

The impact of a hybrid training program on point-of-care ultrasound (POCUS) knowledge acquisition & skills among non-ultrasound trained physicians



Maryam Alnuaimi^{1*}, Hamid Shokoohi², Deborah Navedo³, Roger Dias⁴

1. SKMC, Emergency Department

2. Mass General Brigham

3. Mass General Brigham

4. Harvard Medical School

Correspondence to: Maryam Alnuaimi

*SKMC, Emergency Department

Email: maryam.alnuaimi@live.com

DOI: 10.24911/SJEMed.72-1710016049

Background:

Physicians from around the world with a variety of training backgrounds practice medicine in the United Arab Emirates. Most of these physicians have not received formal ultrasound training, a critical skill to practice medicine in several specialties. Furthermore, no formal ultrasound fellowships or hospital credentialing processes exist in the UAE to prepare physicians to perform point-of-care ultrasound (POCUS). This prospective interventional pre/post study investigated the impact of a longitudinal hybrid (online and hands-on) training program on POCUS knowledge acquisition and skills of non-ultrasound-trained physicians in UAE.

Methods:

The POCUS training workshop was spread over four full days to accommodate capacity and physicians' shift schedule limitations (three hours of didactics and four hours of hands-on). The course focused on teaching the following ultrasound modalities: Cardiac, Focused Assessment with Sonography in Trauma (FAST), and Lung Ultrasound. Participants' knowledge was assessed via multiple choice questions pre-workshop, post-didactics, and post-hands-on while POCUS scanning skills were evaluated using the ultrasound competency assessment tool (UCAT).

Results:

Fifty-four physicians who had no prior ultrasound experience enrolled in the workshop, of which 25 were Internal Medicine residents, 16 were Emergency Medicine residents, 8 were General Practitioners working in the emergency department, 1 Emergency Pediatric fellow, 1 Hospitalist, and 3 were newly graduated physicians in their internship year. Significant improvements were observed in the knowledge exam results with pre-course, post-didactics, and post-hands-on with the average of the correct answers, increasing from 4.9 to 6.8 and then to 8.5, respectively, post-course ($P < 0.05$). The Ultrasound Competency Assessment Tool (UCAT) was used by trained ultrasound faculty members to assess participants' competency in POCUS during the Objectives Structured Clinical Examination (OSCE). Participants were more trusted to perform FAST and lung ultrasound, scoring above 4 in the entrustment section of the checklist (50% of the participants in FAST scan and 55% of the participants in lung ultrasound) while the Cardiac ultrasound has shown above 3 (I had to prompt from time to time) in 61% of the participants as repetition is needed to reach the desired learning outcome.

Conclusion:

Our cohort showed a statistically significant increase in POCUS knowledge of practitioners following a single-day ultrasound training workshop. This suggests that a well-structured ultrasound educational program can improve physicians' performance of ultrasound skills and knowledge. Future steps to implement effective ultrasound education include increased training and assessment programs and standardized ultrasound-credentialing programs.