Evaluation of Distance Learning in Basic Ultrasonography:

Can E-FAST Exams Be Learned Through Distance Learning?

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INTRODUCTION

During the COVID-19 pandemic, medical education has drastically changed to a remote format, with independent and e-learning becoming more valuable.

While virtual learning of ultrasound has shown to be effective, there is scant literature regarding the efficacy of independent remote learning of the Extended Focused Assessment with Sonography in Trauma exam (E-FAST).

E-FAST is a bedside ultrasound protocol designed to detect peritoneal fluid, pericardial fluid, pneumothorax, and hemothorax in a trauma patient with 85% to 96% sensitivity and specificities exceeding 98%.

We chose E-FAST because of its value in trauma and emergency clinical settings as well as its broad application of point of care ultrasound knowledge and techniques.

OBJECTIVES

Can we successfully teach health care professionals and students how to perform E-FAST exams via distance learning using an online modular curriculum and self practice?

METHODS AND MATERIALS

- This is a proof-of-concept study.
- 64 participants were recruited from UC Davis Health Education to participate in the online module intervention.
- Participants filled out a pre and post course survey with confidence and experience levels.
- During the 4 week course, participants watched recorded tutorial videos, then practiced with portable Clarius ultrasounds.
- During the final week, participants performed a scored OSCE graded based on a rubric (see right)

Name:		Date:		
Ultrasound FAST Exam Grading Rubric (total 30 pts) 2 points: complete view 1 point: partial view 0 points: no view				
View	Landmarks	Grading		
RUQ	(1) Morrison's Pouch (hepatorenal recess)	0	1	2
	(2) Liver tip (right paracolic gutter)	0	1	2
	(3) Lower right thorax	0	1	2
	(4) Inferior and superior poles of the kidney	0	1	2
LUQ	(5) Subphrenic space	0	1	2
	(6) Splenorenal recess	0	1	2
	(7) Spleen tip (left paracolic gutter)	0	1	2
	(8) Lower left thorax	0	1	2
	(9) Inferior and superior poles of the kidney	0	1	2
Cardiac - Subxiphoid	(10) Pericardium	0	1	2
	(11) Heart chambers (esp right ventricle)	0	1	2
Bladder - Two views	(12/13) Rectovesical pouch (males)	0	1	2
	(12/13) Pouch of Douglas/rectouterine (females)	0	1	2
Lungs - L&R	(14/15) Anterior lung sliding between rib spaces, use of M mode	L: 0	1	2
		R: 0	1	2
		Total:		/30

RESULTS

- Out of 64 enrolled, 25 completed OSCE (9 MS1, 9 MS2, 1 MS3, 2 PA-Y1, 4 PA-Y2)
- % perfect scores: 8/25 = 32% (see fig. 1)
- Mean score 24.76/30 (82.5%)
- 76% of individuals obtained a score of 70% or higher

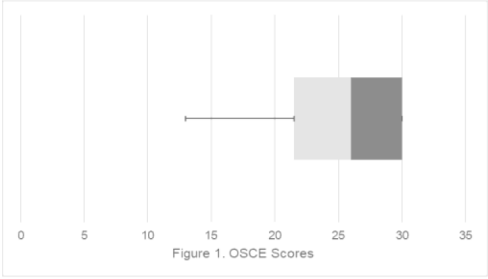

Figure 1. OSCE Scores

CONCLUSIONS

- Alludes to success in teaching E-FAST vai distance learning
- 32% of 25 participants got perfect score on E-FAST OSCE
- Limitations: small sample size, poor course retention as it was voluntary with no course credit offered, Clarius ultrasound technical difficulties, missing or duplicate videos
- First identified study that looks at potential effectiveness of teaching E-FAST ultrasound via distance learning.
- Future project to perform larger RCT study and applications locally in COVID-19 pandemic and internationally in low resource settings

MANUSCRIPT QR CODE

For more information about the study, please scan the manuscript QR Code.

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