

## Medical simulator, an innovative tool for experiential learning, application and reflection of knowledge

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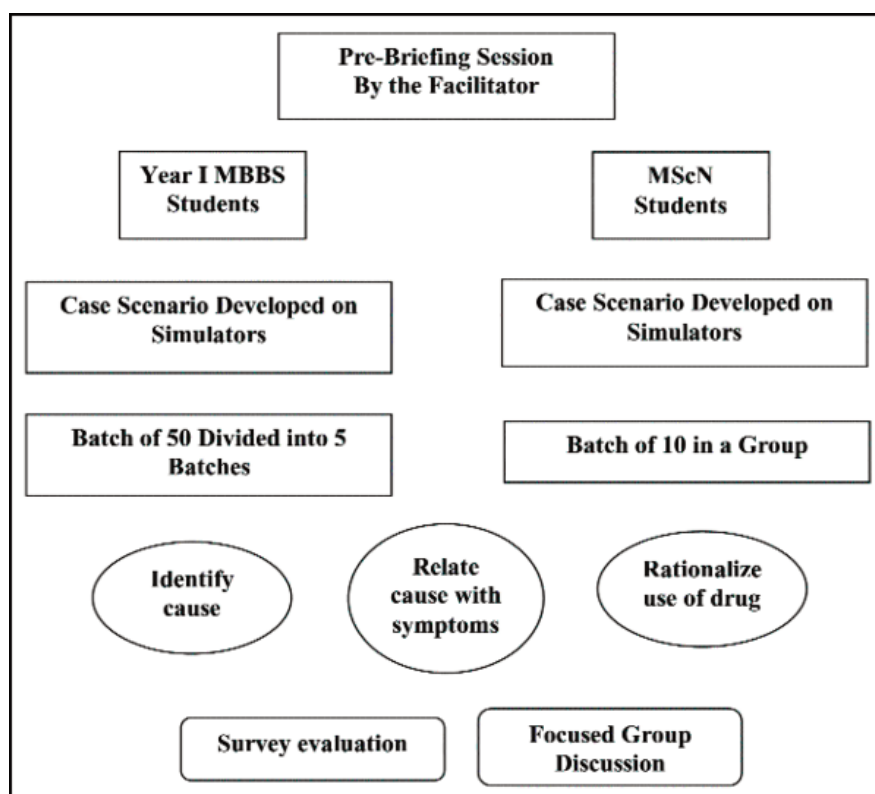
Madam, competency based curriculum is reinforced and improved by introduction of innovative teaching modalities that drive curiosity for knowledge and approaches to facilitate impulse of active learning.<sup>1</sup> The feedback obtained from learners experiences cultivate the learning curve for improvement and modification.<sup>2</sup> To enhance learning of students, multiple teaching approaches (Lectures, tutorials, lab sessions, clinical skills) have been practiced in Medical College and School of Nursing at Aga Khan University.

Medical simulators are commonly used as innovative teaching/learning pedagogy that help students better to integrate learnt concepts and apply those in designed scenarios given to students for application and reflection. The simulator-based sessions are developed with multidisciplinary intellectual inputs integrating at least two to three disciplines so that students could have better opportunity to understand, apply and reflect appropriately by integrating concepts of different disciplines and their importance in given clinical scenarios. Multiple studies have been carried out to assess the impact of simulated methods to enhance knowledge, skills and attitude of students.<sup>3-5</sup>

We propose that use of medical simulators for understanding of selected integrated (Pharmacological

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**Figure:** Medical simulator, an innovative tool for experiential learning, application and reflection of knowledge.

and patho-physiological) concepts will facilitate learning of both undergraduate and master level students. However, there is no study available in our region sharing the impact of medical simulators in experiential learning, application and reflection of knowledge. The blue print of this innovative learning modality should be divided into five main steps (Figure): 1. Development of simulation based clinical scenario, 2. Pre-briefing session of student in small groups with SMART objectives, 3. Display of simulation based clinical scenario, 4. Interactive case analysis, discussion and critique to identify the cause, relate symptoms with presentation and rationalize appropriate treatment regimen, 5. De-briefing session with students for reflection of acquired learning and its possible application.

We hope that use of such learning modality both in

undergraduate and post graduate education system will play a pivotal role in retention, integration and application of knowledge. We also expect that this learning model will inculcate critical thinking and clinical reasoning abilities. The findings of this study will not only attest the role of simulation based teaching for better student's engagement and deep learning but will also highlight the use of medical simulators in day to day teaching pedagogies. In our context, the findings of this study will provide evidence to the usefulness of medical simulators as innovative and worth adding tool for deep and student-centered learning.

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**Conflict of Interest:** Nothing to declare.

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## References

1. Ahmad HR, Hashmi S, Mahmood MH. A New Model for PhD Elective Course. *Pak J Med Sci.* 2017; 33: 782.
2. Rehman R, Iqbal A, Rehan R. Do adults learn by experience; Student's perceptions and performance in Neuro Physiology Lab Course? *Rawal Med J.* 2012; 37: 206-10.
3. Via DK, Kyle RR, Trask JD, Shields CH, Mongan PD. Using high fidelity patient simulation and an advanced distance education network to teach pharmacology to second-year medical students. *J Clin Anesth.* 2004; 16: 144-51.
4. Fraser K, Peets A, Walker I, Tworek J, Paget M, Wright B. The effect of simulator training on clinical skills acquisition, retention and transfer. *Med Educ.* 2009; 43: 784-9.
5. Gordon JA, Brown DF, Armstrong EG. Can a simulated critical care encounter accelerate basic science learning among preclinical medical students? A pilot study. *Simul Healthc.* 2006; 1: 13-7.