

## Background

- Sepsis is a noxious host response to infection that can lead to organ dysfunction and hypotensive shock (1)
- Sepsis is the most expensive condition treated in US hospitals costing over \$20 billion every year (2)
- Over 1.5 million Americans are diagnosed with sepsis each year and about 250,000 of these persons die (3)
- The Centers for Disease Control and Prevention (CDC) concluded that 80 percent of sepsis begins outside of the hospital setting and that seven out of every ten patients diagnosed with sepsis recently used healthcare services (4)
- Because there currently are no biomarkers or diagnostic tests to confirm sepsis or available treatment, management relies on early recognition, which has been shown to decrease mortality (1, 3, 5, 6, 7, 8, 9, 10, 11, 12)
- Accordingly primary care providers must increase their awareness and recognition of sepsis to expedite treatment (2)
- Early recognition of sepsis is challenging because it is a complex syndrome which requires more than just knowledge of the illness; it requires clinical judgment (1, 3, 12, 13)
- When knowledge, judgment and skills are applied within a given context, it is termed competence (6)
- Simulation, using mannequins, virtual patients, or live patients to replicate reality in a safe environment, has been shown to increase critical thinking skills in complex disease processes like sepsis (6, 13, 14, 15, 16, 17, 18, 19)

## Problem & Purpose

The problem is that primary care providers often lack knowledge in recognizing the signs and symptoms of sepsis as well as the clinical judgment necessary to detect sepsis in its early stages

**The goal of this project was to determine if simulation, as compared to computer-based learning, was a superior methodology in improving the knowledge and competence of nurse practitioners and students in the early identification of sepsis**

