

45th Biennial Convention (16-20 November 2019)

Reducing Medication Errors in the Clinical Setting Using Simulation Scenarios With Embedded Errors and Distractions

Deborah A. Eremita, PhD

School of Nursing, University of Maine, Orono, ME, USA

Administration of medications is a vital aspect of nursing practice and a critical component of nursing education curricula. The use of prescription medications has increased in the United States with nearly one-third of adults taking five or more medications (Agency for Healthcare Research and Quality, 2018). The increased number of prescribed medications has led to an increase in the number of adverse drug events and medication errors. The average hospitalized patient experiences at least one medication error each day (de Silva & Krishnamurthy, 2016). Although side-effects and adverse reactions to medicines are an accepted risk of treatment, those caused by non-adherence to protocol, mistakes, or complacency are not acceptable and can be avoided (Harris, Pittiglio, Newton, & Moore, 2014). Best practices for medication administration include teaching medication calculations, proper techniques in administering medications following protocols and guidelines, and decreasing interruptions and distractions during the medication administration process (Blignaut, Coetzee, Klopper, & Ellis, 2017; Bowling, 2015; Jarvill, Jenkind, Akman, Astroth, Pohl, & Jacobs, 2018).

Nursing students require instruction and the opportunity to apply knowledge regarding medication administration procedures to keep patients safe and deliver quality nursing care (Konieczny, 2016). Prior to entering the clinical setting, students are required to provide evidence of competency in specific nursing skills such as proper technique for administering medications (Ferguson, Delaney, & Hardy, 2014). Preparing nursing students to deliver safe, quality care during medication administration requires education that addresses the complexity of the clinical setting. The use of simulation in nursing education provides a realistic environment in which students can apply best practices and concepts to medication administration. Factors including distractions or interruptions in the medication administration process, are associated with deviations from safe practice for medication administration and may lead to medication errors. Most interruptions come from non-stop calling from patients, answering telephone calls, and conversations with other nurses (Thomas, McIntosh & Allen, 2014). Duruk et al. (2016) conducted a study in which 122 observations were made of medication administration by nurses. The authors found there were interruptions in the preparation of medications in 95.9% of the observations. Safe practice protocols and regulations are necessary to uphold patient safety during medication administration and deviation may lead to medication errors (Blignaut et al., 2017). Treiber and Jones (2018) conducted a survey of recent nursing graduates, the new graduates stated they needed more experience dealing with distractions in the clinical setting. Thomas et al. (2014), suggested that exposing nursing students to simulation scenarios containing medication distractions will help the students to become aware of the many distractions they may encounter and also learn how to manage these distractions.

Nursing faculty may utilize simulation as an educational strategy to teach safe medication administration practices and promote patient safety. While research has

been done to show that simulation is an effective teaching strategy to enhance knowledge and comfort with medication administration, there is a lack of research available to see if knowledge gained from simulation transfers to the clinical setting. Many studies have been done with the use of simulation as a teaching intervention among undergraduate nursing students and medication administration in the laboratory setting but there have not been many done to determine if the knowledge or competency is transferred to the clinical setting (Jarvill et al., 2018). Mariani, Ross, Paparella and Allen (2017), suggest that studies in the clinical setting could provide valuable information about medication safety in health care and academic environments.

The purpose of this pilot study was to determine the effect of using simulation scenarios with embedded medication errors and distractions as a teaching strategy to reduce the number of medication errors committed by nursing students in the clinical setting. Junior level nursing students were randomly divided into a control group and an intervention group. Both groups attended scheduled simulations involving medication administration as well as didactic instruction. The intervention group also participated in two additional simulation scenarios with embedded medication errors and distractions. Data was collected on each medication administered by the junior level nursing students in the clinical setting over a 12 week period regarding the use of the six rights of medication administration. The intervention group and the control group each administered over 500 medications throughout the clinical rotation. There was a statistically significant difference noted between the intervention group and the control group with the number of documented medication errors and potential errors. The findings suggest that simulation education may contribute to a reduction of medication errors in the clinical setting. Nursing faculty can use innovative teaching strategies such as simulation to help students develop skills in identifying possible actions leading to medication errors and therefore prevent errors from occurring.

