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Letter to the Editor

Medical simulation: a novel innovation from resource limited nation

Sir,

Traditional medical learning was to learn from errors on human patient, however during the recent few decades, there has been revolutionary changes in medical education with introduction of simulation based learning, hence minimizing medical errors. One of the major concern for this change was the patient safety which otherwise leads to 98,000 deaths per year in USA.[1] These medical errors range from negligence, wrong medications or procedures, delays, professional attitude, team dynamics and communication gaps. Simulation based learning hence, can improve patient safety and provide clinicians a medium to learn from their errors without having deleterious effect on live patients.

Increasing patient awareness about their rights has led to more refusals from them to be seen by junior doctors hence minimizing the chance for junior doctors to practice and learn on live patients. Proficiency in error free clinical services by nurses, residents, and faculty can be enhanced not only by acquisition of knowledge but also by practicing and learning their clinical skills in a safe and controlled simulated environment and practiced their acquired knowledge, clinical, procedural, therapeutical and laboratorial skills, and critical thinking along with resuscitation, team dynamics and communication skills and professionalism to minimize serious consequences of medical error made during the learning process.[2,3]

Medical schools across Pakistan have changed their curricula from dictated lecture to more problem based learning (PBL), however with few available low fidelity manikins for simulated clinical scenarios and life support course like PALS/ACLS/ATLS and almost non-available high fidelity medical simulators or mannequin like Sim-Man/Mom/Baby-3G or Human Patient Simulator (HPS), along with the required training for Physicians/educators and skilled technical staff, the clinical teaching still rely on live patients teaching and practicing, hence endanger the patient safety. Moreover the team dynamics skills and communication acquisitions remain as second priority during these learning scenarios.[4]

Determining whether our innovative exercise on simulation based education and practices in promoting the clinical cases have any impact on improved clinical outcome and minimizes the medical errors etc. which is difficult to gauge from society like Pakistan where high fidelity medical simulation centers and trained physicians doesn't exist is merely difficult. Hence we simply aim to describe our experience of simulated clinical scenario practice and try to improve with practice and achieve the above mention goal in the existing system and try to improve further to incorporate simulation in medical education.

This milestone in the medical field in Pakistan was achieved with the establishment of Center of Innovation and Medical Education (CIME) at the Aga Khan University (AKU), which provides ample facilities to all health professionals to learn in a risk free environment with the help of high quality learning tools. The facility have state of art facilities with Wi-Fi internet connected computers, videoconferencing (local/international), complete skills lab with high/low fidelity manikins, virtual lab and PBL multi-station skills assessment rooms with one-way mirrors embedded with CCTV. The vicinity also has a Virtual research unit consisting of a simulation lab with a slave and a master robot room and a technical room and mock OR and dental phantom lab etc., this is use to bridge gaps between the developers, users, researchers and beneficiaries of end users. This lab allows assessment of new technologies under controlled conditions, simulating many real-world settings where the technology could be accessed e.g., hospital and clinic waiting rooms, operating rooms, intensive care units, consultation rooms, nursing stations, or the home environment.

In order to facilitate the appropriate use of CIME and the equipment capacity, more than a dozen of faculty got their comprehensive training of simulation and debriefing techniques from Boston Children Hospital, followed by technical staff who got preliminary training of simulation programming, software and hardware handling and troubleshooting. We faced similar problems as highlighted by Kim Hyungjong, as residents and faculty being clueless and freeze up despite attending open house session multiple times and observed different clinical scenarios.[5]

We developed, piloted and practiced multiple clinical scenarios by group of faculty supervised by educationist for our residents and junior faculty. First full day CME accredited simulated clinical scenario developed at Aga Khan University Hospital, simulation center was an integrated event lasting several weeks, author designed, conceptualized, created, organized and the run simulated clinical scenario focusing Emergency Medicine faculty on February 08, 2017. Learning objectives for this session was to create a safe simulated scenario, develop and discuss its challenges and debriefing tips. Clinical

scenario runs by residents was a 30 minute of initial assessment and management of a patient with septic shock as a team, followed by extensive debriefing session conducted by trained faculty. The course ended with a didactic session, group discussion and a short lecture on Introduction to Simulation, challenges and requirement, how to design and develop the course followed by reflective practices and techniques of debriefing and finally practice session for participants to develop their own simulated cases and practice them.

Followed by some more simulated sessions were conducted which includes a case of road traffic injury with poly-trauma/hypotensive and practiced the Advanced Trauma Life Support (ATLS), chest pain, airway compromise anaphylaxis etc. all followed by extensive debriefing session to assess cognitive abilities of the participants and discuss pros and cons of the exercise.

There were multiple challenges pre, post and during the sessions. Deficient understandings, preliminary knowledge and experience on simulation as assessed by pre course test reflects the need of time, commitment and consistency to customize with the infrastructure and equipment along with cooperation and coordination amongst different team member to learn with their own skill and experience. There was serious technical, administrative and academic deficiency to handle the stuff, kick off, and practice the scenario based simulation cases. Moreover the center was new for teachers, students, administration and others, and was not tune to take initiative step and start to run the show, only author has some prior exposure and training in the field. So different team members of simulation group cooperate, coordinate and join hand with each other and started to learn with their own experiences and skills.

Realization from senior administration in terms of training needs and the protected time for the faculty to spare protected time for maximum involvement in term of faculty development and training for the technical staff in their respective field.

The feedback we collected during these sessions was promising enough to enhance our satiety for more efforts. Residents sees it as game changer in their training while faculty love to practice their scenario session on manikins and feel it easy to demonstrate and practice as much as they can, hence are able to minimizes the risk to patients.

We still need to develop culture of safe patient practice with the introduction of simulation based training and Simulation exchange program across the globe with more established centers.

The institution must also focused on developing a team of dedicated and trained simulation educators with small trainings sessions/workshops and degree programs.

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