

Assessment of Non-technical Skills Using High Fidelity Simulation among Emergency Medical Services (EMS) Students in Pune, India

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ABSTRACT

Introduction: In the curriculum for Emergency Medical Services (EMS), much emphasis is given on teaching technical skills and little focus on non-technical skills (NTS). The non-technical skills specifically applicable in emergency medical services are communicating, managing workload, anticipating, situation awareness, supervising, maintaining standards, using assertiveness and decision making which are broadly integrated into three key areas of Leadership, Teamwork and Task management. Simulated scenarios are an opportunity for presentation of similar crisis situations.

Objective: To assess non-technical skills using high fidelity simulation among Emergency Medical Services (EMS) students.

Methodology: Non-technical skills were assessed among 48 students using six clinical case scenarios on high fidelity simulation in a single day session. To assess the NTS, a standardized 11 item observational tool called Team Emergency Assessment Measure (TEAM) was used. The students were subjected to a simulation session followed by focused debriefing. The item on the TEAM tool was scored by two Simulation Educators to avoid rater bias.

Result and Discussion: Leadership and Task management were found to be relatively better compared to Teamwork across all groups. Overall team performance by all groups was found to be 5.38 out of 10. The participants scored well in parameters pertaining to leadership. The groups performed better in areas of effective communication, timely completion of tasks, acting with composure and control and maintaining a positive morale. High fidelity simulation offers an environment to hone both technical and non-technical skills.

Conclusion: This study underlines the significance of conducting more frequent non-technical skills training with adequate debriefing time dedicated to it.

Keywords: Leadership, Communication, Decision making, High fidelity simulation, Non-technical skills, Emergency medical services.

Introduction

Teaching technical skills and interventions using models and simulators specially intended for basic technical skills, prepare trainees for a positive and enriching educational experience in the technical or interventional platform¹. In the curriculum for Emergency Medical Services (EMS), emphasis is given on teaching technical skills and there is little focus on non-technical skills (NTS). Analysis of adverse events in the Emergency Department (ED) reveals that contributory factors commonly relate to non-technical

skills such as decision-making. Crisis Resource Management (CRM) courses, designed to improve non-technical skills, invariably center on the critically ill patient. While resuscitation is undeniably important, little attention has been paid to the skills necessary for routine management of the ED and the vital leadership role². Traditionally, non – technical skills training is given to students through task trainers which are low fidelity in nature. Good non-technical skills are pivotal to delivering high quality care, particularly in acute situations. Five categories of non-technical skills have been identified -- situational awareness, teamwork,

leadership, task management and decision making³. The non-technical skills specifically applicable in emergency medical services are communicating, managing workload, anticipating, situation awareness, supervising, maintaining standards, using assertiveness and decision making which are broadly integrated into three key areas of Leadership, Teamwork and Task management⁴. High fidelity Simulation training helps improve non-technical skills along with the technical skills. The use of a Simulation based training program has the potential to amplify learning from real-life clinical scenarios⁵. Medical teams depend on technical skills as well as non-technical skills for successful management of critical events. Simulated scenarios are an opportunity for recreation of similar crisis situations.⁶

Objective

To assess non-technical skills using high fidelity simulation among Emergency Medical Services (EMS) students.

Methodology

Non-technical skills were assessed among 48 students using high fidelity simulation in a single day session. Six

clinical case scenarios based on EMS curriculum were designed and tested before the session. The participants had experienced similar cases on low fidelity manikins along with the background theory of the cases. The session did not focus on technical skills of the participants. To assess the NTS, a standardized tool called Team Emergency Assessment Measure (TEAM) was used. The TEAM tool is an 11 item questionnaire with 5 point Likert scale having rating from 0 (lowest) to 5.(highest). The 12th item is the overall score for global rating of the team’s NTS performance on a scale of 1 (lowest) to 10 (highest). The 11 item observational TEAM tool is used to assess three key NTS including Leadership (2 items), Teamwork (7 items), and Task management (2 items).

