Impact of simulator-based training on acquisition of transthoracic echocardiography skills in medical students- Medical students’ perspective

To the Editor,

We read with great interest the article by Hempel et al. concerning the impact of simulator-based training on the acquisition of transthoracic echocardiography (TTE) skills for medical students. From our experience as students, TTE is a challenging skill to achieve competency and confidence. However, having personally benefited from regular sessions allowing for repeated reinforcement, we have found that the use of patient educators best prepares us for practicing these skills on patients.

We propose that patient educators with a history of cardiac disease are used to bridge the gap between using simulators without pathology and one-day practicing TTE on a patient in a clinical setting. It has been shown that medical students respond well to the use of patient educators in a teaching setting and that they benefit from the patient educators’ experiential perspective. This is feasible in the context of TTE as students are able to identify anatomical structures through the previous teaching and build upon this using patient educators serving as teachers. Another benefit of employing patient educators is their ability to communicate their experience to students with time for reflection. Giving patients’ the time to identify and verbalize their experience helps to frame clinical skills such as TTE and ultimately allows students to understand the vital role of communication beyond the clinical procedures and investigations.

Notwithstanding, we feel that simulators greatly assist in providing a protected learning environment, allowing students to experiment with their procedural skills in a way that does not harm the patient. Collectively, this gave us confidence when practicing in simulator sessions. The authors of this paper noted that one benefit of simulators is that they can be standardized, which allows for sessions and scenarios to be repeated. Spaced repetition is a style of learning that has been shown to be useful when learning skills such as transoesophageal echocardiography. We believe this approach, where a student...
has multiple sessions to practice TTE, is a sensible way to proceed. A spiral-style learning approach should be used, involving the return to topics throughout medical school, building on previously covered topics to both consolidate knowledge and increase skill acquisition.

The simulators and live human models used to teach TTE in this study did not have any pathology. Whilst practising TTE in a clinical setting on patients with pathology could allow for experiential learning superior to simulation, learning clinical skills on patients has been shown to be impractical, often due to a lack of suitable cases and a failure to provide students with learning opportunities during a busy clinical day.\(^5\)

The use of simulators plays an unquestionable role in acquiring skills such as TTE. To maximize the impact simulation, multiple sessions allowing for spaced repetition should be encouraged in conjunction with patient educators. This gives students more insight and perspective, serving to bridge the gap between simulation and potentially unwell patients with cardiac issues.

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**Conflicts of interest**

There are no conflicts of interest.

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