## Simulation

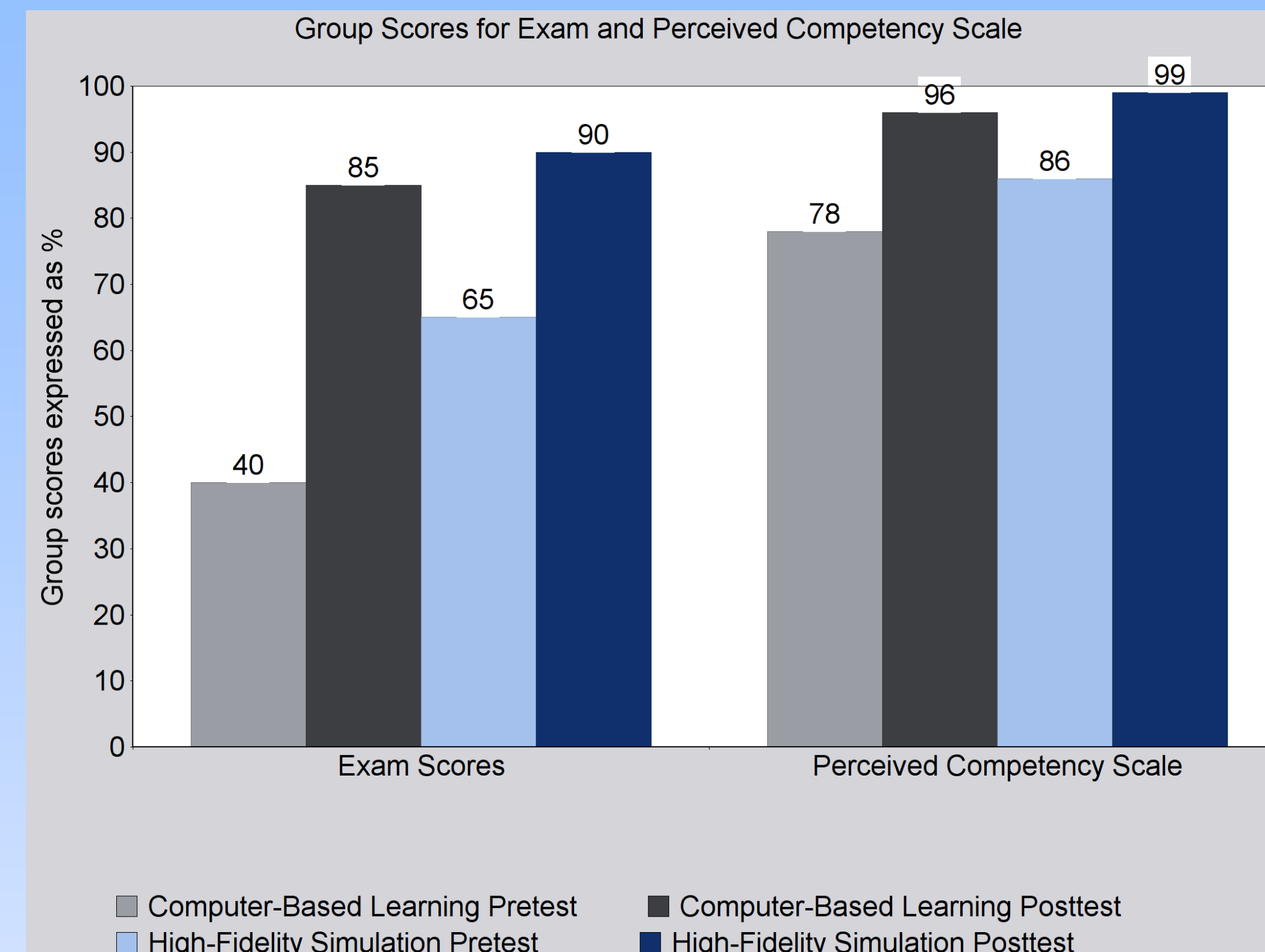


Simulation has not been used extensively as a teaching method in the outpatient setting. However, there is a multitude of data on the benefits of simulation training for sepsis in the inpatient setting, and the concepts may be applicable for providers in primary care. There is a need for further studies on the value of simulation in nurse practitioner providers (17)

## Approach

- This project sought to compare computer-based learning and high-fidelity simulation using Kolb's Learning Theory as the framework (20)
- Four participants were randomized into two groups and asked to complete a Perceived Competency Scale (21) and a 10-question exam on sepsis
- Education on sepsis, including tools to aid in early identification, was followed by participation in a clinical sepsis scenario presented via PowerPoint for the computer-based learning group, or high-fidelity simulation followed by debriefing
- Upon completion of the scenario, the Perceived Competency Scale and the 10-question exam were repeated
- In addition, the high-fidelity simulation group was assessed using a clinical skills checklist created from the simulation objectives. The group completed 15 of the 19 suggested actions

## Results



## High-Fidelity Mannequin



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## Discussion of Findings

While this project lacked statistical significance, simulation was found to be feasible for use in educating nurse practitioners. Additionally, simulation polished the competence of the providers in identifying sepsis.

Facilities should make greater efforts to utilize simulation whenever possible to train their providers in the early identification of sepsis.

**The benefits of using simulation as a teaching methodology is well documented for inpatient providers, and while this project tested high-fidelity simulation in a controlled environment, simulation can be adapted to any healthcare setting and used with any type of provider.**

This aligns with the CDC's national campaign on sepsis and the call for increased awareness.

## Application to Practice

- Following the completion of this project, a modified version was implemented as a quality improvement project in a post-acute care facility
- The goals of the 8-week program were to increase provider communication and improve early recognition of patient decline from sepsis
- All employees in the facility were asked to complete the Perceived Competency Scale (21) at the beginning and end of the 8-week project
- Staff education included a PowerPoint on sepsis and tools for use in improving communication (SBAR) and recognition of early patient decline (STOP and WATCH) (22)
- The project ended with a live patient simulation involving maintenance, housekeeping, physical therapy, nurses and a nurse practitioner
- The team's new knowledge was validated later that week when they applied their new skills and tools and sought early treatment for a resident that was subsequently diagnosed with sepsis

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