Effects of Pattern Recognition-Based Simulation Scenarios on Nursing Students’ Symptom Recognition of Myocardial Infarction, Critical Thinking, Clinical Decision-Making, and Clinical Judgment

Susan A. Walsh
Georgia State University – Dissertation Chair Dr. Cecelia Gatson Grindel, committee Dr. B. Woodring and Dr. L. Schumacher, Dr. W. T. Maddox, consultant
Fundied by the American Association of Critical Care Nurses and Philips Medical Systems

Significance and Background
- Neary 1 million annual myocardial infarctions (MI) occur in the U.S. with 10% of patients hospitalized with MI having unrecognized ischemic symptoms.
- Nurses may not recognize MI, especially if inexperienced.
- Diagnostic inaccuracy may lead to poor patient outcomes.
- Experience aids in diagnostic accuracy through pattern recognition, the foundation of critical thinking, which informs clinical decision-making and nursing judgment.

Conceptional Framework

Methodology

Conclusions and Recommendations

Conclusions:
- Pattern recognition for MI is improved by experiential learning with simulation.
- Clinical decision-making and clinical judgment improve with simulation and debriefing.
- Use of pattern-based simulation with reward-based feedback greatly improves analytic and non-analytic clinical decision-making.
- Heuristic decision-making can be an unintended consequence of simulation.

Recommendations:
- Pattern recognition structured simulation with feedback-based debriefing can be used to teach symptom recognition of MI and improve clinical decision-making and clinical judgment.
- When conducting reiterating simulation MI scenarios, attention should be given to symptom order to prevent development of heuristics.
- Further research should be conducted to assess the contributions of structured simulation and debriefing on pattern recognition and use of scenarios which present overlapping symptoms with MI.

Background
- Nearly 1 million annual myocardial infarctions (MI) occur in the U.S. with 10% of patients hospitalized with MI having unrecognized ischemic symptoms.
- Nurses may not recognize MI, especially if inexperienced.
- Diagnostic inaccuracy may lead to poor patient outcomes.
- Experience aids in diagnostic accuracy through pattern recognition, the foundation of critical thinking, which informs clinical decision-making and nursing judgment.

Significance and Background

Methodology

Conclusions and Recommendations

Conclusions:
- Pattern recognition for MI is improved by experiential learning with simulation.
- Clinical decision-making and clinical judgment improve with simulation and debriefing.
- Use of pattern-based simulation with reward-based feedback greatly improves analytic and non-analytic clinical decision-making.
- Heuristic decision-making can be an unintended consequence of simulation.

Recommendations:
- Pattern recognition structured simulation with feedback-based debriefing can be used to teach symptom recognition of MI and improve clinical decision-making and clinical judgment.
- When conducting reiterating simulation MI scenarios, attention should be given to symptom order to prevent development of heuristics.
- Further research should be conducted to assess the contributions of structured simulation and debriefing on pattern recognition and use of scenarios which present overlapping symptoms with MI.

Purpose
- To test an educational intervention using pattern recognition to develop critical thinking in MI and improve clinical decision-making and clinical judgment in nursing students using high-fidelity simulation.

Design
- A quasi-experimental three group pre-post-test design with triangulation using qualitative data analysis of semi-structured interviews.

Sample

Measures

Wilk Pattern Recognition Tool (WPRT)
- Designed to measure pattern recognition in MI. Two columns listing 5 essential and 14 nonessential symptoms of MI. Higher scores indicate greater pattern recognition in MI ability.

Clinical Decision-Making in Nursing Scale (CDMNS)
- Designed to measure pattern recognition in MI. Two columns listing 5 essential and 14 nonessential symptoms of MI. Higher scores indicate greater pattern recognition in MI ability.

Clinical Judgment

Diagnostic Accuracy
- Accuracy in ability to diagnose MI in simulation. Higher per cent scores indicate diagnostic accuracy.

Diagnostic Efficiency
- Time to diagnosis from first/sat symptom, until diagnosis. Higher scores (time in minutes) indicate faster time to diagnosis.

Clinical Decision-Making in MI
- Semi-structured interviews using ‘Thinking Aloud’ technique. Data treated as qualitative, analyzed within and among groups.

Results

Group 1: Control
- Control; didactic class and pre-test measures with semi-structured interview.

Group 2: Control Simulation
- Control; didactic class and pre-test measures. Simulation with 3 MI ‘typical’ patient scenarios. Standard debriefing. Post-test measures and semi-structured interview.

Group 3: Experiment Simulation
- Experiment; didactic class and pre-test measures. Simulation with 2 MI experimental patient scenarios + 1 scenario with symptoms overlapping MI. Experimental debriefing. Post-test measures and semi-structured interview.

Conclusions and Recommendations

Conclusions:
- Pattern recognition for MI is improved by experiential learning with simulation.
- Clinical decision-making and clinical judgment improve with simulation and debriefing.
- Use of pattern-based simulation with reward-based feedback greatly improves analytic and non-analytic clinical decision-making.
- Heuristic decision-making can be an unintended consequence of simulation.

Recommendations:
- Pattern recognition structured simulation with feedback-based debriefing can be used to teach symptom recognition of MI and improve clinical decision-making and clinical judgment.
- When conducting reiterating simulation MI scenarios, attention should be given to symptom order to prevent development of heuristics.
- Further research should be conducted to assess the contributions of structured simulation and debriefing on pattern recognition and use of scenarios which present overlapping symptoms with MI.

References

American Association of Critical Care Nurses and Philips Medical Systems

Acknowledgements