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ORIGINAL ARTICLE

Experiences of Undergraduate Medical Students Regarding Virtual Clinical Rotations during COVID 19 in Karachi

SHAZIA FAKHIR DURRANI, AMMARA HAMEED, POOJA HAREN KUMAR, Ayesha Muneer Arain, Fatima Fakhir Musharraf

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Correspondence to:

Shazia Fakhir Durrani,
Department of Pediatrics, Bahria University Medical and Dental College, Karachi

E-mail: shaziafakhir@hotmail.com

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ABSTRACT

Objective: To explore the lived experiences and feelings of clinical year undergraduate MBBS students regarding virtual clinical rotations.

Study Design: Cross sectional qualitative descriptive study.

Place and Duration of Study: Private and Public Medical Universities in Karachi and duration of study 6 months.

Material and Methods: In-depth interviews of 9 students taken from clinical year undergraduate medical students regarding their live experiences and feelings Views recorded through video clips and conference calls. 2 live focus group discussions conducted and recorded .After transcription, codes and themes made and data interpreted and recorded.

Results: A thematic content analysis yielded four core themes: (1), not the true feel (2), history taking of simulated patients (3) no hands on learning, and (4) weak internet. The online clinics were not as effective. Skills and examinations not learnt. Interaction less due to internet connection failure. Most students preferred face to face for clinical rotations due to lack of technical resources.

Conclusion: Online clinical rotations cannot replace actual campus and clinic face to face teaching in low socioeconomic countries.

Key Words: *Online teaching, Medical education, Computer assisted teaching*

INTRODUCTION

The post COVID 19 era requires new strategies. Innovations in medical education have already replaced face to face learning by virtual to reduce exposure. Low socioeconomic countries cannot afford expensive gadgets, high fidelity simulations and holographic cameras and other latest technologies for their students so it was a concern to continue virtual medical education in our country in the best way possible. Student experiences led us to know whether learning was actually taking place in these circumstances and what steps should be taken to ensure this.

Due to the sudden closure of all academic institutes, medical education was severely affected.[1] Adaptations done during this time shall

be taken into the future even when Covid era wanes.[2] Medical educators tried their best to cover as much as possible while changing their teaching strategies from classroom teachings to online.[3] The real issue that occurred was the clinical rotations which were going on for the undergraduate clinical years. Most of the medical institutes managed to convert lectures into online lectures quite effectively but as far as clinical skills are concerned it was not an easy task.[4] Since the third, fourth and final year undergraduate were exposed to real live clinical teaching before the pandemic lockdown started and could somewhat relate but missed a lot of the real patient feel and clinical environments.[5] High fidelity simulations,[6,7] holographic cameras,[8] virtual attendance of rounds and case discussions via zoom and teams, all these were thought of but proved to be either too expensive for low socioeconomic countries or too difficult to manage.[9] Videos of clinical examination techniques,[10] history taking from virtual patients[11] were actually good options but they were not successful either because of lack of faculty training and motivation or student lack of interest plus home environment took away the feel of real live clinical exposure.[12] Although a study done in Pakistani universities proved that virtual reality is best for medical student in motivation and learning competencies.[13] A study done in Bangladesh during Covid era stated student views and according to the students, face to face could not be replaced by virtual.[14] In this technological era, innovations can lead to have led to transfer of knowledge by internet, but still most of the psychomotor skills cannot be learned, unless actually doing them. However, e-learning can assist in clearing concepts and learning for certain physical skills. For example, a package containing theory followed by a video showing the technique, could prepare learners before face to face session. It could be used to deliver stages 1 and 2 of the widely used “4 stage” technique.[15] It is in the best interest of the students, and should be further investigated so as and if similar situation occurs in future, appropriate action can be taken as a way forward in medical education.

MATERIAL AND METHODS

Setting is Private and public medical college, Karachi. with a Total Duration of Study of 6 months. .The Sampling technique is Convenience samplingInclusion criteria: Third, fourth and final year undergraduate MBBS students who attended the virtual clinical teaching done online during the pandemic. Exclusion criteria: Those who did not attend the virtual clinics or did not have access to internet.

Overall, 9 students participated in two focus group discussions, and one group had 4, the second group had 5 participants, Focus group discussions were continued unless the saturation of new information was encountered. In-depth interviews of 9 students taken from third, fourth and final year undergraduate medical students regarding their lived experiences and feelings about virtual clinic held during complete lockdown in pandemic era. Some views and opinions recorded through video clips and conference calls. 2 live focus group discussions conducted and recorded. After transcription of all data, codes and themes will be made and data interpreted and recorded. Data collection and analysis after approval from FRC and ERC. Statistical analysis: ANVIVO. Discussions were recorded, transcribed, and analyzed by summarizing content analysis. This helped to condense the data into essential content in a systematic manner guided by sequential steps. The main themes of the data were based on the discussion questions. An inductive process was used for analysis and to assign a code for each meaningful sentence and then gather similar codes in overarching sub-themes. Finally, similar sub-themes were grouped together under a main theme reflecting its sub-themes. The data was analyzed and coded. Final transcription was sent to 2 participants for member validation.

