Original Article

A win-win for all? A qualitative student's perspective about online case-based learning in clerkship gynaecology and obstetrics

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ABSTRACT

Introduction: Clinical teaching is a complex entity that poses many challenges to medical educators. During COVID-19 pandemic, medical education saw a major shift towards online pedagogical methods which led to a significant query regarding their effectiveness. In order to ensure effective clinical teaching, case-based learning was adapted as the major educational tool in most Institutes. However, not much data is available regarding the effectiveness and student perceptions about such online case-based learning.

Objective: The objective of the study is to explore and analyze perceptions of medical students regarding the effectiveness of case-based learning and how does this perception compare with similar studies done for face-to-face case-based learning.

Method: The qualitative explorative research design was used to explore the perceptions of 21 medical graduates who had attended online case-based learning sessions during 8 weeks of their clerkship in Gynecology and Obstetrics. The study was conducted in University of Lahore from June 2020 to August 2020. Sampling was done through purposive, non-probability sampling. Participants underwent Semi-structured interviews, that were audio-taped and manually transcribed. Thematic analysis was done using constant comparative method through open and axial coding.

Results: Findings from the participants' responses converged on three main themes, through which the case-based learning helps students. Students reported that online case-based learning provided them with "Cognitive Avails", helped them with providing "Efficient Patient Care" and created an enhanced "Sense of Commiseration"

Conclusion: This study provides evidence that the online case-based learning sessions were perceived to be equally effective as face-to-face case-based learning by students. In light of the study findings, it is concluded that well-constructed and interesting clinical cases can be efficiently delivered online and can result in achieving desired learning objectives by students.

KEYWORDS: Online learning, case-based learning, Perception, Medical Students

INTRODUCTION

Clinical teaching is a complex and multi-faceted entity that poses many challenges to medical educators(Borneuf & Haigh, 2010). Treating a real-life patient not only requires the relevant theoretical knowledge but also needs a diverse set of abilities including good communication skills, clinical reasoning, a profound grip on clinical methods, decision making, ethical awareness, confident demeanor, leadership skills and time management(Abu-Hilal et al., 2006; Lauer & Lauer, 2017) Hence, Clinical Sciences can't be taught through traditional methods and require innovative teaching strategies that ensure a holistic approach towards treating a patient(Malone, 2019).

Case-based learning is one such educational strategy that links theoretical knowledge to real life scenarios. It uses inquiry-based learning methods and involves application of knowledge to the

cases(Thistlethwaite et al., 2012).In this method, students are exposed to authentic cases, before clinical attachments or during rotations, for providing added breadth of patient presentations, to understand how underlying mechanisms relate to identifying illnesses and to prepare them for clinical practice(Hudson & Buckley, 2004).

During recent COVID-19 pandemic, medical education saw a major shift towards online pedagogical methods due to safety hazards and recurrent worldwide lockdowns. While these measures ensured safety of students, faculty and patients, however, such online activities posed great challenge to medical educators and led to a significant query regarding effectiveness of online educational activities(Rajab, Gazal, & Alkattan, 2020). Specifically, there was a huge concern regarding the clinical proficiency of medical students during these times(Dedeilia et al., 2020).

In third world countries like Pakistan, the situation was even more dire as we are still majorly relying on didactic methods for teaching clinical skills and this task of online educational

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shift felt herculean. In order to bridge this gap, most of the progressive Medical Institutes in Pakistan tried to adapt online case-based learning as the major educational tool for effective teaching of clinical skills. However, not much data is available regarding the effectiveness and student perceptions regarding such online case-based learning. On-campus or face-to-face case-based learning is shown to improve student enjoyment, motivation and deep learning(Hansen, Ferguson, Sipe, & Sorosky, 2005). Students commented on the degree of creativity, challenge, interest and enjoyment afforded through the case-study method(Mayo, 2002).

This study aimed at exploring and analyzing perceptions of medical students regarding the effectiveness of case-based learning during clerkship in Gynecology and Obstetrics and how does this perception compare with similar studies done for face-to-face case-based learning.

The main objectives of the study were:
1) To explore if students find online case-based learning effective
2) To analyze the ways in which online case-based learning affects students' performance in exams

The research findings from this study will have local and international relevance and may expand knowledge regarding long-term effects of online case-based learning. This study will illuminate professional skills that are attained through online case-based learning sessions and how they prepare medical students for patient encounter and their future workplace.

METHODS

This study is an exploratory qualitative study. It was conducted at Department of Gynecology and Obstetrics, University of Lahore, Pakistan from June 2020 to August 2020. The institute was selected to conduct this study because it is mature in using Case-Based Learning as one of its teaching tools and was proficient in adapting Online educational measures.

