International Journal of Research in Medical Sciences
Panchu P et al. Int J Res Med Sci. 2019 Sep;7(9):3379-3384
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012
DOI: http://dx.doi.org/10.18203/2320-6012.ijrms20193917

Original Research Article

Choosing the best teaching modality: medical students' perspectives

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Received: 27 June 2019
Revised: 30 July 2019
Accepted: 03 August 2019

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ABSTRACT

Background: Didactic mode of teaching retains a strong hold in the Indian medical education scenario. Is this because there is no alternative teaching method or is it the preferred choice of the learners? When outcomes of teaching are considered, better teaching tools are available. But when the question of choice of the learners is raised, there are no satisfactory answers. This study aims to expose medical students to different modalities of training and to obtain their verdict on what they consider is the best method of teaching to aid in their learning process.
Methods: A cross sectional study was conducted on all I year medical students after obtaining institutional clearance. 33 students consented to participate in the study. They were divided into 3 groups and given instructions in cardiopulmonary resuscitation (CPR)- single rescuer method in the didactic, video format and manikin based. A pre-test was taken and a post-test too. A skills test was taken at the end of teaching. Finally, all the students were asked to give a feedback. The results tabulated and analyzed.
Results: Students with simulation (manikin) based teaching had more confidence in performance of CPR, performed better in the skills test and post-test when compared to the other groups. Almost unanimously, the students preferred simulation based teaching over the other two tools that they were exposed to.
Conclusion: A revolution in medical teaching in the Indian syllabus is the need of the hour. While newer tools are being implemented, the requirements and choices of the recipients of teaching should also be considered.

Keywords: Cardiopulmonary resuscitation, Choices, Didactic, Medical education, Medical students, Simulation

INTRODUCTION

Medical education is a rapidly evolving and dynamic domain. Constant evolution in the art of teaching medicine has included a spectrum ranging from the use of chalk and talk, overhead projectors, use of computer based training ,models, animals to manikin based teaching.[1] Newer techniques like small group discussions ,problem based learning, self-directed learning, simulation based studies-all stake claim to being better than their predecessors.[2] The shift from teacher centric learning to student centric learning is clearly apparent in this evolution saga, but the documentation to prove the same remains controversial. In this situation, should not the opinion of students regarding their favored choice of learning be considered? Such was the aim of this study.

The age old method of didactic lectures as a form of imparting knowledge to medical students, though outdated cannot be put to the grave. Practical knowledge, highly advocated in the medical curriculum proves its efficacy if preceded by didactic mode of teaching.[3] However a large student size, poor modes of presentation and long duration of lectures may adversely affect the learning outcome.[4] The next modality emerging in the evolution spectrum of teaching tools was the use of

animation to make the subject more interesting and improve student outcomes.[5] Religious believes in some cultures which did not allow dissection in human cadavers , prevention of cruelty to animals which makes dissection of animals for education purposes troublesome, may have aided in furthering the importance given to animation based education.[6] Short duration videos requiring less attention span, ability to replay the videos at will, interactive formats of certain videos make the learning experience pleasant and desirable beating the tedium of didactic lectures. However merely watching the demonstration of a practical experiment is a far cry from actually performing the same. Hence the final outcome; that is shaping a student into a doctor who has good clinical skills by use of video demonstrations, as a substitute to didactic lecture or hands on, may be questionable. In the armory of medical education tools, simulation based education is the latest toy. This is a tool of education which has its roots in ancient times, a long history which is now coming to light.[7] It's strength lies in its ability to reproduce similar conditions of clinical setting while giving a safe environment to practice, free from the stresses of actual clinical scenario. It tricks the students into sense of safety from the stresses of actually performing on the patient with little practice and provides scope to hone their practical skills. Review of literature has firmly lodged simulation based training in the list of superior tools to be used to shape a novice medical student into an efficient clinical practitioner.[8-11]

Having presented arguments regarding different modalities of teaching which includes didactic lectures, animation based education and simulation based education; the winner among these three is still moot. Exams which ultimately determine the outcome and the efficacy of each of these tools can be one of the deciding factors aiding in choice. While we reason the merits and demerits of various modalities, authors often forget that the learner must be given a choice as to his preferred modality. In this study authors have given voice to the opinion of medical students who were exposed to various learning modalities.

METHODS

This was a cross sectional study done among first year medical students in a medical college in south India after obtaining clearance from the institutional review board and institutional ethics committee IEC Study Ref.No:18/19/IEC/JMMC&RI. The protocol was registered under ctri.nic.in (CTRI/@019/03/018279).

Participants for this study all first year medical students in a single medical college in south India were included if they voluntarily consented to be part of the study. 33 out of 100 first year students consented to participate in this study which was conducted over a period of one month in March 2019.

Inclusion criteria

All First MBBS students who consent to participate in the study.

Exclusion criteria

Prior knowledge and training in giving CPR and students with any physical disabilities.

This study was conducted in March 1st, 2019 to March 31st, 2019.

