Pediatric gastroenterology (GI) fellows in an academic, free-standing children’s hospital are expected to achieve competence in providing procedural sedation. The majority of GI cases at our institution are done under general anesthesia leaving few opportunities for GI fellows to acquire sedation experience and nurses to gain comfort assisting them. Studies have shown that simulation-based training sessions are an effective way to improve knowledge, clinical skills, and confidence (1,2). Through simulation, knowledge can be taught simultaneously with technical skills (3). One goal of this pilot study was to create a feasible, well-received curriculum that provided knowledge improvement and hands on application of skills through simulation. A second goal was to see if there was an improvement in crisis resource management (CRM) skills after focused simulation debriefing.

GI fellows and nurses received lectures that covered sedation topics from patient selection through discharge after recovery. Multiple choice exams were administered pre- and post- didactic session. Skills training consisted of airway management on task-trainers and simulation sessions of laryngospasm and oversedation using SimMan®. Between the two simulations, there was a debriefing focused on CRM. Learners completed evaluations of the lectures, airway workshop, and simulation sessions. Simulation sessions were videotaped and scored according to the validated Clinical Teamwork Scale (CTS) (4,5). Two reviewers independently rated the simulation videos using the CTS. In the few videos with interrater score discrepancies, the videos were watched again by both reviewers together and scored by consensus, using objective evidence whenever possible. CTS scores before and after the debriefing session were compared.

The average of the group’s scores on the multiple choice knowledge assessment increased from 65% to 72% after the didactic portion of the curriculum. Evaluations were favorable with all participants ranking “Agree” or “Strongly Agree” on a five point Likert scale when assessing their understanding and reception of the didactic lectures, airways skills training session, and simulation session. The CTS scores for the simulation session after debriefing improved in one group, remained the same for three groups, and lowered for three groups.

Based on knowledge assessments and curriculum evaluations, our training program was feasible and well-received with objective knowledge improvement. However, there was a lack of improvement in CTS scores between the two simulations sessions despite CRM-focused debriefing between the sessions. This may be due to the fact that the GI teams did not have much baseline experience with CRM and may have benefited from formalized CRM training prior to simulation sessions. This may also be due to limitations in the applicability of the CTS score which has primarily been used in more acute settings such as obstetric emergencies and trauma (4,5). Limitations of this study include small sample size, the significant subjective nature of the CTS scale, and the varied level of baseline knowledge and clinical experience of the participants. Furthermore, the two simulation session were not equal in difficulty and not all groups did the scenarios in the same order. Finally, we were unable to see if the skills obtained in simulation translated to clinical practice because our GI service did not implement the use of sedation in real clinical practice after this training program.

In conclusion, our pilot study supports the use of simulation-based courses with a multifaceted and specialty-specific educational approach but more work is needed to objectively assess the transfer of skills learned in simulation to other scenarios. Future directions for this research include improved study design to increase the number of participants and remove some of the confounding variables listed above, a formal CRM curriculum in the simulation training, and follow-up to see if these skills translate into clinical practice. It may also be necessary to use another scale besides the CTS to assess improvement progress over the course of simulation training.

References

Figure 1. The Clinical Teamwork Scale and explanation of categories on the scale.