We used non-probability purposive sampling for this study. We included one group of 21 Final year MBBS students from batch 2019. This group was purposively chosen as they had attended their 8 weeks long Gynecology and Obstetrics clerkship entirely on online platforms as compared to other students who had attended hybrid sessions (both face-to-face and online). Participants were invited through their official class group on WhatsApp.

The participants, who were doing their House Job in University Teaching Hospital (affiliated with University of Lahore) responded and showed willingness for interviews. After obtaining their consent and ensuring anonymity, participants were interviewed on their convenience using semi-structured interview questions. The responses were audio-taped and interview questions were also sent via WhatsApp so that participants can answer them on their convenience.

Open-ended questions were used in the interviews after peer review and pilot testing (see annexure1)

Interviews were stopped after reaching data saturation. The interviews were recorded in English language and manually transcribed. Each participant was given a number, from P1, P2, P21 for future reference. The data analysis was mostly done manually and some additional aid was taken from NViVO 12 pro software. After initial familiarization and immersion with data, thematic analysis was done. Initially, 'open codes' were identified from transcribed and recorded in a MS word document. By using constant comparative method, axial coding was done and sub-themes and themes emerged from our data(Merriam & Tisdell, 2015). The participants were approached and contacted through a faculty member, working in Department of Gynecology and Obstetrics in University of Lahore. However, no faculty member from University of Lahore was present at the time of interviews. The author, herself, doesn't work or teach in University of Lahore or any affiliated hospital. Hence, it was ensured that responses were unbiased and not influenced by any external factors.

RESULTS

The sample of 21 Students included 5 male students and 17 female students. All these students had taken online case-based learning sessions during Clerkship in Gynecology and Obstetrics. They have successfully passed final professional examination and are now working as house officers in various departments including Department of Gynecology and Obstetrics.

The Word cloud showing NViVO top thousand-word count analysis of transcript is as follows:

Fig I. NViVO top thousand-word count analysis of transcript

107 'open codes' were identified after initial data analysis. These open codes were condensed into 14 'axial codes' which finally led to emergence of following three themes from data:
1. Cognitive Avails
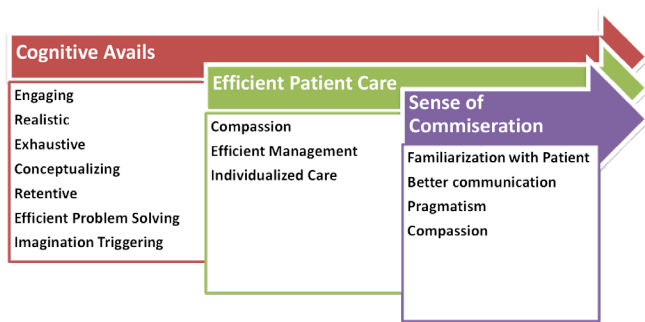2. Efficient Patient Care

Fig II. Three main themes from Data

3. Sense of Commiseration

1. Cognitive Avails:

Students reported multiple cognitive benefits that they have achieved through CBL. The major sub-themes reported case-based learning -sessions to be:

Engaging: 8 out of 21 participants reported case-based learning to be engaging as they helped them interact with their facilitators and made topics more interesting.

P4: *"Solving them was a great experience in order to increase my knowledge"*

P5: *"In the end, what was most important was that all the students were actively involved and the discussion was interactive, keeping our attention to the case"*

P17: *"But if the topic is connected to some clinical scenarios, it gets interesting like getting a reason of every symptom through its proper pathophysiology and following clinical case for prognosis make a topic really interesting"*

Realistic: 5 out of 21 participants reported Case-based sessions to be realistic and helped them in understanding the real-life presentation of patients.

P9: *"Thirdly these scenarios gave us opportunity to put ourselves in professional position where we can decide the outcome of any treatment... This is something we can't do only by reading a book."*

Retentive: 8 out of 21 participants commented that Case-based sessions helped them in long-term retention of their knowledge and made recall easy.

P3: *"It was easy to recall the topic in exam since it was explained through a case discussion and cases are easier to be retained. It also gives a practical aspect of the topic being discussed in theory"*

P19: *"It makes you able to click the points on which you are studying hence when you study a topic you find out the solution and reasons of the highlighted points in the scenario"*

Exhaustive: 11 out of 21 participants reported Case-based sessions to be exhaustive in coverage of common clinical topics and helped them in understanding every aspect of clinical encounter.

