


Comments on “Transfer of Laparoscopic Skills from Box Trainer Simulation to Real Life: A Bi-Center Study in Pakistan” [Letter]

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Dear editor

I read with great interest the study by Aftab et al¹ which examined the transferability of laparoscopic skills from box trainer (BT) simulation to real-life surgery in two centers in Pakistan. The authors' findings provide valuable evidence supporting low-cost simulation as a feasible modality for surgical training in resource-limited settings. We commend the team for addressing a critical gap in medical education research within low- and middle-income countries (LMICs). Nevertheless, we wish to raise several methodological and interpretive points that warrant consideration and clarification.

The study effectively demonstrates significant improvement in most skill domains using the Global Operative Assessment of Laparoscopic Skills (GOALS). However, the statistical insignificance for simpler tasks such as ball and ring transfer should be interpreted cautiously. Rather than indicating full skill transference, this may suggest a *ceiling effect* that is, residents may already have achieved maximal performance in these basic psychomotor domains during simulation.² This interpretation could have been substantiated by analyzing task difficulty and baseline competence levels separately.

The quasi-experimental design without a control group limits causal inference. Future research could incorporate a randomized comparison with either virtual-reality simulators or traditional apprenticeship-based learning. This would strengthen claims regarding the relative efficacy of BTs in skill acquisition and transfer. Although the authors note that participants reported improved confidence and reduced anxiety, these perceptions might be subject to *social desirability bias*. Employing validated psychometric instruments or objective anxiety measures (eg, heart rate variability) could yield more robust conclusions about affective learning outcomes.

The follow-up period of only three months constrains understanding of long-term skill retention. Simulation-to-clinic transfer is not only about immediate performance but also about sustained proficiency. Longitudinal follow-up studies could evaluate whether the observed skill gains persist after six to twelve months of operative practice. While the study justifiably highlights cost-effectiveness, it would benefit from a brief cost-benefit analysis or cost-per-resident estimation. This would strengthen its relevance to policymakers in LMICs aiming to institutionalize simulation-based surgical education.

This paper makes an important contribution by demonstrating that structured BT simulation can enhance residents' laparoscopic performance in real surgical settings. Addressing the methodological aspects in future studies will enhance evidence-based integration of simulation within postgraduate curricula and further improve surgical competency and patient safety.

Disclosure

The author reports no conflicts of interest in this communication.

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