In-Theatre Simulation as a Training Tool for Laparoscopic Salpingectomy in Eldoret, Kenya

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Background/Objective: Minimally invasive surgery (MIS) offers many advantages over open procedures including decreased patient safety risks and reduced burden on healthcare infrastructure. As low- and middle-income countries (LMICs) are disproportionately affected by these aspects of surgery, there is motivation to increase MIS. A multimodal training program in laparoscopic salpingectomies was piloted with a small cohort of OB-GYN registrars and consultants at Moi Teaching and Referral Hospital (MTRH) in Eldoret, Kenya. This project assesses the in-theatre simulation’s (1) effectiveness in improving laparoscopic knowledge and skill confidence, and (2) feasibility for long-term implementation at MTRH and in similar settings.

Methods: Participants completed a half-day in-theatre simulation of a laparoscopic salpingectomy. The simulation required participants to demonstrate knowledge of laparoscopic setup, proper patient positioning, procedure completion, equipment troubleshooting, and peri- and intra-operative complication management. Participants completed a multiple-choice laparoscopic knowledge quiz and Likert scale skill confidence survey immediately prior to and following the simulation. Pre- and post-simulation responses were compared to assess knowledge and confidence acquisition overall and across content topics.

Results: There was a significant increase in the average knowledge quiz score from pre- to posttest (p=0.028). A significant difference between pre- and posttest confidence was noted in four of the six skills assessed. By topic, equipment troubleshooting (p<0.001), and complication management (p<0.01) saw the most improvement. Barriers to long-term sustainability include unpredictable theatre and laparoscopic tower access and availability of supplies for uterine modeling. A modified model using nitrile gloves as fallopian tubes will be piloted in future simulations as a more accessible alternative for long-term implementation.

Conclusion: Despite limitations, in-theatre simulation has the potential to be an effective and sustainable teaching tool within a long-term MIS training program at Moi Teaching and Referral Hospital. The low-cost model and methods outlined may also be replicable in similar low-resource settings.