P18: *"It covers every aspect from which a question can be made."*

P 9: *"These are some of the scenarios that were discussed in gynae clerkship. As you can see, I have made a separate book of these scenarios in which I have written their answers as well... So, for me as a student they were very helpful because firstly they gave me idea of what to study and on what topics I should focus."*

Conceptualizing: 7 out of 21 participants appreciated Case-based sessions for fostering conceptual approach in students.

P17: *"Every important topic must be discussed on the basis of clinical scenarios so that all the important aspects related to the case could be discussed making concept clearer."*

Imagination Triggering: 3 out of 21 participants reported Case-based sessions to be imagination triggering and prompted them to develop a sketch of clinical picture of presenting cases.

P15: *"Previously, I was just reading the topic and ratafied it, having no sense about the relevant topic on clinical basis but now firstly I read the scenario, make a picture of the topic and then learn the whole topic, that is more and more easy for me"*

Efficient Problem Solving: 17 out of 21 participants reported Case-based sessions to be helpful in problem solving and helped them in performing better in MCQs and OSCE exams.

P4: *"It help me recall my topic and make my concept clearer especially in OSCE"*

P7: *"Above all paper mai wohi kuch aya tha jo humain phara gaya tha"*

P14: *"It made my exams easier. Because whenever I have to attempt my MCQs, there were 2- 3 main points of that topic in my mind, and I can immediately answer"*

2. Efficient Patient Care:

Students reported CBL sessions to have helped them with:

Efficient Management: 7 out of 21 participants reported Case-based sessions to have helped with learning Efficient and effective patient management.

P5: *"Furthermore, since the discussion included learning objectives like pre requisites, advantages and disadvantages of a procedure and then moved to specific case management stepwise based on revision of Los"*

P18: *"Case based scenarios are key to the perfect diagnosis and they consume less time, less energy."*

Confidence Imparting: 2 out of 21 participants reported Case-based sessions to be confidence imparting and helped them in becoming more confident clinicians.

P10: *"If you do case-based discussion with your teacher you ask questions by every angle and you learn differently and after that you become hundred percent confident to manage a case. As per me, there should be case based discussion on daily basis for one*

hour"

Individualized care: 2 out of 21 participants reported Case-based sessions to have taught them about the importance of individualized and presentation-specific care.

P5: *"With certain scenarios, it was easier to understand how we would proceed with the case management based on gestational age and not just presentation of patient"*

3. Sense of Commiseration:
The following sub-themes of 'Sense of Commiseration' emerged from data:

Compassion: 5 out of 21 participants commented that Case-based sessions taught them compassion and improved their awareness about importance of developing empathy.

P16: *"Moreover, I know that patient come in pain, it is good thing that I should save the time of patients and mine also. Also, after diagnosing the exact disease, patient can manage their expenses easily, because being a doctor we should take care of patients financially also"*

Familiarization with Patient: 5 out of 21 participants reported that knowing patient's details and spending more time with them during Case-based sessions helped them in developing empathy.

P9: *"Sticking to scenarios is also good for our ethical studies because while doing scenarios we learnt that we have to always prioritize the safety of the patient and if push comes to shove, we have to save the mother first! This was something I learnt in Gynae. Before this, I used to have the concept that we can let the family chose between the life of the mother or the baby"*

Better communication: 3 out of 21 participants reported Case-based sessions to have helped them in developing their communication skills and have helped them in improving patient encounters.

P5: *"Also, the scenarios for counseling of patients were very beneficial considering we have difficulty understanding how to explain/ put our thoughts into words in the patient's own language."*

Pragmatism: 6 out of 21 participants reported Case-based sessions to be pragmatic and helped them in application of their theoretical knowledge to resolve practical problems in real-life case scenarios.

P8: *"It also gave us a good idea of the clinical presentation of cases and we could recall and apply our theoretical knowledge especially in management of the given scenario/case. Reading a topic from book was different"*

DISCUSSION

Our Study revolved around online case-based learning sessions that were conducted during COVID-19 lockdown. The purpose of this study was to understand the perception of students regarding the effectiveness of Online Case-based learning and how did it help them during their exams or clinical practice.

Findings from the participants' responses converged on three main themes, through which the Case-Based learning helps students, namely:

a) Cognitive Avails
b) Efficient Patient Care
c) Sense of Commiseration

Lev S. Vygotsky Soviet psychologist shared once "A word devoid of thought is a dead thing, and a thought unembodied in words remains a shadow"

1. Cognitive Avails:
Our study revealed that Online Case-based learning sessions offered similar cognitive avails as regular, on-campus sessions.

