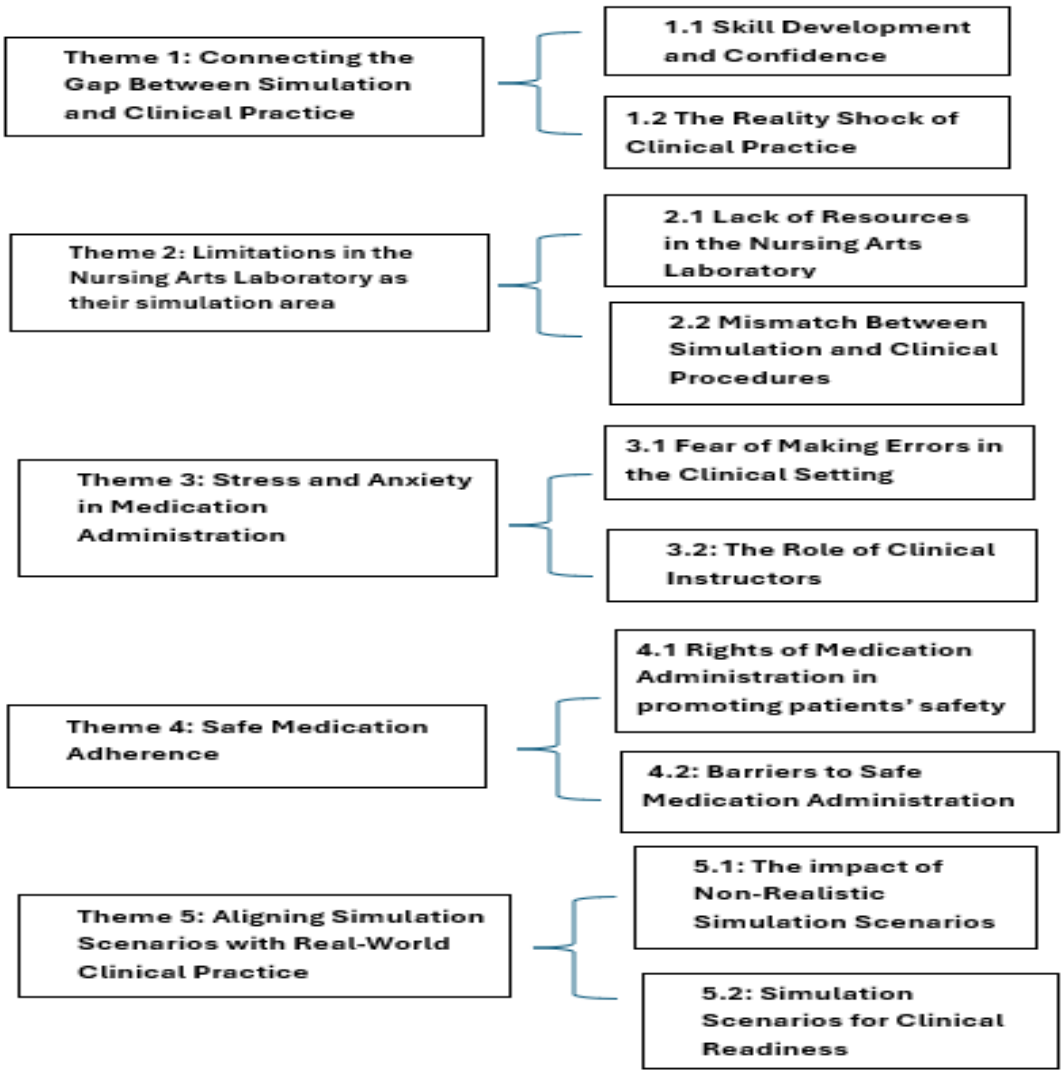

Figure 1. Study Themes & Subthemes

Theme 1: Connecting the Gap Between Simulation and Clinical Practice

A considered critical phase in nursing education is the transition from simulation learnings to the actual clinical practice. Simulation laboratories in schools such as the nursing arts laboratory continues to provide structured environment for nursing learners, areas where learners can practice essential skills as their medication administration skills. However, realities in the clinical areas show complexities. These may challenge learners' confidence and competence in their skills.

