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An Educational Module to Teach Interprofessional Learner Feedback Skills for Trauma Simulation Events

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Abstract

Background Peer feedback, or feedback given by a learner to another learner, is an important active learning strategy. Hierarchy and stereotypes may affect interprofessional (IP) learner-to-learner feedback. The aim was to assess the efficacy of an educational module for IP learners in delivering effective feedback during trauma simulations.

Methods Multiple simulation events designed to improve teamwork and leadership skills during trauma simulations included IP learners (residents and nurses). Participants completed a pre-course educational module on IP peer feedback. The Trauma Team Competence Assessment-24 tool structured feedback. Learners completed pre/post-assessments utilizing IP Collaborative Competencies Attainment Survey (ICCAS).

Results Twenty-five learners participated in the trauma simulations (13 general surgery and 5 emergency residents, 3 medical students, 4 nurses). The majority of learners had either not received any previous training in how to effectively deliver peer feedback (40%) or had engaged in self-directed learning only (24%). Most learners (64%) had delivered peer feedback less than ten times. Learner knowledge and confidence in delivering feedback to fellow IP learners improved after simulations. All learners felt the feedback received was useful to their daily practice (68% agree, 32% strongly agree). All participants agreed that the simulation achieved each of the ICCAS competencies.

Conclusions Formal education on IP peer feedback is rare. This pilot work demonstrates educational modules with a foundation in validated tools can be effective in improving learner knowledge and confidence in the process. Engaging in IP peer feedback may also serve to flatten hierarchies that can challenge effective interprofessional teamwork.

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Introduction

Peer feedback is the delivery of constructive comments between learner colleagues specific to established competencies. These competencies may include medical knowledge, attitudes, clinical skills, and professionalism [1, 2]. Useful feedback is essential for learners to be able to reflect upon and improve their performance in relation to specific, measurable actions [3]. Peer feedback facilitates learning, and many accreditation bodies require documented peer feedback as an educational component. However, despite the benefits of peer-to-peer constructive feedback, this

process remains underutilized [4–6]. There are several barriers to the effective delivery of feedback including time constraints, social issues including hierarchy, and lack of confidence or knowledge in the process of delivering effective feedback [7, 8]. Medical education relies on both informal and formal evaluation. It is important to establish effective strategies that ensure valuable and timely formative feedback to maximize educational value.

Interprofessional teamwork and communication are crucial components of the Interprofessional Education Collaborative (IPEC) competencies [9] The IPEC states that interprofessional communication should include "giving timely, sensitive and instructive feedback to others about their performance on the team, responding respectfully as a team member to feedback from others" [9]. Despite the importance, there is little published data on efficacy of interprofessional peer feedback educational strategies, for either learner confidence, knowledge, or clinical team performance. Van Schaik et al. studied 353 students from seven health professions who participated in a team-based interprofessional exercise at the beginning of their training and found that interprofessional peer feedback was a useful and positive experience [10]. In this study, the feedback was delivered by students writing anonymous comments for each other. The nuances and efficacy of delivery of in-person interprofessional peer feedback have not been assessed, nor has the effect of educational initiatives on peer feedback best practices of interprofessional peer feedback.

Safe and effective surgical care relies on interdisciplinary teamwork and collaboration. However factors such as hierarchy, professional identity, societal expectations, personal attitudes, and stereotypes can hinder teamwork and cooperation [11–13]. Instructing learners and educators how to incorporate peer feedback into daily practice has the potential to improve collaboration, medical knowledge, professionalism, and attitudes towards other staff and providers. The aim of this work was to assess the efficacy of an educational module on provision of interprofessional peer feedback for learners participating in a trauma simulation educational event.

Materials and methods

Peer feedback module

Regularly conducted interprofessional trauma simulation events for general surgery residents (GSR), emergency medicine residents (EMR), nurses, and medical students were selected as the educational events at which to pilot the peer feedback teaching module. Using a flipped-classroom approach, the learners were given trauma-specific

education in addition to the interprofessional peer feedback module to review prior to the simulation [14].

An educational subject matter expert created the peer feedback module, which included videos and PDF links to recommended reading articles, based on literature review aided by a trained medical librarian. Zoom videos were recorded by the educational subject matter expert detailing the theory behind peer feedback and efficacy, the principles of interprofessional learning, strategies for best practices for interprofessional peer feedback, and goals for provision of this within the planned trauma simulation learning event. Learners were also provided with details of the validated Trauma Team Communication Assessment (TTCA-24) tool and advice on how best to utilize this as a guide to structure their reflections and the peer feedback process [15].

