"FAST and FoCUSed:" Improving Point-Of-Care Ultrasound Competencies for Advanced Practice Registered Nurses

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PROBLEM STATEMENT

- Focused abdominal sonography in trauma (FAST) and focused cardiac ultrasound (FoCUS) exams have gained recognition as an invaluable piece of the bedside assessment, however, there are currently no formal education requirements for ultrasonography for advanced practice registered nurses (APRNs).
- FAST and FoCUSed exams have been acknowledged as a low-cost point-of-care assessment tool that can improve diagnostic accuracy, aid in clinical decision making, and improve patient outcomes in critically ill patients across all patient care settings.
- APRNs are invaluable patient care team members who can utilize ultrasound applications rapidly at the bedside, decrease time to the appropriate intervention, shorten hospital stays, evade possible invasive procedures and increase patient satisfaction.

PROJECT PURPOSE

- The objective of this project was to develop an innovative point-of-care ultrasound (POCUS) simulation workshop for APRNs, based on national and international consensus guidelines and recommendations, to increase the knowledge acquisition and confidence of APRNs in performing POCUS.
- The workshop focused specifically on performing FAST and FoCUSed exams accurately and identifying normal and abnormal structures and pathologies.

"Does incorporating high-fidelity simulation, augmented reality (AR), and didactic instruction into a NP-led focused cardiac ultrasound (FoCUS) and focused abdominal sonography in trauma (FAST) training workshop increase competency in use and self-efficacy of the advanced practice registered nurse (APRN)?"
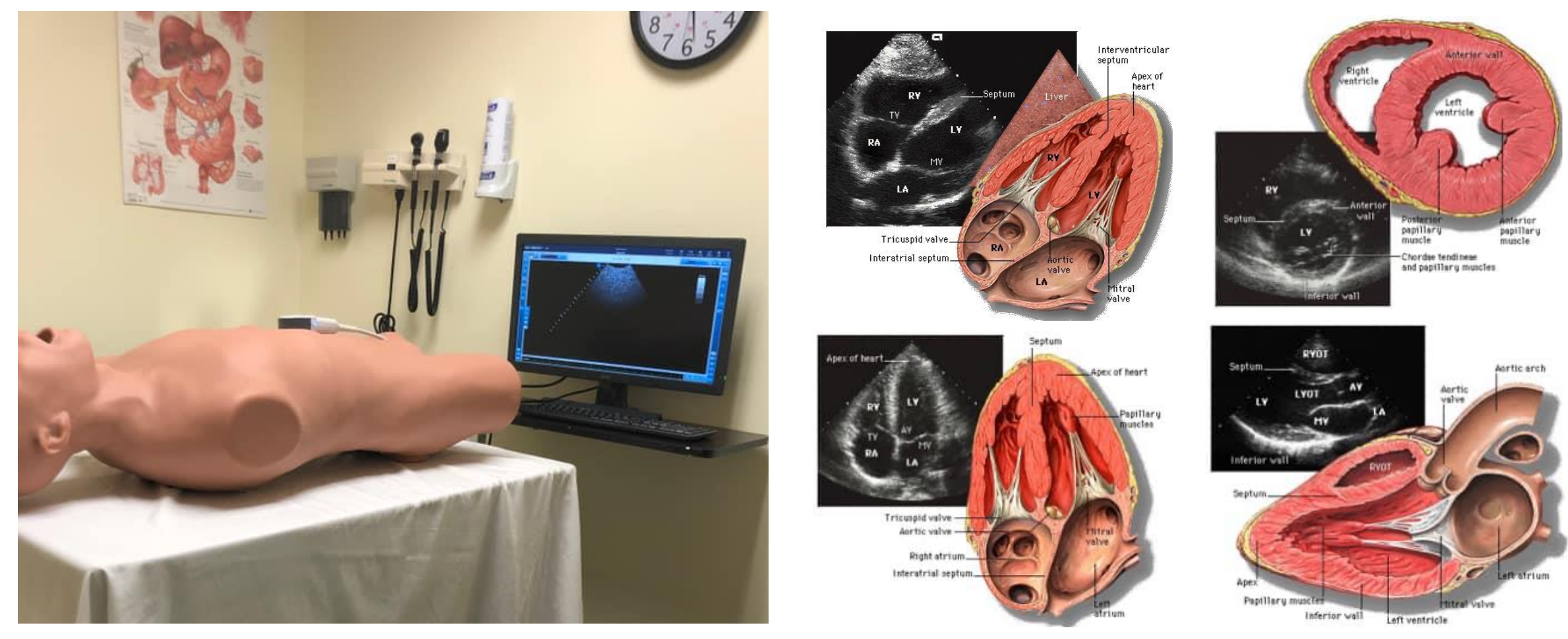
Figure 1. CAE Vimedix Ultrasound simulator and related AR and 2D views.

