

Assessment of ultrasound skills in pre-clinical medical students

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Background

- Point-of-care ultrasound is used in a variety of medical specialties for both procedural guidance and diagnostic purposes
- While many medical schools offer an ultrasound curriculum, few perform assessment of medical student ultrasound skills
- Medical students at the University of Colorado School of Medicine (CUSOM) participate in a longitudinal ultrasound curriculum, but their ultrasound skill acquisition remains unknown

Purpose

We sought to assess the effectiveness of a didactic intervention on medical students' ultrasound skill acquisition

Methods

- Pre-clinical second year medical students were given a 45-minute hands-on didactic session in pleural ultrasound and the focused assessment for free fluid (FAFF) exam
- Directly following the hands-on didactic session, they were randomly assigned to perform pleural ultrasound or one portion of the FAFF exam
- Students had two minutes to complete the assessment and were not prompted. Students and the ultrasound images were filmed using an iPad
- Two independent reviewers assessed the student's ability to obtain adequate images using a structured 6-item observational assessment tool

Results

Figure 1. Student scores for the FAFF. Data presented as the median and IQR. Left upper quadrant (LUQ): n = 16, right upper quadrant (RUQ): n = 13, subcostal (SC): n = 10, suprapubic (SP): n = 12
Weighted Kappa = 0.897

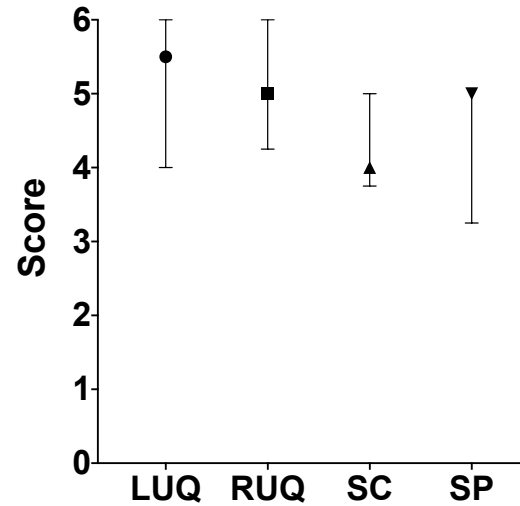


Figure 2. Student scores for pleural ultrasound. Data presented as the median and IQR. Pleural effusion (PE): n = 21, pneumothorax (PTX): n = 24
Weighted Kappa = 0.669

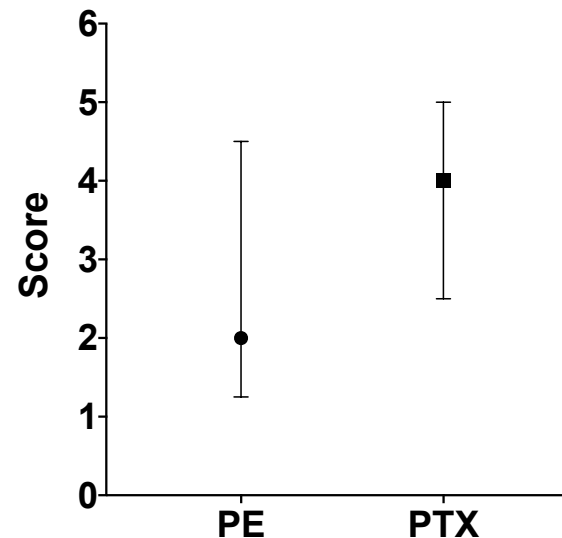
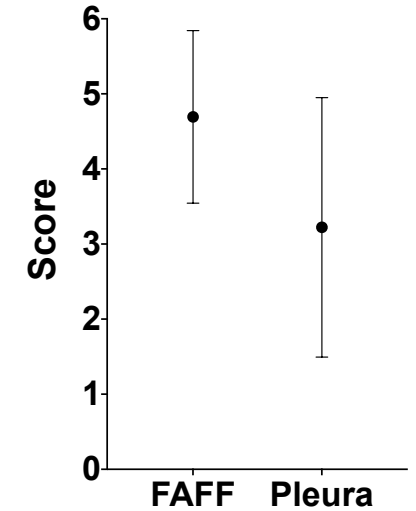


Figure 3. Students scored significantly higher on the FAFF (n = 51) than the pleura assessment (n = 45); p < 0.001 by Mann Whitney Test



Conclusion

- This was the first attempt at evaluating CUSOM medical students' ultrasound skills using a structured observation tool
- Students achieved higher scores on the FAFF assessment compared to the pleural assessment
- Interrater reliability of both assessment tools was acceptable, but higher for the FAFF assessment
- Future directions include determining the minimum standard for competency at this level of training in undergraduate medical education and evaluation of retention of ultrasound skills among CUSOM medical students