

Ultrasound-Guided Regional Anesthesia Workshop for Registered Nurse Student Anesthetists

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Purpose

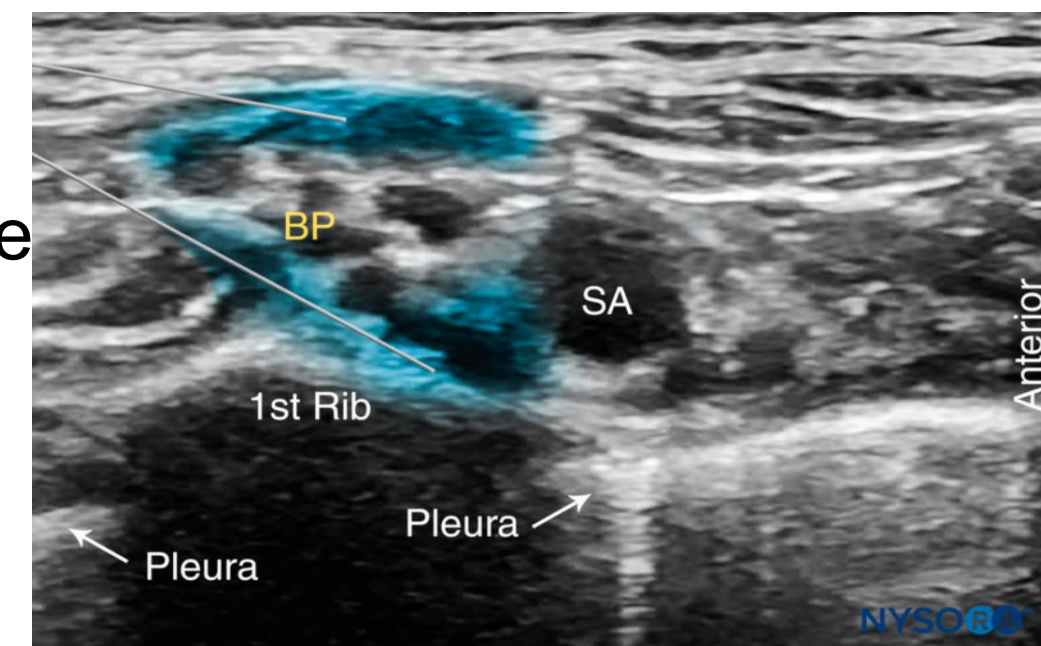
This project aims to increase nurse anesthesia student knowledge, competency, and confidence in ultrasound-guided regional anesthesia (UGRA) through an educational review session.

Background

UGRA is a practice modality that is gaining popularity. It involves an injection of local anesthetic near bundles of nerves to decrease pain intraoperatively and postoperatively.

UGRA is a complex skill requiring:

- Anatomic and pharmacologic knowledge
- US image acquisition and interpretation
- Simulation-based education
- Motor skill development
- Direct visualization of needle to target



Pain
PONV
Opioids

**UGRA
Benefits**

Patient
Satisfaction

PICOT

In nurse anesthesia students, how does ultrasound-guided peripheral nerve block education increase student knowledge, perceived confidence, and procedural skill after one education review session?

Needs Analysis

- Education for UGRA is not standardized
- Competency in UGRA is difficult to attain and teach
- Risk of providers performing skills in which they are not proficient
- 4–12-month delay in student nurse anesthetists' knowledge acquisition and skill implementation

Literature Review

- UGRA is superior to landmark-guided regional anesthesia and general anesthesia
- Underutilized technique due to lack of skill and confidence
- 76.5% of providers desire more training
- Repeat and simulation-based education is required for proficiency

Implementation

- Formal review was conducted by an institutional review board
- Evidence-based practice project implemented at the University of Cincinnati College of Nursing
- Knowledge, confidence, and procedural skill assessed in 18 student nurse anesthetists before and after an education session