MODEL/NURSING THEORY

- The Kirkpatrick Model is the conceptual framework that was used to guide the FAST and FoCUS workshop and is comprised of four levels: reaction, learning, behavior, and results. This conceptual model ensured that the simulation intervention generated the desired educational impact, based on identified learning outcomes, and assisted in demonstration of content and construction of validity for future research studies.
- Levine's Conservation Model guided the premise of this quality improvement workshop. This model proposes that nurses use scientific and creative abilities to enhance critical thinking in the care of the patient.

METHODS

Subjects
- 15 licensed APRNs in the Tampa area, including faculty, preceptors and graduate nursing students.

Setting
- Simulation Center at a large Florida university with accredited master's degree and Doctorate of Nursing Practice (DNP) programs by the Commission on Collegiate Nursing Education (CCNE).

Instruments/Tools
- APRN confidence and knowledge related to image generation, identification, recognition, and clinical integration was assessed utilizing a quality improvement anonymous pre- and post- test design.
- Previously validated 16-question pretest to assess general knowledge of ultrasound, FAST and FoCUS exams, competency and expectations of training.
- Previously validated 17-question posttest to evaluate reaction to the received training, knowledge gained, and self-efficacy of the skills attained.

Intervention and Data Collection
- Subjects were administered pretest upon arrival. Exams were collected prior to didactic and hands-on simulation were conducted.
- One hour of classroom didactic followed by three hours each of FAST and FoCUS specific instruction with hands-on simulation.
- Posttest administered at conclusion of all instruction and collected upon subject leaving.
- SPSS utilized for statistical analysis of the quantitative data.