The main challenge faced in online learning is to actively engage students. Among the many cognitive avails mentioned by participants, 'increased engagement' was the most prominent and frequently highlighted benefit, a consistently reported finding for on-campus Case-based learning(Hansen et al., 2005; Thistlethwaite et al., 2012). All the participants unanimously preferred this method of learning over traditional lectures and some even went ahead to recommend this mode of teaching for all academic levels in our educational system.

P20: *"I think the system should change the teaching method whether it is related to medical or on intermediate level"*

Student engagement is measured by its four components, i.e., behavioral engagement, cognitive engagement, emotional engagement and agentic engagement(Payne, 2019). Following clinical cases and explaining each symptom in detail creates an increased sense of involvement and piques interest in the topics. Our study revealed online case-based sessions to be equally engaging in all four components as on-campus sessions(Raza, Qazi, & Umer, 2019). Our participants appreciated the active interaction with their facilitators. They also enjoyed sense of achievement that one gets by solving clinical cases and playing detective for clinical situations, consistent with similar studies conducted for face-to-face sessions(Liu, Zhou, Lam, & Dahlke, 2018). Moreover, the constant questioning during discussions helped in maximum and active participation of students, making the experience of case-based learning all the more exciting.

Christopher Nolan, a famous film director, shared" You're never going to learn something as profoundly as when it's purely out of curiosity"

Presenting story-like scenario or cases helps in reducing cognitive load and anxiety that comes with learning of lengthy and complex topics, thus resulting in increased productivity of case-based learning.

Students also appreciated the realistic and practical aspects of case-based learning. Realism of case-based learning gives students an accurate idea about how patients actually present in real life and how various case presentations must be dealt with. Case-based Discussions are an accurate representation of the "complexity and ambiguity of real-life problems" and how they are experienced by practitioners It was satisfactory to see that students felt a similar sense of realism with these online sessions as reported for on-campus or bedside sessions.

A major and recurrent theme, emerging in almost all responses, was the superior and long-term retention of knowledge. All students unanimously appreciated that Case-based learning, having its firm footing in constructivist theory, led to easier recall of complex topics and made their life much easier(Hartfield, 2010). Through case-based learning, the knowledge is repeatedly applied in various real-life scenarios which helps in creating a firm set of codes or schemas, leading to enhanced long-term memory. This confirms similar findings of increased learning with case-based instructions(Nkhoma et al., 2017).

Many responses in our study specifically mentioned case-based learning as the efficient and time-saving approach towards learning complicated ideas in Gynecology and Obstetrics. Other studies have reported similar perception about role of Case-based approach in learning,(Gul, Khan, Yasmeen, & Ahsan, 2020) However, some studies emphasize the need of background knowledge and prior preparation for achieving such learning gains(Rhodes, Wilson, & Rozell, 2020).

Students also pointed out the exhaustive nature of Case-based method of instructions. Students immensely appreciated the rigor of Case-based learning and felt that they had better grip on topics by learning through this method. Students find this exercise to be extremely productive as they feel more prepared for their assessments as well as for their clinical practice. Many students commented that this method was helpful in giving them an authentic idea about how to approach a subject, where to focus on and what to study during their exams and for their future practices.

All the participants in this study showed a positive response towards long-term benefits of case-based learning and reported a high rate of satisfaction. Similar results were recorded for an immediate post-test of RCT comparing Case-based sessions with PBL(Krupat, Richards, Sullivan, Fleenor, & Schwartzstein, 2016). The better exam performance was mainly attributed to better retention, easier recall and comprehensive coverage of topics. The ease of going through story-like scenarios makes it easier for students to apply their theoretical knowledge in clinical scenarios.

A vast majority of students appreciated that clinical cases shown to them during their session were similar to the ones in exams and thus they felt a sense of familiarization. The students not only performed better in Observed Structured clinical Examination or OSCE, similar to trend in literature,(Gormley, Collins, Boohan, Bickle, & Stevenson, 2009) but also reported to have a positive effect on attempting MCQs. A similar enhanced score for MCQs is reported for use of cases in Biochemistry (Kulak & Newton, 2015). Case-based learning also led to time-efficiency and helped students in attempting their exam quicker and earlier than other, a recurrent remark in responses. This positive finding in our study, however, is not consistent with contrasting or ambiguous data regarding effect of case-based learning on exam performance in other studies(Blewett & Kisamore, 2009).

Students remarked that case-based sessions helped them in taking a more conceptual approach towards learning which is consistent with findings reported for on-campus case-based instructions(Fortun, Morales, & Tempest, 2017). This conceptualization is again vastly attributed to questioning and discussions during these sessions, giving students an opportunity to have a better and more adult approach towards learning.

