

# Promoting clinical competence in early-career surgical residents with a surgically-oriented anatomy workshop

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## Background

Clinical competence is a broad and diverse term which encompasses what clinical doctors are expected to be able to do in their daily practice. The American Board of Internal Medicine (ABIM) classified four different aspects of clinical competence: abilities, problem solving skills, the nature of medical illnesses and the social and psychological aspects of the patient problem<sup>1</sup>. Recently, the ABIM updated and included more elements into their definitions including communication skills, professionalism and knowledge of the healthcare system<sup>2</sup>.

Miller used a 4 layered-pyramid to summarise different layers of clinical competence<sup>3</sup>. At the base of the pyramid is knows (knowledge), followed by knows how (competence), shows how (performance) and finally at the top does (action). It represented a sequential developmental process whereby a clinician should be able to reach the top of the pyramid by doing what they are expected to do in their daily routine.

Early-career surgical residents are assessed on their shows how and does on a daily basis, which are their primary duties in the clinical setting and they are expected to have mastered the knows and knows how in their medical school training. However, multiple studies have shown perceptions of insufficient anatomical knowledge amongst graduates<sup>4,5</sup>. Another study has shown that students were not ready to apply their anatomical knowledge in the clinical settings<sup>6</sup>. Therefore, the aim of the workshop is to provide our participants with a timely review of the recall of factual information and also an opportunity to apply this information in problem-solving scenarios in a less-pressurised environment.

## Research question

**What is the impact on participants' perceived clinical confidence before and after the workshop?**

## Methods

### Anatomy Workshop

- Early-career surgical residents were recruited to attend the "Anatomy workshop in acute abdomen"
- Short video clips and lectures related to five different surgical procedures were shown
- Demonstrations of surgically important anatomical structures by instructors using cadaveric specimens
- Participants re-visited these anatomical structures using cadaveric specimens and discussed with peers and instructors

### Questionnaire evaluation

- Conducted online using the Qualtrics survey software
- Contained 5 items to assess key areas of clinical competence regarding surgical anatomy pre and post-workshop
- Items were represented with a visual analogue scale (in the form of a slider on Qualtrics)

### Data analysis

- Wilcoxon signed-rank test for mean comparison using SPSS software

## Results

**Invitation was sent to 167 participants over the last 5 years and 63 participants completed the questionnaire**

### Perceived clinical competence

- A. The five questions assessing perceived clinical competence included
- (Q1) **Determine** the required preventative procedures correctly
  - (Q2) **Prepare** for probable complications during the surgical procedures
  - (Q3) **Apply** the steps for the surgical procedures correctly
  - (Q4) **Obtain** three-dimensional spatial relationships of the structures regarding the surgical procedures
  - (Q5) **Explain** the underlying anatomical basis related to the surgical procedures

B. Significant improvement in perceived confidence post-workshop was observed in all five question items compared to pre-workshop (Fig. 1)

- Biggest improved observed in (Q4) and (Q5) (Table 1)

Table 1. Mean scores of perceived clinical competence (out of 100)

	Pre workshop	Post workshop
Q.1	56.03	68.51
Q.2	52.76	69.06
Q.3	53.67	70.10
Q.4	54.37	73.24
Q.5	56.44	75.18