Title:

Reducing Medication Errors in the Clinical Setting Using Simulation Scenarios With Embedded Errors and Distractions

Keywords:

Medication Errors, Medication Safety and Simulation

References:

Agency for Healthcare Research and Quality. (2018). *Medication Errors and Adverse Drug Events*. Retrieved from <https://psnet.ahrq.gov/primers/primer/23/medication-errors>

Blignaut, A., Coetzee, S., Klopper, H. & Ellis, S. (2017). Medication administration errors and related deviations from safe practice: An observational study. *Journal of Clinical Nursing*, 26, 3610-3623. doi: 10.1111/jocn.13732

Bowling, A. (2015). The effect of simulation on skill performance: A need for change in pediatric nursing education. *Journal of Pediatric Nursing*, 30(3), 439-446. <https://doi.org/10.1016/j.pedn.2014.12.010>

de Silva, B. & Krishnamurthy, M. (2016). The alarming reality of medication error: A patient case and review of Pennsylvania and national data. *Journal of Community Hospital Internal Medicine Perspectives*, 6(4), 1-6. doi: 10.3402/jcimp.v6.31758

Duruk, N., Zencir, G., & Eser, I. (2016). Interruption of the medication preparation process and an examination of factors causing interruptions. *Journal of Nursing Management*, 24, 376-383. doi: 10.1111/jonm.12331

Ferguson, A., Delaney, B., & Hardy, G. (2014). Teaching medication administration through innovative simulation. *Teaching and Learning in Nursing*, 9(2), 64-68.

Harris, M. A., Pittiglio, L., Newton, S. E., & Moore, G. (2014). Using simulation to improve the medication administration skills of undergraduate nursing students. *Nursing Education Perspectives*, 35(1), 26-29.

Jarvill, M., Jenkind, S., Akman, O., Astroth, K. S., Pohl, C. & Jacobs, P. (2018). Effect of simulation on nursing students' medication administration competence. *Clinical Simulation in Nursing*, 14(1), 3-7.

Konieczny, L. (2016). Using high-fidelity simulation to increase nursing student knowledge in medication administration. *Teaching and Learning in Nursing*, 11(4), 199-203.

Mariani, B., Ross, J. G., Paparella, S., & Allen, L. R. (2017). Medication safety simulation to assess student knowledge and competence. *Clinical Simulation in Nursing*, 13(5), 210-216.

Thomas, C., McIntosh, C. & Allen, R. (2014). Creating a distraction simulation for safe medication administration. *Clinical Simulation in Nursing*, 10, 406-411.

Treiber, L. & Jones, J., (2018). After the medication error: Recent nursing graduates' reflections on adequacy of education. *Journal of Nursing Education*, 57(5), 275-280.

Abstract Summary:

Nurses play a vital role in the administration of medications. Educating nursing students on proper techniques of medication administration is essential. The use of simulation scenarios with

embedded medication errors and distractions may contribute to a reduction of medication errors committed by nursing students in the clinical setting.

Content Outline:

Content Outline

- I. Introduction
 - A. Medication Errors
 - B. Simulation as a Teaching Strategy
- II. Body
 - A. Medication Administration Education
 - 1. Best practices
 - a) Rights of medication administration
 - b) Medication knowledge and dosage calculations
 - B. Use of Simulation
 - 1. Development of Medication Administration Scenarios
 - a) Embedded medication errors
 - b) Distractions and interruptions
 - 2. Simulation Sessions
 - a) Improved knowledge
 - b) Enhanced critical thinking
 - C. Medication Administration in the Clinical Setting
 - 1. Competency of Medication Administration
 - a) Use of Rights of Medication Administration
 - b) Distribution of medication errors and potential errors
 - III. Conclusion
 - A. Safe Medication Administration
 - B. Transfer of knowledge from simulation to clinical setting

First Primary Presenting Author

Primary Presenting Author

Deborah A. Eremita, PhD
University of Maine
School of Nursing
Assistant Professor, Undergraduate Program Coordinator
Orono ME
USA

Author Summary: Deborah Eremita is an assistant professor and undergraduate program coordinator of the University of Maine, School of Nursing. Her areas of teaching expertise include medical-surgical nursing and dosage calculations. She completed an Interdisciplinary PhD in nursing and education at the University of Maine. Her areas of research interest include, nursing education, simulation, and patient safety.

