The American Journal of Surgery (2016) 211, 583-588

The American Journal of Surgery®

Midwest Surgical Association

Catch me if you can…early simulation efforts affect fundamental surgical skill assessment scores

EeeLN H. Buckarma, M.D.*, Becca L. Gas, M.S., T. K. Pandian, M.D., Jad M. Abdelsattar, M.B.B.S., Moustafa M. El Khatib, M.B.B.Ch, Monali Mohan, M.B.B.S., Nimesh D. Naik, M.D., David R. Farley, M.D.*

Department of Surgery, Mayo Clinic College of Medicine, 200 First Street SW, Rochester, MN 55905, USA

KEYWORDS:
Simulation;
Assessment;
Training;
Education;
Surgery interns

Abstract

BACKGROUND: We evaluated whether early exposure to a simulation curriculum enhances acquired surgical skills.

METHODS: The "Surgical Olympics" evaluates interns on basic surgical skills and knowledge. After the Summer Olympics (July), interns were randomly divided into groups: "A" participated in a 7-week curriculum once a week, whereas "B" attended 7 weeks of lectures once a week. All interns then participated in the October Olympics. The 2 groups then switched. Finally, all interns completed a January Olympics.

RESULTS: Scores were tabulated for the July, October, and January Olympics. Mean scores (A = 182 ± 42, Group B = 188 ± 34; $P = .70$) were similar in July; in October, group A (mean score = 237 ± 31) outperformed group B (mean score = 200 ± 32; $P = .01$). Mean total scores in January (A = 290 ± 34, B = 276 ± 34; $P = .32$) were similar.

CONCLUSIONS: Early exposure to a surgical simulation curriculum enhances surgical intern performance in our Surgical Olympics. Subsequent simulation experience helps learners close this gap.
© 2016 Elsevier Inc. All rights reserved.

Surgical residency differs from other residency programs in that surgeons in training are working to balance the acquisition of clinical knowledge and mastering technical skills needed for procedures. Residency training in 2015 is moving at a fast pace and staff surgeons are pressured to evaluate more patients, offer more operations with decreased procedure times and shorter hospital stays, and complete more paper/computer work, while simultaneously teaching residents to be safe and competent. In a world fixated on surgical Relative Value Units, patient throughput, and academic and research productivity, time for teaching and training is cut short. Better preparing surgical residents for the operating room would be a major benefit to staff surgeons, patients, and the trainees themselves. Many surgical educators believe it is increasingly important to prepare surgical residents for the hands-on demands of training up front and to do so in a pre-emptive

The authors declare no conflicts of interest.

Presented at the meeting of the Midwest Surgical Association, July 26-29, 2015, Lake Geneva, WI.

* Corresponding authors. Tel.: +1-507-284-2095; fax: +1-5-7-284-5196.

E-mail addresses: Buckarma.EeeLN@mayo.edu, farley.david@mayo.edu

Manuscript received July 13, 2015; revised manuscript November 20, 2015

0002-9610/$ - see front matter © 2016 Elsevier Inc. All rights reserved.
http://dx.doi.org/10.1016/j.amjsurg.2015.11.007

fashion. We sought to demonstrate that early exposure to a simulation curriculum aimed at fundamental surgical knowledge and technical skills would indeed enhance intern performance over staff didactic presentations. In addition, we sought to scrutinize whether those fundamental skills would continue to improve throughout the 1st year of training when compared to residents with delayed exposure to a simulation curriculum.