Education

- Block indications
- Anatomic landmarks
- Ultrasound landmarks
- Needle trajectory
- Local anesthetic dose
- Complications



PRE

EDUCATION

POST

Knowledge Assessment

Upper Extremity

Knowledge Assessment

Confidence Survey

Lower Extremity

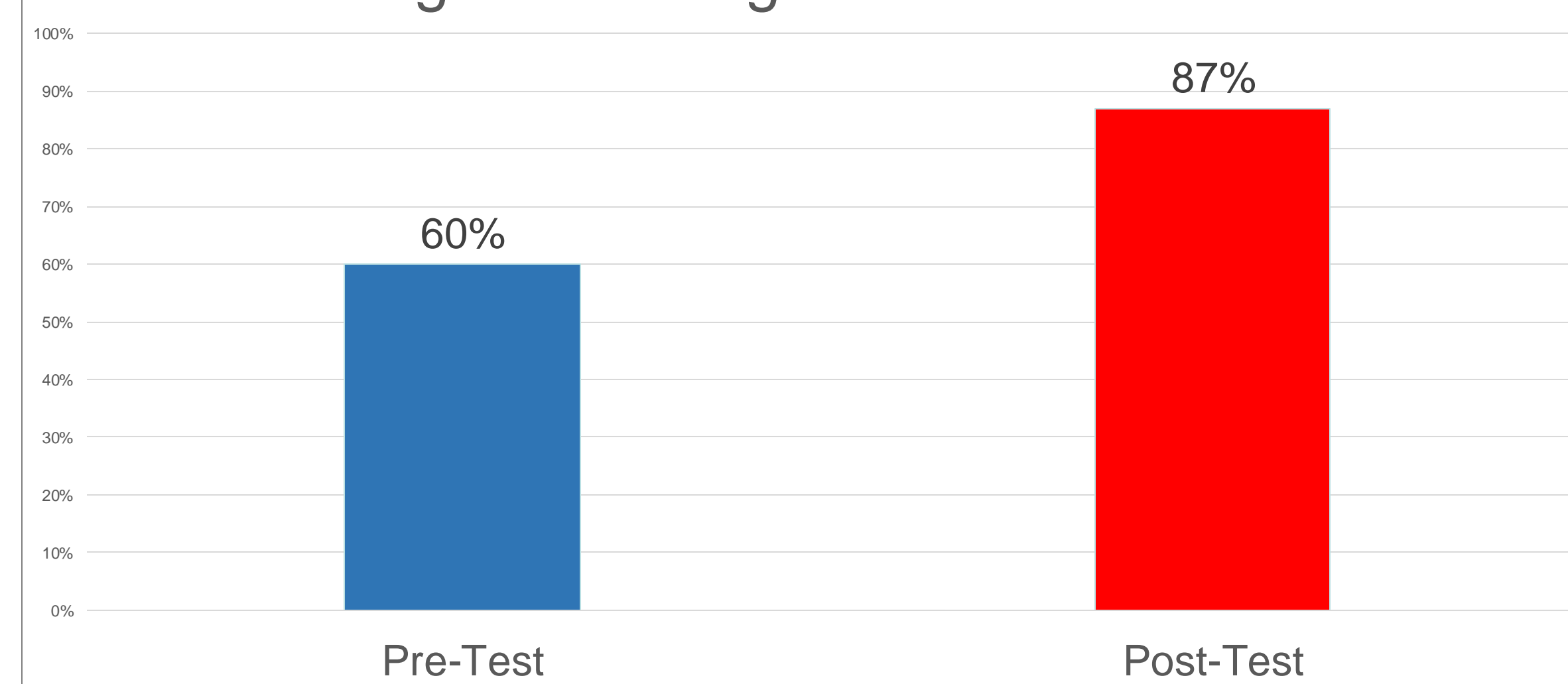
Confidence Survey

Hands-On Evaluation

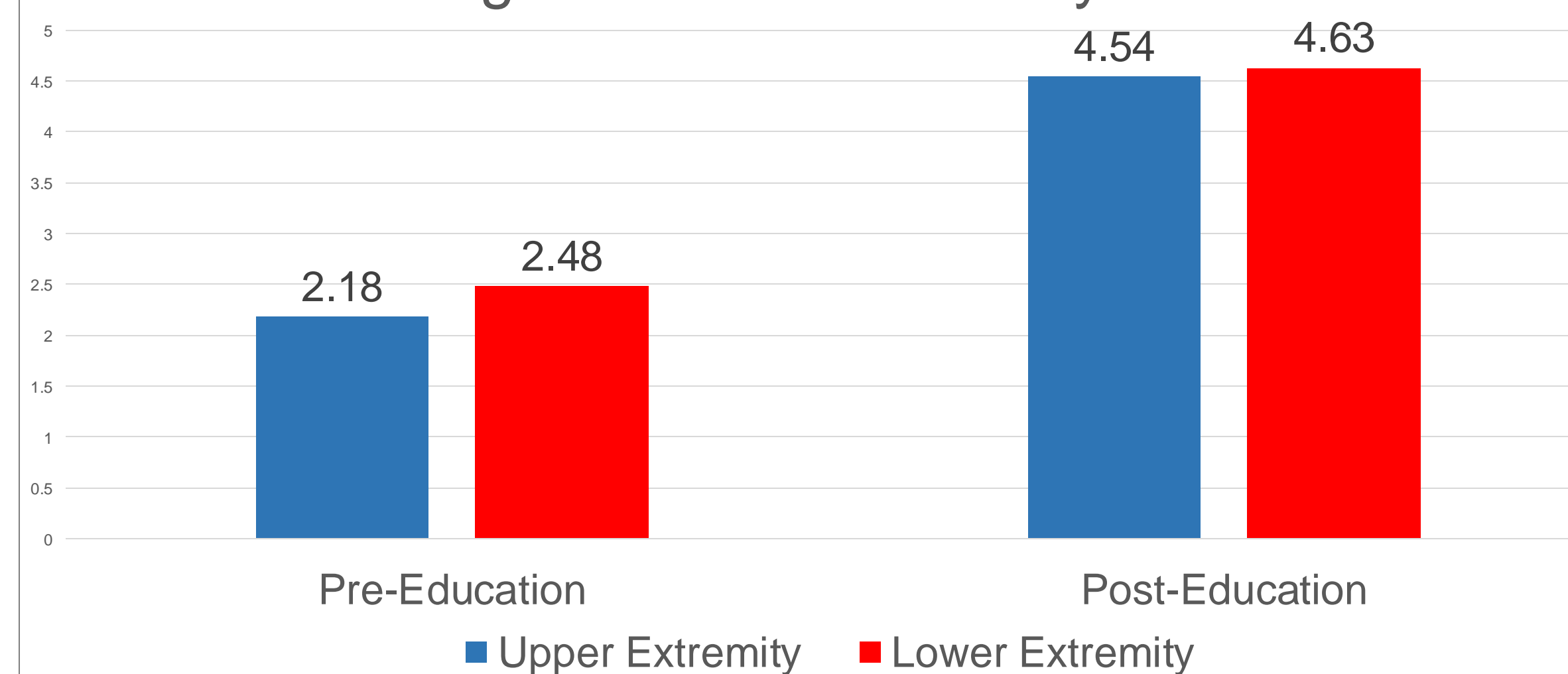
Hands-On Evaluation

Outcomes

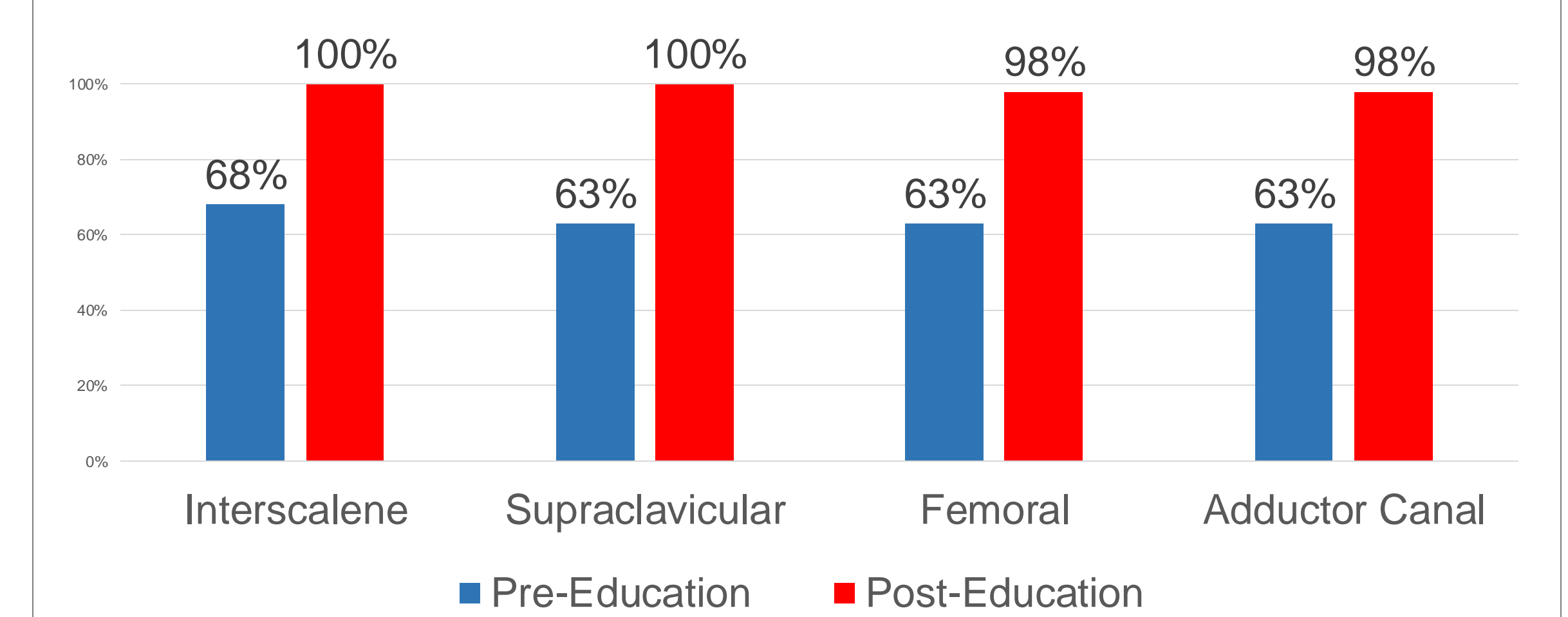
Average Knowledge-Based Test Results



Average Confidence Survey Results



Hands-On Evaluation



Discussion

- 18 senior nurse anesthesia students
- Descriptive statistics and paired t-tests used to evaluate scores before and after education intervention
- Data showed a statistically significant (p -value <0.05) increase in knowledge, confidence, and procedural skill

Knowledge Assessment

- 30% average increase in knowledge
- 35 question assessment

Confidence Survey

- Perceived confidence increased by 2.26 points
- 5 question evaluation utilizing a 6-point Likert scale self-evaluation

Hands-On Evaluation

- 35% average increase in procedural skill
- 4 blocks performed with identification of indications, landmarks, and complications

- Decreased volume for ankle block leading to insufficient data
- Limited population of 18 students at the University of Cincinnati
- Subsequent trials are necessary to compare results and increase available data



Recommendations for Practice

Repeat education and ultrasound scanning are encouraged to improve competence and confidence in nurse anesthesia students learning to provide peripheral nerve blocks. Standardized education among nurse anesthesia programs is needed to develop safe providers. Anesthesia providers proficient in UGRA can increase the implementation of successful peripheral nerve block leading to improved patient outcomes.

References