RESULTS

	Average score	SD
Pretest	44.6	14.3
Posttest	77.9	14.2

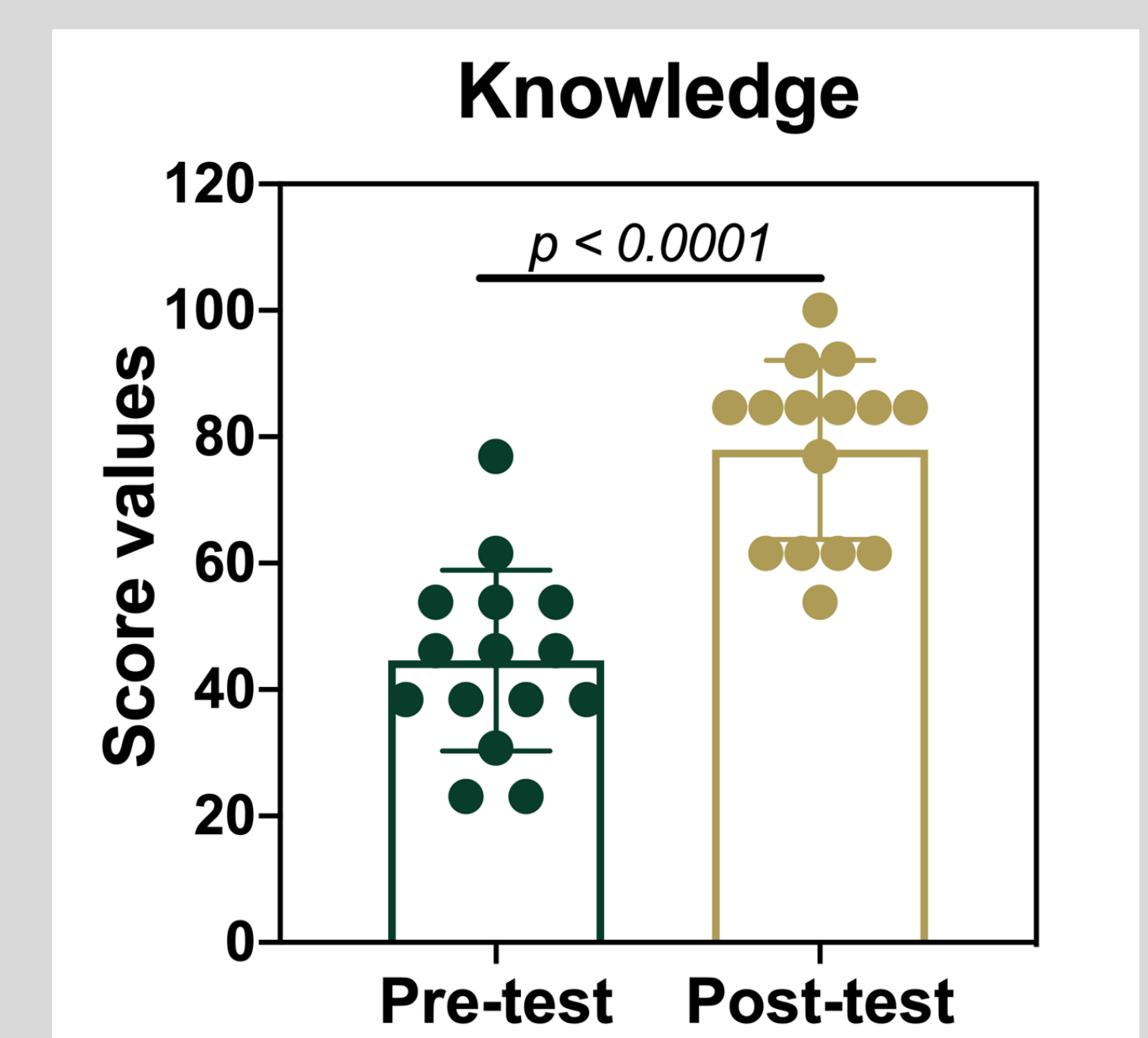**Table 1.** Descriptive statistics of test scores.

Figure 2. Test scores for knowledge assessment before (pretest) and after (posttest) the workshop (n = 15).

	Strongly disagree	Disagree	Agree	Strongly agree
Pretest	13	2	0	0
Posttest	1	0	12	2