Subtheme 1.1: Skill Development and Confidence

Simulation regardless of its level of fidelity, if practiced accordingly enhances learners' competence and confidence. The repeated yet controlled practice in the NAL, may enhance learners' familiarity on their skills pertaining to medication preparation and administration. This could reduce anxiety about making errors when learners will do the actual practice in the hospital.

"Practicing in the NAL helped me memorize the steps. I felt prepared when I started handling real medication administration to patients in the hospital." (P3)

"Return demonstration in the nursing arts laboratory made me more confident in following the 10 Rights of Medication Administration." (P12)

Subtheme 1.2: The Reality Shock of Clinical Practice

Students significantly encountering challenges in handling patients in clinical areas. Hospital scenarios are dynamic and even unpredictable. Some patients may refuse to take medications or display behaviors that make the process even more difficult, unlike the controlled environment which is seen at the simulation area. The fast-paced nature of clinical areas may even avert students to religiously follow the steps they have done during return demonstrations.

"At the NAL, everything is controlled, but in the hospital, patients react, refuse medications, or ask questions we can't always answer." (P6)

"You cannot choose your patient in the hospital; they have different behaviors as to acceptance of the procedure, like children who always refuse to take medication." (P7)

"I was surprised at how busy the ward was. It was an unforgettable experience during my first exposure, there was no time to double-check everything like we did in the return demonstration." (P15)

Theme 2: Limitations in the Nursing Arts Laboratory as their simulation area

In nursing education, simulation-based learning serves as a fundamental component which allows learners to practice and enhance their skills. It is confined in a controlled setting and its limitations can impact the effectiveness of their skills in doing a certain procedure like medication administration. The reality that nursing learners face problems such as constraints in resources needed which can merely affect their confidence and preparedness in the actual practice.

Subtheme 2.1: Lack of Resources in the Nursing Arts Laboratory

The insufficiency of resources needed in the simulation area is a primary concern raised by the learners. They often use substitute materials and outdated equipment which hinders learners from fully replicating the real clinical procedures. This leads to feelings of pressure and uncertainty during their actual exposure in the hospital where actual materials and equipment are being used.

"In the clinical area, we use real IV or IM medications, but at the NAL, we only use the available resources. We always assume—I was tense that time." (P8)

"Some materials at NAL are outdated, and we don't always have the same equipment as in the hospital." (P14)

Subtheme 2.2: Mismatch Between Simulation and Clinical Procedures

Discrepancies between simulation-based procedures and the actual practices in the clinical area have been a significant challenge in nursing education. The variations in the clinical workflows, and even in patient responses from the procedures being done to them, create a gap in their preparation for their duty.

"In school, we were only taught to administer medications intramuscularly (IM), but in the hospital's delivery room, we were expected to prepare IV medications instead." (P5)

"We learned one procedure in simulation, but in the actual hospital setting, the workflow was different. We were tasked to administer medication in different routes." (P11)

"In school, we just demonstrated the procedure, but in the hospital, we had to do drug calculations based on the doctor's order before administering the medication." (P1)

Theme 3: Stress and Anxiety in Medication Administration

Medication administration carries a significant amount of responsibility. For nursing learners, the fear of making errors or mistakes when handling medications for real patients in the clinical area can lead to heightened stress and even anxiety.

Subtheme 3.1: Fear of Making Errors in the Clinical Setting

The pressure of ensuring patient safety can be overwhelming for nursing learners, with fear of making mistakes serving as a major barrier to their confidence and competence.

"I was terrified of making a mistake because I knew the consequences could be serious." (P2)

"My hands were shaking; the first time I administered medication to a real patient." (P9)

Subtheme 3.2: The Role of Clinical Instructors

The mentorship and encouragement of the clinical instructors help alleviate nursing learners' stress and anxiety during their actual practice of administering medications to real patients. Their presence plays a vital role in ensuring safety and quality patient care. Thus, it helps build confidence to the learners.

"My CI was very patient and guided me through every step, which made me feel more secure." (P8)

"Some nurses expected us to know everything already, which was overwhelming." (P14)

"My CI guides me all throughout the procedure, and it lessens my feelings of anxiety." (P16)

Theme 4: Safe Medication Adherence

There are challenges brought by the transition to real clinical setting that impact medication safety adherence.