On the day of the session, the participants were divided into eight groups of six students each. Each group was oriented to the manikin and prebriefed about the case history. This was followed by a simulation session lasting for about 10-12 minutes. The students underwent a focused debriefing session after the simulation. The entire event was video –recorded with prior consent of the students. The items on the TEAM tool were scored by two Simulation Educators to avoid rater bias. The data was collated and tabulated. The means and standard deviation of the scores was calculated.

Result

Table 1: Mean scores and standard deviation

Non-Technical Skills	Tool	Mean Score for each sub parameter (out of 5)	Mean Score for each parameter (out of 5)	Standard deviation
Leadership	1. Directions and command	3.25	3.19	0.71
	2. Maintained Global Perspective	3.13		0.83
Teamwork	3. Communicated effectively	2.88	2.48	0.64
	4. Complete tasks in timely manner	2.75		0.46
	5. Act with composure and control	2.88		0.35
	6. Morale was positive	2.75		0.46
	7. Adapted to changing situations	2.25		0.46
	8. Monitored and reassessed the situation	1.63		0.74
	9. Anticipated potential actions	2.25		0.89
Task Management	10. Prioritized tasks	2.38	2.94	1.06
	11. Followed approved standards and guidelines	3.50		0.53
Overall	12. Global rating of team (out of 10)	5.38		0.74

Table 1 shows the mean scores and standard deviation for each non-technical skill parameter

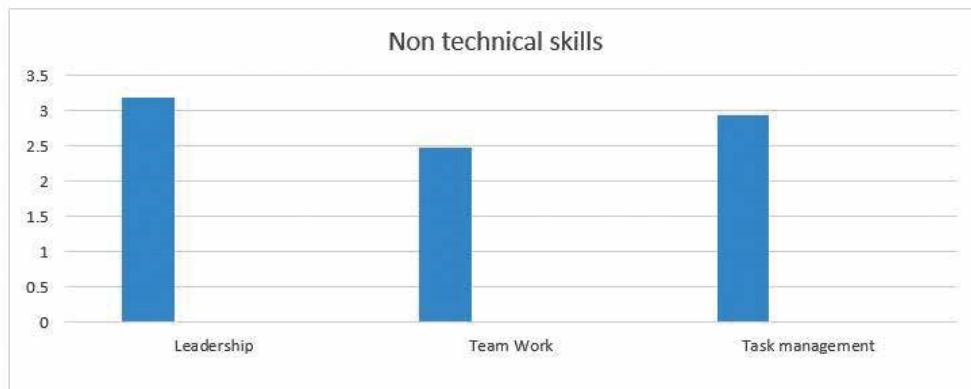


Fig. 1: Score of assessed non-technical skills (Out of 5)

Leadership and Task management were found to be relatively better compared to Teamwork across all groups. Overall team performance by all groups was found to be 5.38 out of 10.

Discussion

The 3 key non-technical skills assessed in the study included Leadership, Teamwork and Task management. The participants scored well in parameters pertaining to leadership.

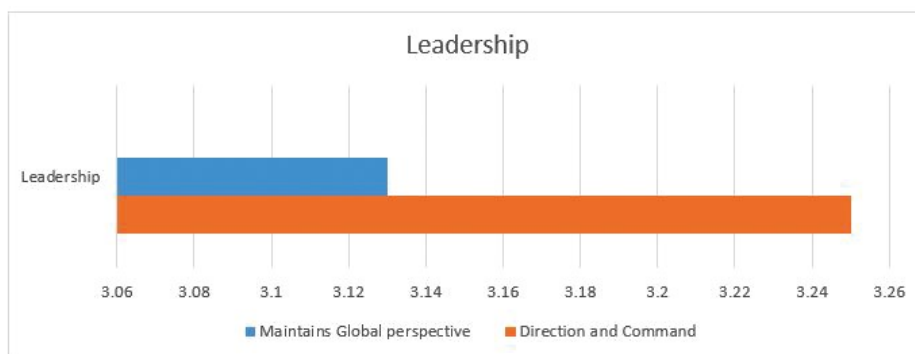


Figure 2: Mean Score for Leadership-sub parameters

The team leader across groups gave frequent directions to the team and maintained a global perspective during the case simulation. Leadership remains the cornerstone of successful team dynamics and also impacts patient outcomes.

