

VIEWPOINT

HOW SIMULATION-BASED MEDICAL EDUCATION CAN BE STARTED IN LOW RESOURCE SETTINGS

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Patient safety and improved healthcare is a major concern for healthcare providers, medical professionals and academic institutions. After the research identified that many patients die because of human error, medical simulation has been increasingly used in developed countries to train medical undergraduates and practitioners. However, most of the developing countries are unable to get benefits from it due to low income and low resource situations. As building simulation centres with high fidelity manikins require modern and expensive equipment, simulated patients and part-task trainers could provide a starting point in developing countries. These are low cost options for developing technical and non-technical skills and very effective for teaching basic concepts to novices. More advanced simulation centres can be established by fund raising with the help of charity organizations at the later stage.

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INTRODUCTION

Patient safety and improved healthcare have been always in debate, but it has become a major concern for healthcare providers, medical professionals and academic institutions after a report “To Err is Human” was published by Institute of Medicine.¹ According to this report, 98,000 Americans die each year just because of medical errors that were avoidable.² Further research has identified even more deaths because of human error. As a result, medical simulation has been increasingly developed and used from the beginning of the last decade. Medical simulation is not only used for training purpose, but its focus is to reduce human errors and costs incurred because of those errors. Along with this, medical simulation is used as a tool for training experienced medical practitioners and undergraduate medical students to achieve improved health care and patient safety. However, all these advancements are somewhat limited to developed countries of the world, for example the UK, USA and Australia. Using medical simulation for training practitioners to improve healthcare is still an untouched topic in developing countries, hence, quality of healthcare is not satisfactory. So, the thinking point ascends that until when residents of these countries will suffer and what could be done to improve the situation?

What are the possible barriers?

Although using medical simulation is an effective method for learning and practising critical cases and scenarios in medicine, it is yet difficult to adopt in developing countries and the reason in my opinion is low-resources and low-income situation. In many

developing countries, resources are limited to the extent that according to a survey held in 2010, for a population of 10 million in East Africa there are only 45 full-time surgeons and 12 physician anaesthetists available.³ One of the reports from World Health Organization has stated that Africa alone contains 20% of patients in the world, however; only 4% healthcare personals are available there.⁴ The situation is not different in many South Asian countries. Because of low resources, the government in these countries is not able to provide proper basic facilities so the matter of improving healthcare services and patient safety is least likely to be considered. To overcome the limited facilities provided by the government, some private sector organisations rise and try to improve the situation in important areas like education and healthcare. However, starting simulation-based medical teaching requires modern and expensive equipment, advanced infrastructure and trained staff to handle such a setup. These requirements are also the main factors that medical simulation has not been used as a tool for improving the healthcare services so far in developing countries.

How simulation-based medical education can be started?

Knowing the effectiveness and outcomes of medical simulation with my experience of working in advanced and developed simulation centres, a solution in my opinion could be to start the simulation-based teaching using simulated/standardised patients and part-task trainers. Both are low cost yet very effective in developing basic technical and non-technical skills in novices.

Simulated/standardised patients (SPs) are individuals who are specifically trained to act exactly like a real patient that even skilled clinicians cannot recognise that they are not actual patients.⁵ SPs not only imitate the patient physically during the simulated sessions, but also the history, emotions, personality and body language. The positive point about SPs is that no big cost is involved in hiring and training them, making SPs feasible to be used in developing countries for starting simulation-based teaching. Organizations providing medical education can hire suitable people as SPs according to the different and extensive range of critical cases in all the specialities, which can be trained and then used in small group teachings.

Similarly, using part-task trainers (PTT) is another low-cost option for developing expertise in basic technical and non-technical skills. PTT are isolated simulators that are not very expensive and also don't require intensive training and resources to maintain, yet are equally effective as high-fidelity simulators. Some examples of PTT include venepuncture arms, airway management heads, abdominal examination trainers, breast exam trainers, lumbar puncture trainers and pelvic exam trainers. Although these PTT are low-fidelity and can be used to learn one technical skill, a number of non-technical skills can be practised at the same time, which will improve healthcare in the long run. Non-technical skills have the same importance as clinical skills when it comes to patient safety and reducing errors. These skills include situation awareness, prioritising the matter, time management, listening to patient concerns, giving proper instructions to the patient before and after a procedure and communication with team members. To teach and practice these skills, simulated sessions can be developed which combine PTT and SPs where an isolated technical skill is practised on the PTT while communicating and practising non-technical skills on the SP.

I realise that initiating these low-cost setups would be not easy in developing countries but at the same time, I think that the system of charity, donation and fundraising is very strong in those countries. Organisations and individuals from developed countries help and donate for causes like health and food for developing countries. For example, in Pakistan individuals alone have built reputable healthcare institutions by just fundraising, which

include "Shaukat Khanum Memorial Cancer Hospital & Research Centre", "The Sindh Institute of Urology & Transplantation (SIUT)", "EDHI Welfare Organization" and many more. To me, it gives a clue that medical schools with limited funds and resources can start simulation-based teaching by investing in PTT and SPs. More advanced simulation centres with high-fidelity manikins can be established at a later stage if teaching using PTT and SPs receive a positive response from students, faculty, patients and other stakeholders of the healthcare organizations. This will also encourage, motivate and mobilise government and public sector charity organizations that work for improvement and development of the healthcare sector to help in collecting funds or provide training to build clinical skills and simulation centres.

CONCLUSION

I would say that it is now time for developing countries to move forward as providing education to medical practitioners through simulation has proved potential of improving human performance, building confidence in health providers, enhancing professionalism and reducing errors due to human factors.² In conclusion, medical simulation being a vital part in training medical practitioners should be initiated in developing countries to provide better healthcare services in the long run.

REFERENCES

1. Kohn L, Corrigan J, Donaldson M, editors. *To Err is Human: Building a Safer Health System*. Committee on Quality of Health Care in America, Institute of Medicine. Washington DC: [Internet]. National Academies Press. 2000. [cited 2019 Jan] Available from: <https://www.ncbi.nlm.nih.gov/pubmed/25077248>
2. Kalaniti K, Campbell DM. Simulation-based medical education: time for a pedagogical shift. *Indian Paediatr* 2015;52(1):41-5.
3. Petroze RT, Nzayisenga A, Rusanganwa V, Ntakiyiruta G, Calland JF. Comprehensive national analysis of emergency and essential surgical capacity in Rwanda. *Br J Surg* 2012;99(3):436-43.
4. Abbas OA, Samuel BO, Odufeko GT. Medical simulation a tool yet untapped in most developing nations in Africa. *Int J Comput Appl* 2014;97(5):1-4.
5. Cleland JA, Abe K, Rethans JJ. The use of simulated patients in medical education: AMEE Guide No 42. *Med Teach* 2009;31(6):477-86.

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