Effectiveness of interactive app-based simulation experience on the physiology of shock as part of early clinical exposure to first year medical students - stratified randomized control trial

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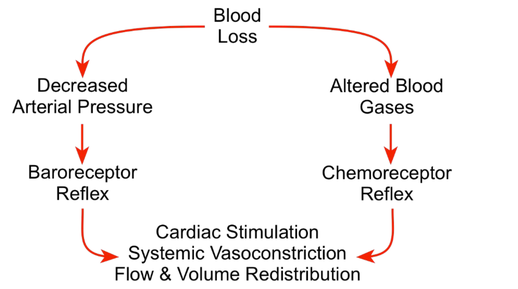
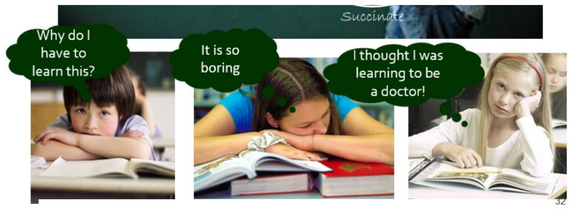
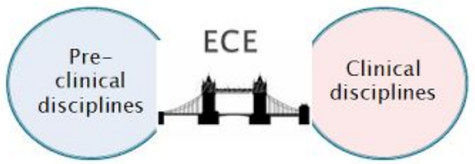
Introduction







Background of the problem

Early clinical exposure (ECE) is introduced as part of first year curriculum to bridge the gap between theory to clinics. Implementation of ECE has its own share of challenges.

Firstly, since ECE requires coordination and collaboration with clinical department, **with limited faculty** available this becomes a huge challenge.

Secondly, with varied patient availability it is **difficult to provide a uniform exposure** to all the students.

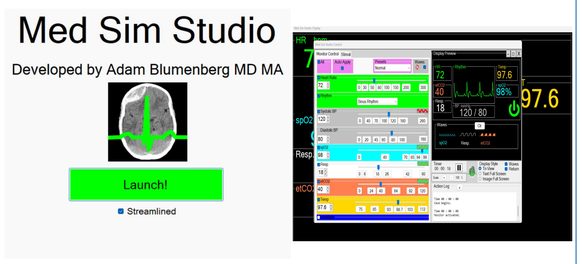
Thirdly there are **risks involved in exposing** the first-year students to real patients (especially during Covid- 19).

Fourthly, commonly adopted teaching method is **paper based** causing issues with **fidelity**. To overcome these challenges, we designed this project.

Methodology

Proposed solution

- 250 first year medical students were stratified based on the previous assessment as high and low scoring group.
- 60 students were randomly chosen from high scoring and low scoring groups.
- Two groups namely intervention and control groups consisting an equal number of high and low scoring students were created.
- Control group had a PowerPoint based lecture along with cased based discussion in small groups while Intervention group were taught using a free, easily available simulation education tool called ***medsim* studio (medical education software with vital sign simulation)**.

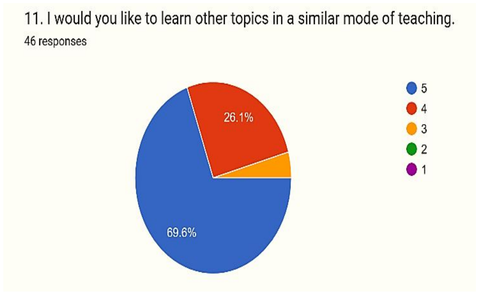


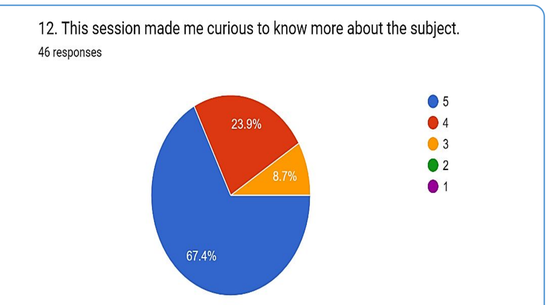
- Students were exposed to different types of clinical presentation of shock with the help of clinical scenarios, mannequin and simulated clinical monitor, where the facilitator could alter the normal physiology.
- Students were asked to act as a primary care physician, in groups of four.
- They were given a task to identify the signs and symptoms to diagnosis a particular type of shock.
- The pre-test and post were comprising 20 MCQ s, 6 extended matching questions (EMQ), 2 script concordance test (SCT) were administered to both the groups.

Results

- Mean pre-test and post test scores in intervention group(n=52) is 20.5 and 26.6 while in control group(n=47) it is 19.8 and 25.9 respectively.
- The difference between pre and post-scores is statistically significant for total scores, MCQ, EMQ in both groups
- Between low and high scorers the difference was **statistically significant** (P≤0.05) in the intervention group
- The difference is **not statistically significant** between intervention and control groups
- **Quantitative and qualitative** feedback was collected from the students.

1. ***"Practical and applied thinking from provided Clinical case studies"***
2. ***"Small group discussion on case study and clear explanation"***
3. ***"Practically we did so that I get more confident"***





Conclusion

Simulation based teaching of shock was more effective for low scoring groups than high scoring group of students.

Lessons learnt

We were able to **provide equal clinical exposure** to large number of students in a relatively safe environment.

An immersive and interactive learning platform was provided to the students in realistic settings with **existing pre-clinical faculty.**

Since this platform provides an opportunity to revisit the developed cases scenarios multiple times and create case scenarios with varied algorithm of patient recovery or development of complications it can be customized to varied group of learners.

References

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Acknowledgements

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