Methods

Our Surgical Olympics has been a decade-long project that now includes 9 stations of *skill* (knot tying, fundamental laparoscopic skills tasks, cricothyrotomy, central line insertion, and so forth.) and *knowledge* (written tests, critically ill patient evaluation, interpreting an arterial blood gas, and so forth.) assessment. Skill stations scores were generated by totaling a completion checklist. Successful fulfillment of a procedural step resulted in point accrual. Time in seconds was converted to a station-specific point scale in stations involving time as a metric. Knowledge stations were awarded points based on number of correct responses. Score totals from each station were then combined to provide a final Olympics score for each participant. The stations used a total of 15 tests scored for each intern in July (Summer Olympics) and retested again in January (Winter Olympics). In between competitions surgical interns have historically attended (1) a regimented *every other* Friday morning surgery simulation curriculum involving ~10 sessions; such 3-hour educational sessions included surgical topics such as endocrine, breast, Hepato-Pancreato-Biliary, laparoscopy, trauma, and so forth. (2) A varied *every other* Friday morning didactic session by Mayo staff on topics of staff choosing; 2 presentations were given; each 60 minutes in length, and (3) a variety of 6-week clinical rotations (general, transplant, pediatric, vascular, and other surgical disciplines) that each included patient care, operative procedures, and clinical conferences.

Retesting surgical interns over the past 10 years has shown a consistent 20% to 50% increase in scores in January over their initial July performance. While we are pleased that scores improved and interns appeared to be smarter and more technically facile after 6 months of overall training time, we have never been confident that the reason for improvement was attributed to the intervening simulation sessions between Summer and Winter Olympics.

After the July Surgical Olympics in 2014, our 29 interns were randomly divided into 2 groups: group A ($n = 14$) participated in the surgery simulation curriculum each Friday morning for 7 consecutive weeks. group B ($n = 15$) attended 7 weeks of didactic lectures of varied surgical topics. The simulation curriculum consisted of 7 consecutive Friday morning simulation sessions: surgical skills, hernia, breast, anastomosis, Hepato-Pancreato-Biliary/endocrine, trauma, and laparoscopy. During these sessions, the residents were asked to perform abbreviated portions of procedures in a simulated operating room (OR), at which time they were required to work together to complete the surgical tasks. This was followed by a debriefing period with a question and answer session in which residents examined the events that took place during the OR experience. Subsequently, the residents were asked to work on a low-fidelity bench model performing a specific step of the procedure whereas a staff surgeon oversaw this deliberate practice. Interns attending the 2 lectures each Friday morning over the same 7-week period did not participate in any simulation activities; like their group A counterparts, group B interns did have a full clinical load with similar surgical rotations.

After 7 Friday sessions, interns participated in an October Olympics consisting of the same skill and knowledge stations previously tested. After this, the 2 groups swapped the educational sessions; group A attended the didactic lectures, whereas group B participated in the 7 simulation sessions. Thereafter, interns were tested in a final January Surgical Olympics consisting of the same 9 stations (and 15 objective tests). Scores for the July, October, and January Surgical Olympics were evaluated. Mean total scores were calculated for each of the groups across the 3 Surgical Olympics events and compared using the Student t test. In addition, mean scores for individual knowledge and skills stations between group A and group B were analyzed.

In June of 2015 interns were asked to comment on the educational curriculum and the pros and cons of specifically simulation, lectures, and clinical rotations.

Results

Twenty-seven of the 29 residents participated in all 3 Olympics. Individuals' raw total scores are as listed for each Olympics assessment (Fig. 1). Mean scores (group A $= 182 \pm 42$, group B $= 188 \pm 34$; $P = .70$) were similar in the July Olympics. In October, group A (mean score $= 237 \pm 31$) outperformed group B (mean score $= 200 \pm 32$; $P = .01$). Mean total scores in January (A $= 290 \pm 34$, B $= 276 \pm 34$; $P = .32$) were similar (Fig. 2). Grouping collective mean scores by knowledge vs skill stations showed an early advantage (October) to simulation learners in some settings (reading radiologic images, performing laparoscopy). There were no differences between groups by the final January Olympics event (Table 1). Feedback from interns ($n = 21$) favored the surgical simulation curriculum unanimously over staff presentations with many learners suggesting we drop the lectures for the next set of trainees.

Comments

This study found improved early performance on our Surgical Olympics competition among 14 interns undergoing early exposure to a surgical simulation curriculum

Download English Version:

https://daneshyari.com/en/article/4278230

Download Persian Version:

https://daneshyari.com/article/4278230

Daneshyari.com