After ensuring that the students have no physical disability impeding them from effectively performing high quality CPR or prior knowledge of CPR they were divided into three batches consisting of 10,11, and 12 students each. An initial briefing regarding the project was given to all the students who were asked to assemble one Sunday morning in the institution. A pretest consisting of ten questions based on accepted 2015 guidelines of American Heart Association was administered to the students.[12] The duration of the pretest was 10 minutes.

Following this the 3 batches were assigned to their respective rooms in the following order. Batch A underwent didactic training batch. B was shown animation videos and batch C was given hands on training using manikins by American Heart association (AHA) certified basic life support (BLS) instructors . The same content of information was imparted to all the students using different modalities of teaching in these sessions over a period of one hour.

Following the intervention a post test was administered to the students consisting of the same questions as in the pre-test but in different order.

The intervention was concluded by taking a skills test of all the three groups in their respective rooms using manikins and a cardiopulmonary resuscitation (CPR) checklist.12 At no point of time was the intermingling of students allowed to happen. In order to ensure equal distribution of knowledge in the end, all students were given training in the modalities which they missed out in the first session.

At the end of the days' training, after the students have undergone all the three modalities of teaching, a verbal and written feedback is obtained. This feedback is analyzed and the results presented. The questions were graded on a five point likert scale with responses ranging from poor, average , good, very good and excellent. The descriptive data so obtained has been presented under the result's section.

Statistical analysis –The data collected was tabulated and analyzed using Statistical Package for the Social Sciences

(SPSS) version 21. Frequency of the scores using likert scale was determined and frequency percent calculated.

RESULTS

33 first year medical students participated in the study and their feedback was obtained and analyzed.

Table 1 Analysis of the question" After didactic lecture/animation video/hands on training, my confidence in delivering CPR" is given below. The five points in likert scale were poor, average, good, very good, excellent. 8 out of 12 students found simulation to be excellent while no student found didactic or video based training to be excellent.

Table 1: Analysis of the question After didactic lecture/animation video/hands on training, my confidence in delivering CPR.

Likert scale	Didactic lecture		Animation video		Simulation	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Poor	1	3	Nil	Nil	Nil	Nil
Average	3	9.1	Nil	Nil	Nil	Nil
Good	3	9.1	7	21.2	1	3
Very Good	3	9.1	4	12.1	3	9.1
Excellent	Nil	Nil	Nil	Nil	8	24.2
Total	10	30.3	11	33.3	12	36.4

Table 2: Analyzed the response to the question, the initial mode of instruction prepared me to successfully pass the skills session.

Likert scale	Didactic lecture		Animation video		Simulation	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Poor	1	10	Nil	Nil	Nil	Nil
Average	1	10	3	27.3	Nil	Nil
Good	5	50	1	9.1	2	16.7
Very Good	2	20	6	54.5	4	33.3
Excellent	1	10	1	9.1	6	50
Total	10	100	11	100	12	100

Table 3: Analyzed the response to the question After completion of all the three modes of teaching my confidence in using the skills taught to me is.

Likert scale	Frequency	Percent
Good	1	3
Very Good	14	42.4
Excellent	18	54.5
Total	33	100

Table 2 Analyzed the response to the question "The initial mode of instruction prepared me to successfully pass the skills session".50% of students in the simulation group answered that they were prepared to pass the skills session after the initial mode of instruction. Only 10% and 9% of students in the didactic and video group respectively were confident of the same.

After completion of all the three modes of teaching my confidence in using the skills taught to me is was the question analyzed in Table 3.18 out of 33were fully confident of their skills after all the modes of instruction was completed and only 1 out of 33 students did not have the confidence. Comparison between didactic lectures, animation videos and manikin based simulation using students' perspectives has been tabulated in Table 4. Out of 33 students 24 preferred simulation over didactic mode of teaching, 21 preferred simulation over video animation.

The opinion of students regarding incorporation of manikin based simulation in medical curriculum has been tabulated in Table 5. out of 33 participants 28 highly recommend the incorporation of manikin based simulation in the medical curriculum. No one was opposed to the incorporation of the same.

Table 6 shows the preferred mode of teaching among the medical students. 97% of the participants voted for simulation as their choice of teaching modality. Only 1 student preferred animation based videos as the best teaching tool.

Table 4: Comparison between didactic lectures, animation videos and manikin based simulation using students' perspectives.

Likert scale	Simulation v/s Didactic lectures		Simulation v/s video		Animation	Didactic v/s Simulation
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Poor	Nil	Nil	Nil	Nil	3	9.1
Average	Nil	Nil	1	3	4	12.1
Good	1	3	1	3	20	60.6
Very Good	8	24.2	10	30.3	6	18.2
Excellent	24	72.7	21	63.6	Nil	Nil
Total	33	100	33	100	33	100

Table 5: The opinion of students regarding incorporation of manikin based simulation in medical curriculum.

Likert scale	Frequency	Percent
Good	1	3
Very Good	4	12.1
Excellent	28	84.8
Total	33	100

Table 6: The preferred mode of teaching among the medical students.