RESULTS

In total, in-depth semi-structured interviews were taken of 9 students and two online synchronous focus group discussions were conducted. First group had 4 and second group had 5 participants. There were a total of 18 respondents, and more than half (60%; n = 9) of the participants were female. There is not much difference of opinion between female and male students and they had

similar opinions regarding all the Issues. All three clinical year also shared almost similar views regarding their lived experiences. Although third year students had a little experience with patients before pandemic and were happy to be able to continue history taking virtually, but fourth and final year students required examinations practice too which was not as easy virtually.

During the analysis, sub-themes were identified and classified under four major themes, which are summarized below with relevant quotes from the participants. Four core themes included the following: (1), Virtual clinical rotation would not give real feel in home environment, (2), history taking of simulated patients and discussion was a good learning exercise (3) not possible for clinical skills and procedures as no hands on and (4) weak internet connections disrupted concentration.

Theme 1: Virtual clinical rotation would not give true feel in home environment

Sub theme 1: Virtual clinics were safe but unbelievable

Most of the students described their feelings when they first heard about virtual online clinical rotations, they could not believe that such a thing was even possible. Although they felt safer and relieved that they did not have to get exposed to the deadly virus in this pandemic for the safety of their family, they were still a bit skeptical about how it would happen online.

Sub theme 2: Homely distractions without real patients would make learning impossible

Home environment would make them distracted as other tabs would be open on their computers and other homely distractions could not make it feel like real clinical rotations. Also missing real patients would be a major disadvantage.

One student from third year MBBS said “home environment was a distraction because we would be dressed in home clothes (pajamas) and we could eat snacks as we liked and also since no one was really looking at us so we would be tempted to check other tabs in the computer. Also be distracted by voices at home and bell ringing etc.”

Sub themes 3: Online classes make us sleepy

Another student from fourth year MBBS said “online clinics in our own bedrooms could easily make us sleepy and distracted “

Sub theme 4: simulated patient and videos make it as close to real as possible

Although it is a difficult task to get the actual feel of a hospital environment or clinic, a near to the real situation can be created virtually where a simulated patient or an actual video can be shown and instructions given in a similar manner as in wards.

Solution identified to reduce learning gap: Maximum interaction and proper dress code can help to reduce unnecessary distractions.

Safety comes first and it was important for most of the students

Theme 2: History taking of simulated patients was a good learning exercise

Sub theme 1: Simulated patients was better than nothing

History taking from a simulated patient was the part which most students appreciated and liked. They all agreed it was good learning and motivation was also there

According to a student of third year MBBS, “A topic was covered very well, concepts cleared and we felt confidant regarding concepts and knowledge related to that particular topic.”

Sub themes 2: Website cyber patient good substitute

One student of final year told us that “we were given access to a website cyber patient, where we could ask the patient history on our own and also decide what examination was to be done and made differentials on our own, it was a good experience and lots of learning took place but the whole process was unsupervised which made us less motivated to continue“

Subtheme 3: Virtual history taking a good learning exercise

One student said “history taking was the only good part of clinical rotations”

Since real live clinics and real patient access was not possible during the pandemic, the only

learning was through online and virtual rotations. History taking requires practice and this was the closest medical students could get to actual learning.

Third year students had a little experience with patients before pandemic and were happy to be able to continue history taking virtually although fourth and final year students required examinations also which was not as simple as only history taking

Solution identified to reduce learning gap: Virtual cyber patients and simulated patients could have been a better learning motivation if it was supervised or marked as students give more time to practice learning if it is summative.

Theme 3: Clinical skills and procedures not possible as hands on was missing

Sub themes 1: Procedures could not be learnt virtually

Most of the students were sure of the fact that procedures could not to be learnt or assessed online. The procedures like passing nasogastric tube in a patient or catheterization could not be learnt without actual hands on intervention.

Sub theme 2: Steps of examination can be learnt theoretically but not ensure performance

Examination can be observed and steps learnt by watching videos but not unless students perform it themselves can they actually learn the procedure properly. Theoretically knowing the steps and being assessed for knowing the correct steps is not the same as actual performance of the examination.

A student from third year said “just because I know the steps does not mean I know how to do it too.”

Sub themes 3: Online videos show procedure but zero Interaction causes ineffective learning

One student of third year told us that “During rotation of Gynea and Obs, they were shown video of a caesarian section but it was very blurry and not much could be seen or observed. Since there was zero interaction, one answered queries if any. So over all it was pretty useless.”