Subtheme 4.1: 10 Rights of Medication Administration in promoting patients' safety

In a controlled environment in the laboratory, nursing learners are being taught to be guided with the 10 rights of medication administration. In the actual area, due to time constraints and clinical pressures, it made adherence difficult to do. However, learners manage to recognize the importance of patient safety, thus to maintain medication administration standards.

"We were taught to be guided with the 10 Rights, and I tried to follow them exactly in the hospital in any case of medication administration." (P5)

"With the toxic environment in the hospital, I always double-check the doctor's order before giving medications" (P11)

Subtheme 4.2: Barriers to Safe Medication Administration

There are significant barriers to safe medication administration practice which highlight the need for an improved clinical preparation.

"There are different forms of medication labels according to manufacturers, and I had to confirm with the CI and staff about it." (P15)

"Sometimes we were told to hurry even in a very busy ward. I found it harder to follow every safety step." (P7)

Theme 5: Aligning Simulation Scenarios with Real-World Clinical Practice

It became a major challenge to nursing learners when simulation scenarios do not fully reflect the complexities of actual healthcare environments.

Subtheme 5.1: The impact of Non-Realistic Simulation Scenarios

Not contextualized simulation scenarios can impact their ability to practice confidently in the clinical area.

"At the NAL, we follow a step-by-step process, but when I got to the hospital, I realized that actual workflows are different, I was overwhelmed" (P4)

"During our duty in the delivery room, we were expected to prepare and administer IV medications, but in school, we only practiced IM injections for obstetric patients. I was not confident though" (P8)

Subtheme 5.2: Simulation Scenarios for Clinical Readiness

There is a need to develop realistic scenarios can prepare the students to the unpredictability of the actual practice. Hence, they gain confidence in handling tasks effectively.

"If the simulation included a real-life hospital scenario,like a nurse in the delivery room preparing an IV medication, it would have made the actual duty easier." (P16)

"It would be better if our simulations were designed exactly like what happens in the hospital, including the real medications we prepare." (P13)

DISCUSSION

This part is the discussion of the findings of the study which explored the experiences of nursing learners in medication administration both in simulation and in the actual clinical setting.

Connecting the Gap Between Simulation and Clinical Practice

One of the central themes in this study highlighted the experiences of the learners in the transition from simulation to the actual clinical practice. Medication administration simulations done at the Nursing Arts Laboratory plays a crucial role in preparing students in their task on proper medication administration, by providing structured yet contextualized environment to practice and enhance skills. Different levels of fidelity in doing simulation offer a controlled space where learners can practice skills in medication administration applying the 10 Rights of Medication Administration. This designed environment advances competence and confidence among learners. This emphasizes the role of practice in skill mastery aligning with Bandura's self-efficacy theory.

However, it is true that actual clinical setting is more dynamic and most of the time unpredictable due to large number of patients with different cases and varied behaviors. Real-world clinical environments bring unique challenges, such as patient behavior, time constraints, and unpredictable clinical situations, which are difficult to replicate in simulation laboratories (Alrashidi et al., 2025). Students struggle as they try to apply what they learned in simulation to real patients. This supports Benner's Novice-to-Expert Model, where novices struggle to adapt to unpredictable environments (Benner, 1984). Clinical simulation, as emphasized by is an innovative teaching strategy that enhances medication safety by minimizing potential errors and improving competence (Shahzeydi et al., 2024). Integrating simulation-based learning into nursing education ensures that students develop both technical expertise and the confidence needed for real-world healthcare settings.

Limitations in the Nursing Arts Laboratory as their simulation area

The study found limitations in the resources available at the NAL. Learners reported the use of outdated and/or substitute materials and/or equipment. These resource limitations can compromise learners' confidence and readiness to handle tasks in actual clinical settings (Guerrero et al., 2024). Similar study highlighted the challenges posed by resource constraints, which can negatively affect the effectiveness of simulation-based training (Gable et al., 2019). Another study highlighted several barriers to effective simulation implementation, including inadequate institutional resources and insufficient faculty training (Benchadlia et al. 2023) This mismatch procedures creates confusion for learners. They face unexpected challenges with the workflows that do not align with what was observed in their return demonstration. These issues within simulation laboratory can greatly affect the quality of nursing education.