Modality	Frequency	Percent
Video/Animation	1	3
Simulation	32	97
Total	33	100

DISCUSSION

Simulation has been touted as the most important teaching tools for medical curriculum in the west and has revolutionized medical science concept delivery to students.[13] The incorporation of the same in the Indian curriculum is much awaited pending concrete evidence regarding its usefulness and the verdict from the students is important and awaited. A pilot study undertaken by us has already proven outcome based superiority of use of simulation as a teaching method in comparison to didactic and animation video based teaching (article under review for publication).This study focuses on students' perspectives and their opinion regarding various teaching methodologies and their views regarding the extent of incorporation of the various methodologies in the medical curriculum, keeping in mind that the student's performance will be optimal if he/she likes the mode of teaching.[14]

Table 1 shows the response of students to the question After didactic lecture/Animation video/Manikin based simulation my confidence in delivering CPR is. Authors observed that out of 10 students who underwent didactic lecture as the first mode of instruction felt that their confidence ranged from poor to very good.

Three students each felt their confidence to be average, good and very good while only one student had poor confidence in delivering CPR after listening to didactic presentation on CPR. Seven and four out of eleven students who watched animation videos on CPR as the first mode of instruction had good to very good confidence respectively in delivering CPR. Even though our pilot study (under review) revealed that students who underwent didactic training first performed better than the students who had undergone video or animation based training, the confidence obtained from the latter was more. This brings light to the conflict as the choice of instruction to be adopted by the instructor - should it be outcome friendly or student friendly? This being a small sample size and there being lack of conclusive evidence regarding the learner's perspectives, a resolution to the conflict is yet to be found. When the confidence levels of students undergoing manikin based simulation training first was considered it is seen that 1,3,and 8 out of 12 students found their confidence to be good, very good and excellent respectively. No one had ticked the 'poor' or 'average' option. This definitely places simulation based instruction on the top of the list of choices for student instruction.[14-16.]

The culmination of instruction was in the form of MCQ based posttest and skills test. When students were asked if the initial mode of teaching them prepared them to pass the skills test, the response obtained was as seen in table 2. Only 1 student felt that he was poorly prepared to face the skills test and he belonged to the "didactic group" as the initial mode of instruction. 4 out of33 students were averagely prepared to give the skills test and none of them belonged to the "simulation group" as the initial mode of instruction as evident from table 2. "Good" confidence for skills test was seen in 5 (didactic group),1 (video group) and 2 (simulation group).Interesting to note is that out of 33 students 10 had very good to excellent confidence and they all belonged to the simulation group when compared to 7 students in video group and only 3

in the didactic group. In terms of inculcating confidence among student's manikin based simulation wins over the other modes of instruction.[14]

Table 3 analyzed the response to the question "After completion of all the three modes of teaching my confidence in using the skills taught to me is".18 students responded as excellent. 14 students and 1 student responded as very good and good respectively. [17]After all the modes of instructions had been delivered; all the 33 students had good to excellent confidence in performing CPR as seen in table 3 which further reiterates the point that no single mode of teaching can be considered in isolation.

Each of the modalities of teaching was compared to each other according to the students' perspective is tabulated in table 4. 24 and 21 students prefer simulation over didactic lectures and animation videos respectively. When didactic lectures are compared with animation, most students found didactic better than videos. This statement puts us in direct conflict with our previous statements where authors claimed that videos increased the confidence of students over didactic lectures. The point to ponder here would be that the reason of preference of didactic over videos may not be with respect to confidence alone. Other parameters like retention of the learned content, outcome on the basis of marks, comfort due to repeatedly being exposed to classroom teaching may have influenced their answers to the question asked in the feedback. Research has placed simulation superior to the other methods but lack of literature comparing didactic and animation further adds to the confusion.[18,19] More work needs to be done in this area.

When questioned regarding the need for incorporation of simulation based education in the medical curriculum, as seen in table 5, the students' response was overwhelming with 28 out of 33 students strongly advocating its incorporation. Strong evidence to the same was obtained from eminent researches in this field.[8,9,20] The final answer to the question which poses as the aim of our study regarding the mode of teaching most preferred by the students is finally answered in table 6. Out of 33 students to whom this question was addressed, 32 of them strongly prefer simulation based teaching and only 1 student found animation based instruction useful. This gives a clear perspective on the requirements of the learners and must be given due thought in the "learner centric world".

The study had certain limitations the important among them being the smaller sample size. 67% of the population did not participate in the study.

CONCLUSION

Simulation based instruction, its efficacy and popularity are now in the spotlight. As instructors authors cannot ignore the students' mandate on their preferred choice of instruction. Bearing in mind the predictable positive outcomes obtained from the other modes of instructions, those cannot be ignored either. Authors propose long-term follow up studies using different modes of instruction and students feedback regarding the same with a larger sample population preferably multi centric be conducted in the future in order to ensure that the doctors of tomorrow were also happy learners yesterday.

ACKNOWLEDGEMENTS

Authors acknowledge students and staffs of the physiology and emergency medicine department of jubilee mission medical college and research institute for their contributions.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee of Mission Medical College and Research Institute, Thrissur, Kerala, India
Ref.No:18/19/IEC/JMMC&RI

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Cite this article as: Panchu P, Suseel A, George T. Choosing the best teaching modality: medical students' perspectives. Int J Res Med Sci 2019;7:3379-84.