The second part of the video module discussed strategies to promote learners to reflect both on and in action during the simulation learning event. The importance of fostering and actively contributing to a safe learning environment in which psychological safety is promoted was emphasized. The expectation that learners would treat each other and faculty with respect and courtesy in the manner utilized in the clinical environment was delineated. The module described the critical aspect of structuring the feedback to provide specific actionable items for the peer learner to be able to focus on. For the trauma simulation, the TTCA-24 was selected as a validated tool by which trauma team communication can be assessed [15]. The reason this tool was selected as the primary learning objective of the trauma simulation involved team leadership and communication skills. Utilizing the TTCA-24 provided learners with a structure for the qualities to assess in each simulated event. Specifically, the TTCA-24 domains are team flow, team relationships, team space negotiation, team noise management, team listening, and team emergent leadership. For each domain, there are 3 descriptors for the learners to assess and a global evaluation of this domain.

The final part of the module centered on language and word choice in order to make the feedback most helpful. Learners were advised to make the feedback honest, sincere, and relevant in order for it to be useable [16]. The importance of using peer feedback to stimulate a dialogue for debriefing rather than eliciting a defensive reaction from the recipient that may preclude learning occurring was highlighted. Careful word choice was emphasized in order to provide feedback in terms relevant to meet the needs of their peer recipient. To be most helpful, the learners were advised that peer feedback should relate to something the learner has control over and is able to improve upon, so as to be most constructive.

All learners were sent the pre-course materials three weeks before the event and were sent two reminder emails

to review this material. On the day of the event, upon entry to the simulation center compliance with the material review was checked and an area provided to review these had this not been completed.

Simulation events–brief

The brief was structured to include reiteration of material from the pre-course module to emphasize, in particular, the importance of committing to an environment of psychological safety when delivering peer feedback. Strategies for fostering psychological safety across the virtual learning environment were discussed including those described by Cheng et al [17].

Simulation events–simulation

When this work was performed, social distancing was in place per Centers for Disease Control (CDC) guidelines. For each simulation event three rooms were utilized, one room for the simulation learner group and two for the debriefing learner groups, all connected via Zoom. The brief, simulation and debrief were all performed via Zoom connecting the simulation group and the debriefing group between rooms. There were two groups of learners involved in each event who participated as trauma teams. Each team included one senior GSR, one junior GSR, one senior EMR, one junior EMR, and a nurse. Teams had 15 min to perform the simulation and were supervised by a faculty member in their room. Faculty members were also present in each debrief room with the remaining learners who were actively observing. Groups then switched roles and the process was repeated twice. For each simulation, event there were four different trauma scenarios with a graded increase in difficulty. All scenarios were new to the learners. In order to allow senior GSR and EMR to gain greater appreciation of team roles, responsibilities, and team dynamics, for the last two simulations, these learners switched roles.

Simulation events–debrief

Debriefings were conducted immediately following simulations as this is when peer feedback is most effective for learning. The debriefing first involved reflection on their performance by the simulation learner group, guided by their faculty member and utilizing the plus/delta model [18]. Following this, the active observers in the debriefing rooms delivered peer feedback utilizing lessons learnt in the modules and structured in accordance with the domains and descriptors of the Trauma Team Communication Assessment (TTCA-24) tool [15].

Evaluation

All learners completed pre-and post-event assessments assessing their previous experience with and knowledge and confidence in delivering peer feedback. In post-assessment, the Inter-professional Collaborative Competencies Attainment Survey (ICCAS) was used to assess the efficacy of learning [19]. The ICCAS is a psychometrically validated tool consisting of 20 items, each scored by a seven-point Likert scale. The domains of the tool are aligned with the Interprofessional education collaborative core competencies for practice, specifically: 'communication, collaboration, roles and responsibilities, collaborative patient-centered approach, conflict management, and team functioning'. Pre-and post- assessment of the learners' self-assessment of performance in the domains of the TTCA-24 was also performed.

Results

Twenty-five learners participated (13 GSR, 5 EMR, 3 medical students, 2 trauma Advanced Practice Registered Nurses or APRNs, and 2 trauma Registered Nurses or RNs). Demographics are shown in Table 1.

Pre-assessment

The majority of learners had either not received any previous training in how to effectively deliver peer feedback (40%) or had engaged in self-directed learning only (24%). A further 16% had received didactics on the subject, 12% had participated in a workshop, and two respondents had previously experienced simulations to teach peer feedback. Most learners (64%) had delivered peer feedback less than ten times (20% never, 32% 1–5 times, 12% 6–10 times). Seven learners (28%) felt that their knowledge of the process of peer feedback was "good" and one learner felt it was "excellent". Eleven learners (44%) agreed and two (8%) strongly agreed that they were confident to deliver peer feedback. Figure 1.