Stress and Anxiety in Medication Administration

Nursing learners experience significant stress and anxiety applying the concepts learned during simulations to their actual practice in hospitals. Many participants experienced shaking hands and

panicked, afraid of making errors during their first exposure to medication administration in the hospital. Hence, the presence of clinical instructors plays a vital role lessens stress and anxiety of students. The mentorship and support offered by experienced clinical instructors provide students with the guidance they need to feel more secure and confident, allowing them to navigate the stress and complexity of real-world clinical practice (Yildirim & Dalcali, 2020).

Medication Safety and its Impact in the Clinical Environment

Adherence to medication safety protocols, guided with the 10 Rights of Medication Administration, is a critical aspect of nursing practice. The clinical setting presents challenges that make it difficult for learners to consistently follow safety protocols in administering medication to patients. There are factors including time constraints, workload, and patient behaviors that can compromise the ability of nursing learners to adhere to medication safety standards. Identifying and addressing these barriers is crucial for improving patient safety and ensuring that learners are adequately prepared to handle actual clinical task as to medication administration (Stoic et al., 2022). The study found that students struggled to follow safety protocols due to busy hospital environments and lack of clarity in medication labeling. These findings stress the importance of institutional interventions to improve medication safety in clinical settings (Falsis et al., 2011).

Aligning Simulation Scenarios with Real-World Clinical Practice

The final theme of the study emphasized the need for simulation scenarios to closely mirror realistic clinical settings. This study reflected that simulation scenarios are too scripted but failed to reflect the dynamic and unpredictable nature of actual clinical environments. This aligns with findings from other studies, which emphasized that simulations that do not align with real clinical practice can create a disconnect for learners, hindering their preparedness for patient care tasks (Guerrero et al., 2024). Similar study highlighted how nursing learners expressed the need for more realistic simulations, such as incorporating real medications, actual patient interactions, and clinical workflows, to better prepare them for the complexities of real clinical practice (Pasay-An et al., 2025). Research signifies the importance of aligning scenarios used during simulation with the dynamic and unpredictable nature of the actual clinical settings. This is to enhance nursing students' preparedness. Overly scripted simulations can create a disconnect for learners, hindering their readiness for patient care tasks. The level of **fidelity** in simulation from low to high plays a major role to achieve realism. High-fidelity simulations, which closely mimic real-life scenarios, have been shown to improve clinical reasoning and patient safety (Mc Faden, 2019). Low and medium fidelity simulations are effective when designed thoughtfully, as they allow for flexibility and can be tailored to specific learning objectives. Regardless of fidelity level, simulations incorporate elements that reflect the complexities and unpredictability of actual clinical settings (Carey, 2021).

Summary and conclusion

Summary

The role of simulation in the preparation of nursing learners to their clinical practice as to medication administration highlighted in the findings. A clinical simulation is a novel teaching method applied to reduce factors threatening medication safety in the education of nursing learners. Simulation based learning offers a structured environment where students can practice and enhance essential their skills in medication administration. A notable challenge from the findings of this study is the switch from simulation to real-world practice. There are identified barriers such as constraints or limitations of

resources in the simulation area which results in incomplete skill acquisition, incongruities of simulated scenarios to the actual medication administration procedures, and the learners' feelings of stress and anxiety towards medication administration in the actual setting. These barriers significantly impact learners' confidence and preparedness. Moreover, results of this study emphasized the fundamental role of clinical instructors in supporting nursing students as they navigate those challenges in medication administration. Clinical instructors assist learners in the toxic hospital environment which lessens their feelings of anxiety. Clinical instructors through mentorship, assist learners in the refinement of medication administration skills. Through their guidance, they help learners build their confidence needed for real-world patient care.

Moreover, this study signified the importance and the need of designing simulation scenarios that closely mirror actual clinical settings with a more realistic and contextually relevant simulations which can better equip students for the complexities of patient care.

Conclusion

As the crucial role of simulation-based learning in medication administration has been signified in this study, integration of more advanced technologies and innovations to mirror the real-world scenario is necessary. Integrating advanced technologies can further improve preparedness. To enhance simulation-based learning, nursing education must address challenges in the implementation including the alignment of simulations to the actual medication administration practices in the hospital. The utilization of the different degree of fidelity in simulation - the low, medium, and high - ensures a progressive learning experience for the learners, advancing their knowledge and skills. Refinement of simulation process to the proper integration into the nursing curriculum, may lead to the advancement of nursing program thereby equipping learners to provide a safe, competent, and compassionate care to their patients.

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