Solution identified to reduce learning gap: The steps can be taught through videos and online demonstrations but learning can still not be ensured unless the student actually performs. Simulation and mannequins can be used for practice. Another solution would be Hybrid access to real patients and surgeries can be shown with social distancing and reduced attendance with Interaction and question answer session with the Consultant.

Theme 4: Weak internet connections disrupted concentration and motivation

Sub themes 1: Glitch in videos and virtual class was a big disruption of motivation

All students agreed that weak internet connections was a big problem.

A student of fourth year said, “Whenever we started getting interested in a online video or wanted to interact or ask a question, internet got disconnected and we lost all motivation for that class. “

Sub theme 2: Zoom and Google classroom access interrupted due to internet connection Issues

Some zoom or google classrooms had the same issue .It took time to get used to the LMS system of each Institute.

Sub themes 3: Proper devices and Internet connections not accessible to all

Few students did not have proper laptops or computers and had to watch videos on their phones. Also lack of proper stable Wii-Fi connections was not assessable to all or too expensive for some.

Solution identified to reduce learning gap: Workshops for proper online classes and virtual classrooms could help students get maximum learning and assist in their motivation. Better IT resources required for proper online learning.

TABLE 1: Summary of themes and sub-themes

Theme	Sub Themes	Description	Example
Theme 1 : Home environment	**Sub theme 1:** Virtual clinics were safe but unbelievable **Sub theme 2:** Homely distractions without real patients would make learning impossible **Sub themes 3:** Online classes make us sleepy **Sub theme 4:** simulated patient and videos make it as close to real as possible	Not the true feel	"Home environment was a distraction because we would be dressed in home clothes (pajamas) and we could eat snacks as we liked and also since no one was really looking at us so we would be tempted to check other tabs in the computer… Also be distracted by voices at home and bell ringing etc."
Theme 2 History taking	**Sub theme 1:** Simulated patients was better than nothing **Sub themes 2:** Website cyber patient good substitute **Subtheme 3:** Virtual history taking a good learning exercise	History taking from a simulated patient in a virtual environment	"We were given access to a website cyber patient, where we could ask the patient history on our own and also decide what examination was to be done and made differentials on our own, it was a good experience and lots of learning took place but the whole process was unsupervised which made us less motivated to continue"
Theme 3 Clinical skills and procedure	**Sub themes 1:** Procedures could not be learnt virtually **Sub theme 2:** Steps of examination can be learnt theoretically but not ensure performance **Sub themes 3**: Online videos show procedure but zero Interaction causes ineffective learning	Not being able to perform hands on	"Just because I know the steps does not mean I know how to do it too."
Theme 4 Internet Issues and online access to all	**Sub themes 1:** Glitch in videos and virtual class was a big disruption of motivation **Sub theme 2**: Zoom and Google classroom access interrupted due to internet connection Issues **Sub themes 3**: Proper devices and Internet connections not accessible to all	Weak internet connections	"Whenever we started getting interested in a online video or wanted to interact or ask a question, internet got disconnected and we lost all motivation for that class. "

DISCUSSION

Our study shows the advantages and disadvantages of virtual clinical rotations in different medical universities of Karachi by students own experiences. Advantages included safety from the exposure risk, time not wasted and curriculum covered during closure.[16,17] Online clinical rotations saved time for commute to and from the campus. The students could access the lecture in their own free time if it was recorded and uploaded for later review. They could also watch the video according to their own learning pace. This could be good for theory part but not for clinical learning.

According to our students, they missed the true feel of clinical practice. Nothing can replace seeing an actual patient because human interaction and clinical experience are very important for medicine.[18,19] Actual patient and the real clinic environment is essential to learn interaction and communication skills with the patients without which it will not be possible to interact with the real patient in real life scenario. Counselling and good communication skills are also an important for dealing with patients.[20]

Role play is an important aspect of clinical learning in which students observe the behavior and attitudes of a consultant during ward rounds and out-patient department.[21,22]

Virtual simulation and computer-based simulation of real-life procedures produce certain advantages by providing controlled environment to practice rare and critical events in safe environments to reduce the risk to actual patients.[23,24] First time exposure to real patients without previous practice on simulation can be embarrassing as well as unsafe.

Use of technology, such as a computer-based virtual patient program designed to simulate real-life clinical scenarios, can be useful for clinical learners to facilitate history-taking and physical examination and can encourage diagnostic and therapeutic decision-making.[25]

Online learning is also a good resource of knowledge for the medical students. Online education has been discussed and researched about in this pandemic era but not much thought is given to clinical rotations and how to overcome barriers specially in low socioeconomic countries.

CONCLUSION

Online clinical rotations cannot replace actual campus and clinic face to face teaching in low socioeconomic countries.

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Authors' affiliation

Shazia Fakhir Durrani, Ammara Hameed, Pooja Haren kumar, Ayesha Arain, Fatima Fakhir Musharraf
Department of Pediatrics, Bahria University Medical and Dental College, Karachi

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