Post-assessment

All learners felt that the feedback they received was useful to their daily clinical practice (68% agree, 32% strongly agree). Learner knowledge and confidence in the peer feedback process improved following the simulation event. Figure 1. Learners also demonstrated improved perception of their ability to contribute to the domains of the TTCA-24 when as part of a team and as the team leader. Figure 2. All participants agreed that the simulation achieved each of the ICCAS competencies.

Table 1 Learner Demographics

Learners	
General Surgery Resident	13
PGY* 3	7
PGY 2	6
Emergency Medicine Resident	5
PGY 3	3
PGY 2	2
Nurse	4
APRN^	2
RN'	2
Medical Students	3
Age (median, years, range)	29 (25–37)
Race/ethnicity	
Asian	1
American Indian or Alaska Native	0
Black or African American	0
Hispanic/Latinx	1
Native Hawaiian or Other Pacific Islander	0
White	23
Two or more races	0
Other	0
Gender	
Female	14
Male	11
Non-binary/third gender	0
Prefer to self-describe	0
Prefer not to say	0

*PGY = Postgraduate year

^APRN = Advanced Practice Registered Nurse

'RN = Registered Nurse

Discussion

Peer feedback, or feedback given by a learner to another learner, is a valuable formative tool for learning, yet is underutilized as an educational strategy. Provision of effective interprofessional feedback has important considerations and potential barriers to this must be acknowledged and addressed for the process to be efficient for learning and, importantly, safe patient care. Provision of a discrete educational module on peer feedback was associated with improved learner knowledge and confidence with the process, with all learners finding feedback useful to their daily clinical practice.

Effective teamwork and communication are crucial for interprofessional team performance and issues with this are well-established affect patient surgical care e.g., tension between certain professional groups. This can extend into the ability of these learners to create a safe learning environment together and to foster psychological safety within this. Both factors are crucial to effective simulation learning. Consideration of the role of social identity theory in creation of educational events is crucial and it is important to recognize that there are interpersonal and intergroup factors that participate in forming an individuals' perception of their membership within a group [20]. Providing educational materials cognizant of social and hierarchical issues on peer feedback and delineating best practices for fostering a positive learning environment allowed our group to be effective in delivery of peer feedback. This is important to "flatten the hierarchy" that may be seen within surgical teams [21, 22]. A contributor to success in this area is an effective pre-brief and brief for the simulation event in which clear and explicit instructions are given to the learner. An example of verbiage used in our brief is "during the peer feedback process we all have an equal voice, we are all here to be heard and we believe that everyone participating in the simulation is intelligent, capable, and cares about doing their best and wants to improve" [23]. It is crucial for simulation educators to level the ground for all participants to participate on equal field and having all learners access the same pre-course materials, have the same voice and expectations of participation is essential to this process.

Structuring the peer feedback with a validated tool is vital to focus the learner's efforts and to provide the most useful formative assessment on which to develop future knowledge, skills, and behaviors. The use of the TTCA-24 in this event not only structured the peer feedback but also focused learners on aspects of teamwork within their own performance. This led to an improvement in all areas of course completion, both when the learner considered themselves as a team member and as a team leader. Again, the expectations were set within the video in the pre-course module, in which learners were advised to reflect on their own performance with regard to the TTCA-24 domains and evaluate how this reflection could guide their future performance. This strategy allows for two-fold benefit for the interprofessional learners, incorporating targeted and specific feedback from their peers with their own reflections to gain maximum benefit from the educational intervention.

This work has limitations. Our cohort was relatively small and limited to one institution. The applicability of this work to other institutions will need further exploration; it is possible that inter-institutional inter-departmental social dynamics may affect results. In addition, we performed this at a time of social distancing requirements within the pandemic and therefore groups were separated into "simulation" and "debrief" rooms for various parts of the educational event. Due to this the extent to which these

