INTRODUCTION

Many students feel they receive inadequate training in basic surgical techniques before starting clerkships. Additionally, disparities between medical students and surgeons regarding learning expectations in the operating room exist. Our MAITF funded research investigates early exposure to surgical skills using deliberate practice to improve student performance and retention of essential techniques. To date, six first-year medical students have been taught 12 basic surgical techniques including two-hand knot tie, simple suture, fascial closure (1 cm and 0.5 cm), advanced knot tie, FLS peg transfer, chest tube insertion, laparoscopic suture, laparoscopic ligation, laparoscopic pattern cut, and central line insertion using ultrasound. Ultimately this research aims to examine medical students’ abilities to retain and utilize the skills in clerkships and residency.

METHODS

M1 KU students taking the SER week in surgical skills at the KU School of Medicine campus were recruited for the program under IRB rules. Identification numbers were assigned to protect any identifying information. Participants performed all naïve testing for initial evaluation for time and errors for 12 tasks (see above). Protocols from the Mayo Clinic Low Fidelity Simulation course were followed for teaching surgical interns. All timing is initiated when the participants either touched the instrument or began tying suture with can tying. The time ended with the final cut of the suture, final throw of the suture or when all the instruments were placed back on the testing table. Performance of tasks were graded with regards to knot quality, dropping of peg tubes in laparoscopy transfer, or sounds made of the can with advanced knot tying. The time and errors were recorded again at the final testing of the 12 tasks, looking for improvement of the time and quality of the task by fewer errors. During the week after naïve testing the same schedule for teaching of the tasks was kept for each round of volunteers. Ample time and supplies were provided to allow for practice at the school or off-campus. Volunteers were asked to keep a log of additional practice time after class to determine if there was a correlation between final performance improvement and practice time. Future evaluations will be done to see if there is retention of the skills in aiding a better foundation/confidence during clinical activities.

RESULTS

The figures demonstrate the progress students made during the SER week before and after testing. Notably, students’ performance tended to rapidly converge in terms of consistent results even in high-intensity skills such as intracorporeal knot tying. In most areas the time to perform shortened considerably while some techniques the time lengthened but the quality of outcome improved. This data is a reflection of the raw times recorded and does not take into consideration the possible deductions.

DISCUSSION

Reports from Minter et al relate a more observational experience in medical school in recent years. There is also inconsistency in the training of third-year medical students at different medical schools. Some surgical clerkships offer very specialized surgical experiences, while other students experience a broader, general surgery clerkship. Schools also differ in how students are integrated into patient care. This leads to unequally prepared students for their first year of residency. Students entering residency feel more anxiety about their ability to perform the tasks that will be required of them on their first day as a resident. Some studies have considered the effect of surgical preparatory courses. Most of the schools that offer preparatory courses for surgical skills offer these courses in the spring of the fourth year of medical school. These courses help ease the anxiety of the students who didn’t have a more hands-on experience during their third-year surgical clerkship. Students in their fourth year have already chosen a career path and are even more motivated to participate because of residency being just around the corner. In this study, an attempt is made at introducing specific surgical skills early into the curriculum. Given these initial findings, M1 students rapidly learn and become proficient in basic surgical techniques. Deliberate practice with dedicated coaching has an impact on convergence of skill level over a short period as seen in the results graphs. Continued follow up is expected to show retention of surgical techniques and increased confidence with continued practice.

REFERENCES