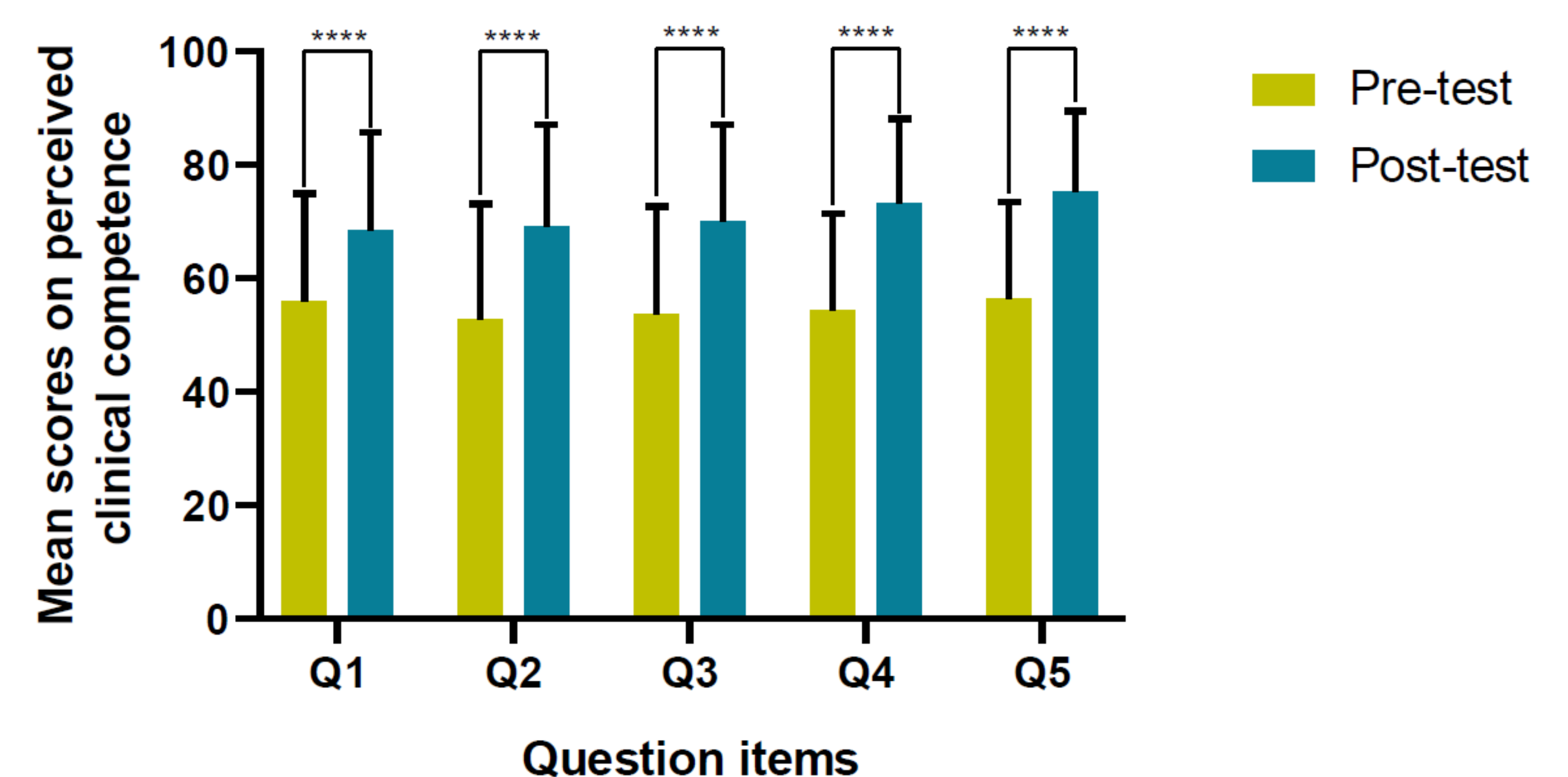


Figure 1. Perceived confidence in clinical competence pre and post workshop. Ratings are presented as means and  $\pm$  standard deviations, \*\*\*\* P < 0.001, p-values are calculated by Wilcoxon signed rank test

## Discussion

1. Significant improvement in all five aspects indicated the effectiveness of increasing perceived confidence in clinical competence
2. The items with the biggest improvement were both anatomically related indicating the effectiveness of the workshop in achieving the primary learning outcome - to recognise and correlate the important anatomical structures that are surgically relevant to acute abdomen conditions
3. The study was done retrospectively so participation rate was lower than expected

## Future direction

- Introduce VR as a learning modality supplementing the use of cadaveric specimens
- Conduct longitudinal study with participants to investigate the long-term impact of the workshop on clinical competence

## References

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