Table 2. Frequency distribution of answers from participants in the confidence assessment.
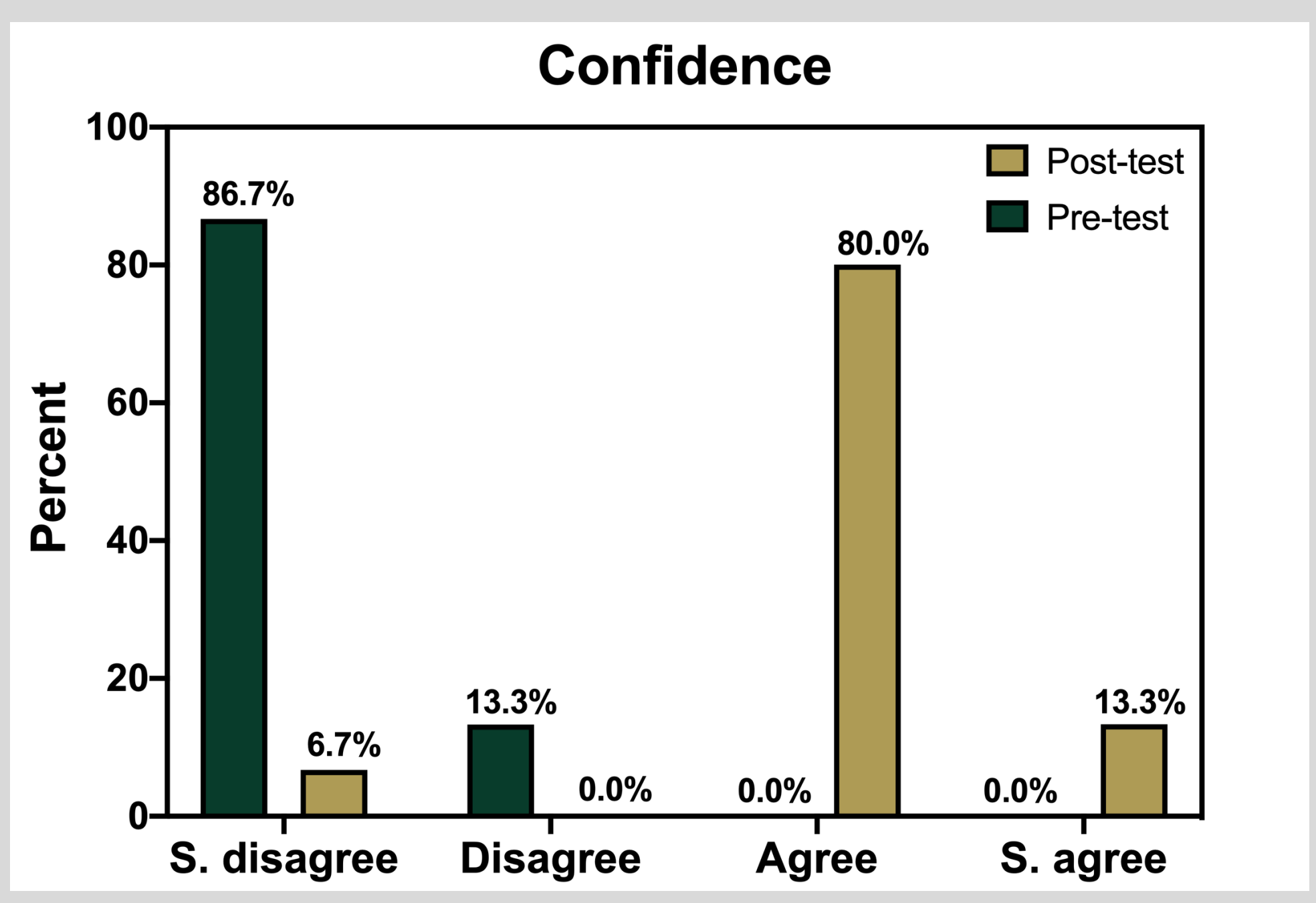

Figure 3. Confidence level of participants based on assessment before (pretest) and after (posttest) the workshop (n = 15).

DISCUSSION

- Despite overwhelming evidence demonstrating the efficacy and cost-effectiveness of FAST and FoCUS for the identification of abdominal and cardiac pathology, this diagnostic tool remains vastly underutilized by APRNs.
- The findings of this quality improvement workshop demonstrate that APRN's knowledge and confidence in performing ultrasound exams was significantly improved following participation in the FAST and FoCUSed workshop.
- Attendees all expressed a need for this course either in formal education requirements or on-the-job training.

IMPLICATIONS FOR ADVANCE PRACTICE NURSING

Since 93% of the subjects reported that they agree or strongly agree that they feel confident in their ability to perform and interpret FAST and FoCUSed exams after completion of the workshop, we believe the implementation of this education into APRN graduate programs will allow for more effective management and clinical decision-making by these providers. A limitation of this study includes the small sample size. The use of inferential statistics to conduct an exploratory analysis resulted in an underpowered study that is only applicable to this sample. Further study is recommended.

SUSTAINABILITY

The structure and content of this workshop is easily adaptable to any graduate nursing program. The simulation equipment cost varies depending on manufacturer. The value of bedside ultrasound use in clinical assessment by APRNs is indispensable in patient care.

REFERENCES

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Additional references available here:

Utilizing simulation technology and augmented reality, participation in the FAST & FoCUSed quality improvement workshop significantly improved APRN's knowledge and confidence in performing point-of-care ultrasonography.

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