Fig. 1 Knowledge and confidence of learners with regard to peer feedback (a) My knowledge of the peer feedback process is (b) I am confident I can deliver effective peer feedback to a colleague
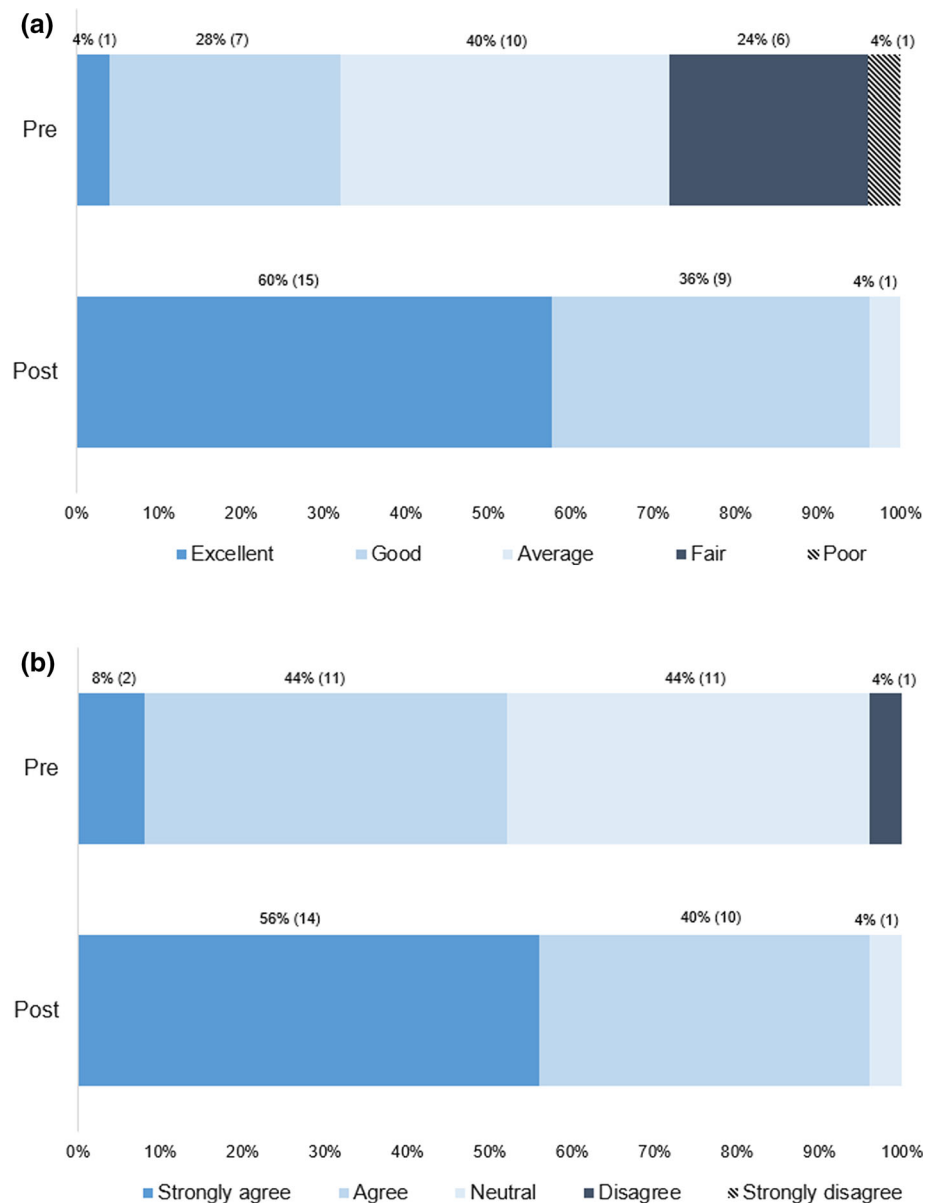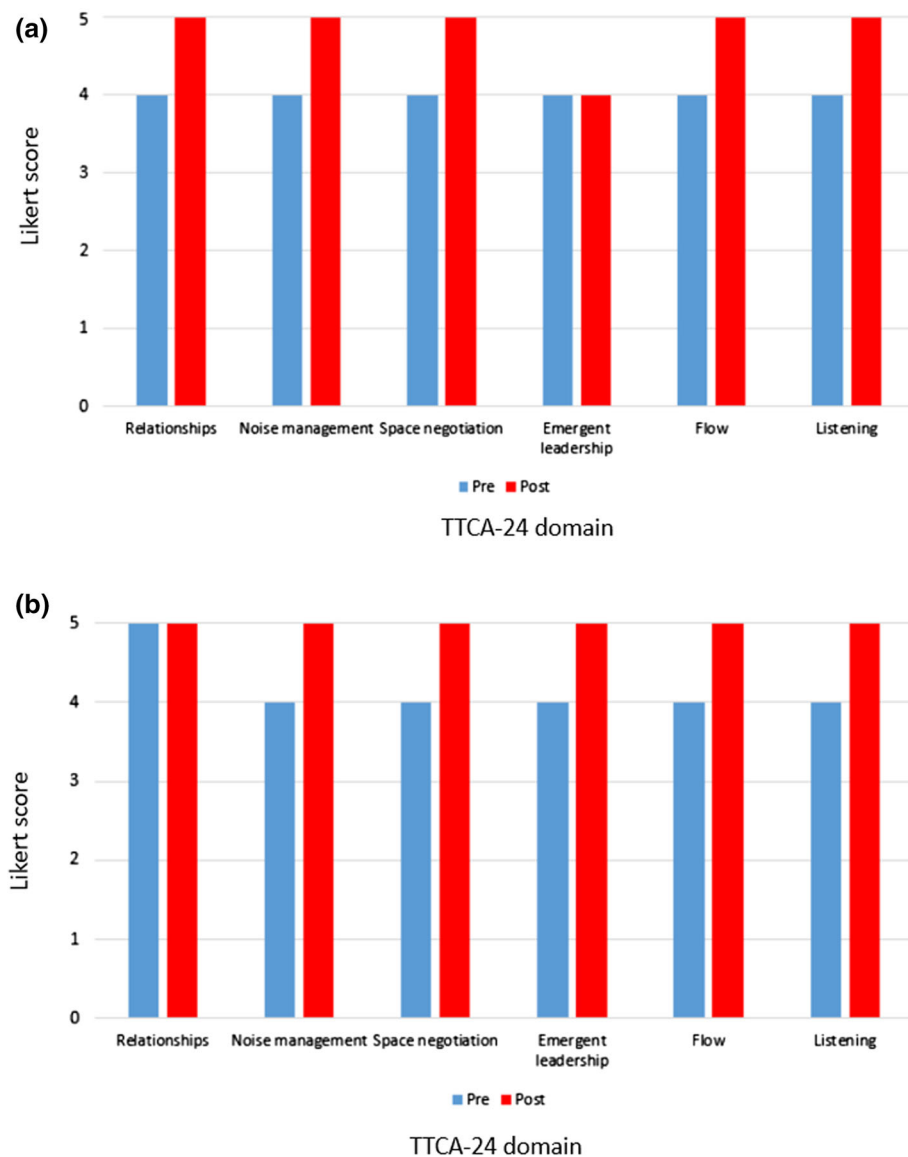
findings can be extrapolated into completely in-person events (with/without masks) is unknown. It may be that through the computer interface learners were emboldened and more apt to deliver honest peer feedback, compared to if they had delivered this in person. Despite this, the COVID-19 pandemic continues and the path out of it is uncertain. It is likely that at least hybrid educational strategies will continue to form part of our surgical education for the foreseeable future. In addition, it is possible that the simulation event itself is responsible for the improved learner knowledge and confidence rather than the provision of the educational module. To challenge this, the module informs quality of feedback during the debrief, and simulation without debrief has been shown to be