Another important sub-theme, that emerged from our data analysis and is consistent with many similar studies, was imagination triggering nature of these sessions. Students enjoy the process of creating sketches of clinical cases and use this knowledge for subsequent application. Students reported that these sessions have helped them in creating a regular habit of sketching what they read and thus have made learning easy and fun for them.

2. Efficient Patient Care:

The individuality of our study relied on analyzing the effects of case-based Learning on clinical practice as perceived by participants. All the participants reported that case-based sessions have helped them in efficient management of patients, consistent will similar results for on-campus case-based sessions(Blewett & Kisamore, 2009). They showed an increased awareness and a new-found urge to manage patients quickly for saving time and resources. The learning objectives set for case-based learning provide an insight into step-by-step management of cases. These findings are consistent with more studies exploring application of theory into clinical scenarios through case-based learning (Aluko, Rana, & Burgin, 2018).

Participants claimed that case-based learning have given them the confidence to manage patients on their own. Another important lesson learnt through case-based learning is provision of individualized care to patients based on diverse clinical presentation.

3. Sense of Commiseration:

An important aim of our study was to ascertain the effects of Online Case-based learning on development of Sympathy and empathy in participants.

Our study has shown a very encouraging response towards development of compassion in our participants. A similar study reported enhanced caring attributes for Nursing students(Kantar & Massouh, 2015). Most of the participants reported to have an increased awareness about patient's finances through these sessions. This is particularly helpful in third world countries like Pakistan that feature unequal distribution of money and stark class divide. Case-based instructions emulate real life situations and it is promising to note that students, especially those studying in private sector of Pakistan, are learning a compassionate approach towards patients who usually don't match the privileges of students pursuing professional education. Other studies have also shown similar development of empathy with such sessions(Dickinson et al., 2018). Majority of participants in the study attributed the development of sympathetic/empathetic feelings towards increased sense of familiarization with patients. A similar increase in awareness of patient safety has been reported in literature(Gaupp, Körner, & Fabry, 2016).

Case-based learning is an excellent means for making students more aware about the grave consequences of their actions as clinicians(Falkenberg & Woiceshyn, 2008). This method helps students in developing a wholesome patient-doctor relationship and establish a bond of trust, even prior to going out in practical field.

"The art of communication is the language of leadership."
– James Humes

The backbone of a successful and efficient clinical encounter is undoubtedly an effective communication. Our study showed that Case-based learning helped participants in overcoming the barriers of language and socio-cultural differences by giving them an opportunity to practice their communication skills in fool-proof and safe environment. Due to gross social differences in Pakistani society, it's important that students learn to serve and communicate respectfully with various diverse sections of society. Similar improvement in communication skills was noted for on-campus Case-based sessions(Yoo & Park, 2015).

Case-based learning is a pragmatic way of applying theoretical knowledge in field operations.(Hakkarainen, Saarelainen, & Ruokamo, 2007) Participants in our study have deeply commended the practical and efficient approaches taught during their case-based sessions. Such sessions help students in focusing on necessary aspects of patient management and thus saving time, energy and resources of both patient and doctors.

We found that the Case-based learning is perceived by students to be as effective online as in face-to-face sessions. The faculty needs to identify most common themes from their specialty and then develop intriguing cases by utilizing admitted patients(Aluko et al., 2018).

Virtual round creates sense of reality for students and promotes better learning and development of empathy, hence, such session can help bridge the gap between face-to-face and online sessions(Dedeilia et al., 2020).

Limitations of the study:
The study has focused on the perception of students about online CBL of only a single discipline that is obstetrics and Gynaecology. Secondly, this a single institution study, inclusion of multiple institutes may have given more diversity to the results.

CONCLUSION

This study provides evidence that the online case-based learning sessions were perceived to be equally effective as face-to-face case-based learning by students. While exploring student perception, three positive influences of online case-based learning emerged from thematic analysis. Findings supported beneficial aspects and challenges of case-based learning that are consistent with those reported in literature, with our study reporting an extra positive influence on our sessions on exam performance. In light of the study findings, it is concluded that well-constructed and interesting clinical cases can be efficiently delivered online and can result in achieving desired learning objectives by students.

DECLARATION OF INTEREST

The authors report no declaration of interest.

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AUTHORS CONTRIBUTION

1 Dr. Abeera Fatima designed the interview questions, conducted and transcribed interviews, performed data analysis and handled manuscript writing.

2 Dr. Saima Rafique conceived the study idea, helped in coding and proofread manuscript.

3 Dr. Rakia, House officer, helped in data collection