

INPLASY PROTOCOL

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Conflicts of interest:
None declared.

Impact of Simulation on Medication Errors Among Nursing Undergraduates: meta-analysis

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Review question / Objective: What is the impact of simulation on medication errors among nursing undergraduates? **PICO** **Participants:** Undegraduate nursing students. **Intervention:** Simulation-based Learning, simulation as an educational method that replaces or amplifies experiences. **Controls :** Both no treatment (usual learning) and active (Low Fidelity simulation) control conditions were considered. **Outcome:** Primary outcome medication knowledge and competency performance.

Condition being studied: Simulation is an educational method that mimics reality and is used to replace or support clinical practice and enhance skills for nursing students to master and manage medication administration.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 07 February 2023 and was last updated on 07 February 2023 (registration number INPLASY202320029).

INTRODUCTION

Review question / Objective: What is the impact of simulation on medication errors among nursing undergraduates? **PICO** **Participants:** Undegraduate nursing students. **Intervention:** Simulation-based Learning, simulation as an educational method that replaces or amplifies experiences. **Controls :** Both no treatment

(usual learning) and active (Low Fidelity simulation) control conditions were considered. **Outcome:** Primary outcome medication knowledge and competency performance.

Rationale: The use of simulation in nursing education has been implemented in many scopes, such as competency, confidence, and perception. Yet, according to current

evidence, medication errors committed by students and staff nurses are rising, and the studies in this regard are scant. Thus, this review is being undertaken to investigate the impact of using simulation in nursing education, specifically to prevent medication errors.

Condition being studied: Simulation is an educational method that mimics reality and is used to replace or support clinical practice and enhance skills for nursing students to master and manage medication administration.

METHODS

Search strategy: Databases included are Cochrane Library CENTRAL, MEDLINE, CINAHL, PubMed, ERIC, and ScienceDirect.

Terms included are:

Simulation, Simul

Nurse students or nursing students or nurse students or undergraduate nurse

Medication Error

Medication Administration Error

Drug Administration Error

Drug Errors.

Participant or population: Undergraduate nursing students who didn't graduate and at any level of nursing college.

Intervention: Simulation-based Learning, simulation as an educational method that replace or amplify experiences, specifically simulation interventions implemented for medication administration errors in nursing education. Interventions were excluded if simulation intervention was not included. Simulation-based Learning, simulation as an educational method that replace or amplify experiences, specifically simulation interventions implemented for medication administration errors. Interventions were excluded if simulation intervention was not included.

Comparator: Both no treatment (usual learning) and active (Low Fidelity Simulation) control conditions were considered.

Study designs to be included: Randomized Controlled Trial will be exclusively included in this meta-analysis. The choice of RCT is to yield the best result of evidence.

Eligibility criteria: RCT Studies, Nursing undergraduates, and Simulation as an intervention/educational strategy.

Information sources: The data will be extracted from electronic databases. The data source will be extracted from the following databases: Cochrane Library CENTRAL, MEDLINE, CINAHL, PubMed, ERIC, and ScienceDirect.

Main outcome(s): The primary outcome is: To determine the impact of using simulation in improving medication competence in nursing undergraduate students.

Additional outcome(s): The Secondary outcome to determine the impact of using simulation in improving nursing undergraduates knowledge in regard to medication administration.

Quality assessment / Risk of bias analysis: Three authors will conduct the quality assessment and risk of bias to independently assess the quality of studies. Quality assessment will be implemented using JBI Checklist for meta-analysis.

Strategy of data synthesis: A random model will be used to synthesize data. The effect size will be calculated using (Mean and Standard Deviation) since variables are continuous.

Subgroup analysis: Not Applicable.

Sensitivity analysis: We will conduct a sensitivity analysis to examine the impact of study quality on the results of our meta-analysis. To evaluate the impact of study quality, we'll use a risk bias tool to assess the quality of each study. We will repeat the analysis using different inclusion criteria and use a random-effects model for all sensitivity analyses.

Language restriction: only English Language.

Country(ies) involved: Saudi Arabia.

Keywords: Nursing, Nursing-students, Simulation, Medication-Administration, Medication-error.

Contributions of each author:

Author 1 - Maha Alzahrani - Author 1 is the Corresponding author will be filling protocol and drafting the manuscript as well as applying quality assessment for chosen studies.

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Author 2 - Ahlam Almaabadi - Author 2 will be contributing in choosing studies and assessing quality.

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Author 3 - Dalia Sunari - Author 3 will be participating in Applying statistical analysis using Rev-Man, choosing and assessing the quality of articles. also, drafting the manuscript.

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