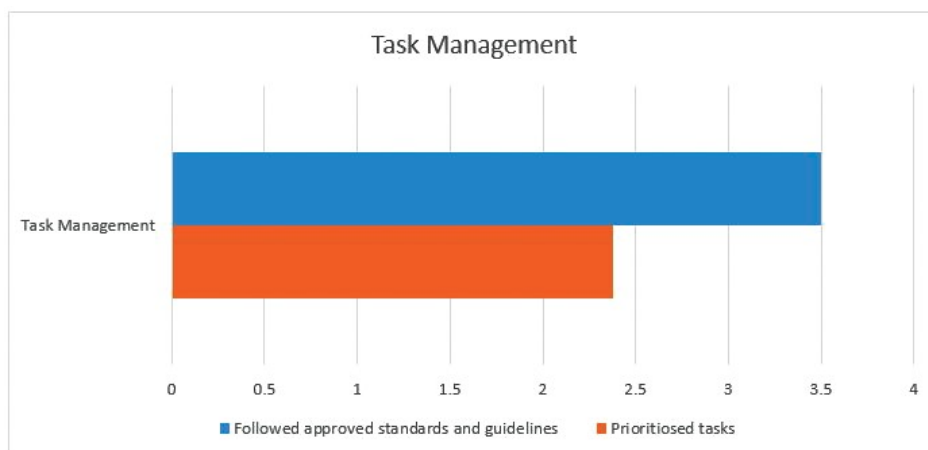


Figure 3: Mean Score of Task management - sub parameters

The participants also scored fairly well in the parameters measuring task management. All groups diligently followed approved standards and guidelines. But there was wide variation in prioritization of tasks. Some groups could not correctly prioritize the management steps. Correct task prioritization requires extensive experience and hence exposure to more simulation sessions can lead to improvement in this trait.

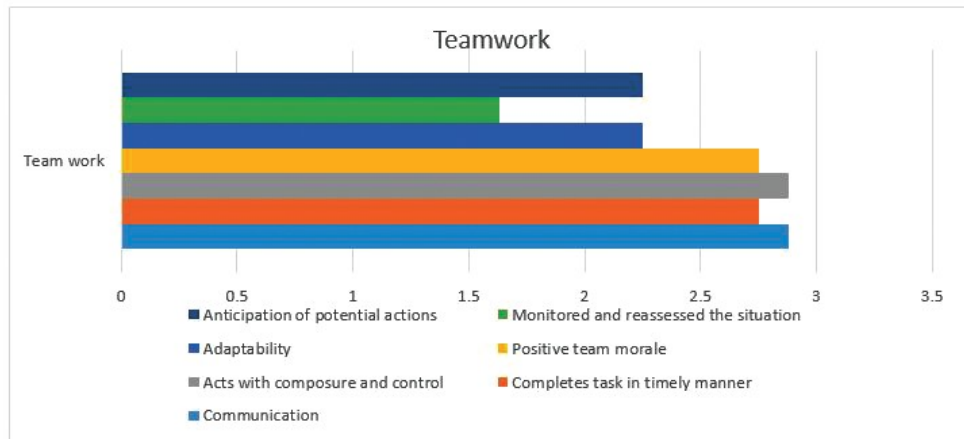


Figure 4: Mean Score of Teamwork - sub parameters

Teamwork was judged in seven parameters. The groups performed better in areas of effective communication, timely completion of tasks, acting with composure and control and maintaining a positive morale. However, the participants scored poorly in complex parameters like adapting to changing situations, monitoring and reassessment of situations and anticipation of potential actions. These parameters require repetitive practice to improve the overall situational awareness among the participants.

The participants scored on average of 5.38 out of 10 on overall rating of team. This value indicates large room for improvement in non-technical skills and draws attention to the significance of teaching non-technical skills to students involved in patient care.

High fidelity simulation offers an environment to hone both technical and non-technical skills. Unfortunately the focus of most simulation based trainings currently is hinged on technical skills.

Conclusion

This study underlines the significance of conducting more frequent non-technical skills training with adequate debriefing time dedicated to it. NTS training has a potential to vastly improve co-ordination amongst professionals in different specialties including medicine and nursing.

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Conflict of Interest: Nil

Ethical Clearance: Taken from IEC, SIU

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