ineffective for learning. Interventions such as this module to improve the quality of the feedback within debrief are important to optimize the learning experience. Finally, our assessment of learners was limited to Kirkpatrick's level 1, or reaction [24, 25]. Due to the restraints of the current pandemic, it was not possible to assess levels 2 and 3 (i.e., learning and behavior) as shortly after this education the Delta and then Omicron waves disrupted clinical services. We aim to assess this translation into learning with learners in simulation events in the upcoming academic year.

We have shown this module is effective within a trauma activation and for members of departments who often interact with each other. We are crafting future work to investigate whether this module will be equally effective in

Fig. 2 Learner agreement with the statement "I contribute critically to the following team functions" (functions are domains of the TTCA-24 tool), data expressed as median Likert score (a) As a team member (b)As a team leader

Conclusions

Formal healthcare professional education on peer feedback is variable and often not targeted to inter-professional learners. Educational modules with a foundation in validated tools can be effective in improving learner knowledge and confidence in this process and may also serve to flatten hierarchies that can challenge effective interprofessional teamwork.

non-crisis clinical scenarios, scenarios related to technical skill acquisition, and those in which team members/learners do not have an existing relationship or familiarity. Based on the feedback we receive from these sessions the educational module contents may be modified to form a series of resources depending on the educational setting involved. It will also be interesting to assess the efficacy of this module in the undergraduate setting. It is important to develop a culture of inclusivity, and centering on interprofessional educational principles early in health professional careers may mitigate some of the challenges that can be encountered with teamwork and communication across professions.

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