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Perceptions of faculty teaching anatomy online during COVID-19, A Qualitative study

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ABSTRACT

Aim: This study is designed to understand the views of the faculty involved in teaching anatomy using online platforms during recent covid-19 pandemic. An insight into their experiences may help policy makers to improve online sessions of anatomy in the future.
Study design: Qualitative phenomenological study
Place and duration of study: From September to December 2021 at Dental College, HITEC-IMS.
Materials & methods: Semi structured interviews were conducted face to face and transcribed verbatim. All responses were subjected to qualitative analysis, and themes were derived.
Results: A total of 15 female participants from three institutions gave feedback. One of the main themes identified was Teaching effectiveness with subthemes including, included Disconnection, feeling ineffective, Technological issues, administrative issues, student related issues, internet issues. Second theme was Opportunities with subthemes including professional development, logistics, blended learning. Third theme was continuing development of online teaching which had subcategories of teacher training, student motivation and connectivity.
Conclusion: The study highlights the issues faced by the faculty, teaching anatomy online for the first time during a pandemic. The feedback about learning opportunities gained and advice for future teaching may help inform policy makers of curricular reforms regarding blended learning in future teaching of anatomy.
Keywords: Covid-19, Online teaching, Anatomy, Blended learning.

INTRODUCTION

Recent covid 19 pandemic posed unanticipated challenges to medical education. After the first wave of coronavirus reached Pakistan in March 2020, on-campus teaching in universities was disrupted due to demands of social distancing and quarantining.[1] This sudden and abrupt shift to online learning was unexpected. Stress of the pandemic and lack of prior experience for this paradigm shift led to unprecedented problems and required quick adaptation. For the first time, faculty was required to teach complex subjects like anatomy online for which on campus resources were previously considered essential[2].

Anatomy is a fundamental basic subject which is taught during first and second years of medicine. Being clinically relevant its firm grasp is considered essential for safe practice[3]. Therefore, methods to teach anatomy effectively has been a topic of research. However, consensus regarding teaching methods of anatomy is still lacking.[4] This is because to understand this subject, three- dimensional comprehension of structures is required, for which various resources are considered indispensable. These include but are not limited to cadaver dissections, pro-sections, models and atlases. During coronavirus pandemic, these resources could not be utilized through online delivery of lectures. These unique conditions were unconventional and must have posed unique challenges. However, some researchers imply that there is a need to incorporate online teaching of anatomy in future and this change should be supported by policy makers.[5,6] In order to use virtual mediums to teach in the future it is crucial to understand the perceptions of the faculty who have used these mediums during these unforeseen circumstances. Their insight may help the higher authorities to inform changes in future medical curriculum for blended learning.

In view of aforementioned, a study was planned to understand the perceptions of anatomy teachers about effectiveness of teaching anatomy online during covid 19 pandemic.

METHODS

This study was approved by the institutional review board of Dental college, HITEC-IMS, Taxila (ref: Dental/HITEC/IRB/24). Informed consent was obtained from the participants. A semi structured interview form was used to facilitate data collection during face-to-face interviews. Faculty members described their experience of online teaching during covid-19 pandemic. All interviews were audio recorded.

The recorded interviews were transcribed verbatim. The transcripts were analysed by three authors with experience in thematic analysis.[7] Based on transcripts codes were developed and the process was continued until no new codes emerged. The authors discussed the relevant codes to determine emerging themes and subthemes.

RESULTS

A total of 15 faculty members from three medical and dentistry institutions participated in this study. All of those faculty members who were teaching anatomy online full time to the students of first and second year MBBS and first year of BDS courses were included in the study. Participants were all females with most of them in their middle age (M=41.2± *SD* 5.8 years).

Themes: Teaching effectiveness

a. Disconnection: Teachers felt that it was difficult to monitor and interact with students online. According to most of the faculty members they experienced inadequacy to establish rapport with the students. One teacher said, "Students need to know that I am connecting with them and that was hard to achieve in online teaching" According to another participant "They (students) need to see that their teacher is observing them, but it was not possible for me to monitor all of them all the time. I tried to ask questions but in a large group it is not that effective and is also time consuming"

According to another teacher, "I feel disconnected to my students while teaching them online. It is hard to interact with them and engage them like I used to do during on campus teaching"

b. Feeling ineffective: Teachers Felt inability to deliver content online as effectively as in person. Most of them said that delivering content online was not the same as in person. One teacher said, "I was frustrated because how I teach in person, was not possible in an online environment." Another participant said "I always felt that I must do something additional to teach them. To teach anatomy, you need to show structures and their relations in all dimensions which was much harder online"

c. Technological issues: Faculty had many problems to handle software on teaching platforms. Many faculty members were new to this online teaching platforms and they were still becoming familiar with different tools available. One of them said "In the beginning I didn't know that it was possible to disable annotations or enable waiting room and that gave me a hard time."

According to one participant "I felt that I was not a good teacher because it was challenging to replicate the resources available on campus to teach. It was hard to draw on the virtual chalk board and I

was frustrated" Another teacher said "The drawing tools are difficult to use and are not as good as drawing on board in class"

d. Administrative issues and increased workload: Faculty felt that administration must understand the workload increased due to online conduction of lectures. One participant said "administration thinks that we are not doing as much when we deliver lectures from home. They don't realise that it requires much more effort and time to prepare and deliver these lectures." Another participant said, "My workload has increased due to online teaching, I have to think to strategies to teach effectively"

e. Student motivation and boundaries: Many faculty members felt that it is difficult to motivate students to learn in an online environment. On participant said, "It is difficult to know if all the students are understanding what is being taught." One teacher said, "Students are not motivated enough to learn online, most of them are not attentive" Faculty also felt that in an online environment students take less responsibility to learn on their own and do not understand the boundaries. One member said "Students feel that I have to be available day and night 7 days a week and they expect response without any delays"

e. Internet issues: Slow internet was an issue raised by almost all the faculty members. According to one of them, "Some students take time to join the class and keep on disconnecting due to slow internet speeds in different areas." Another said "Students are unable to turn on their cameras due to slow internet connections. Without their cameras on I didn't know if they were even there"

2. Strengths of teaching anatomy online

Theme: Opportunities

a. Professional development: Faculty was given the opportunity to attend workshops to use online platforms to teach anatomy. One of them said, " I learned how to teach anatomy through a 3 dimensional atlas and it was very interesting for me"

b. Logistics: Faculty felt that online teaching was a convenient and flexible way to teach. There are opportunities to develop innovative methodology to teach anatomy. According to one participant "I could work from the convenience of my home with flexible timings and that was great"

c. Blended learning: Faculty thought that teaching online was a good opportunity for blended learning. One participant said, "Teaching online is a good way to learn if it can be used as an additional resource to face to face teaching"

"It is easy to use online platform and the lectures could be recorded and posted for the students to review at their convenience and learn at

their own pace" another participant said "Students can easily ask me questions in chat without being judged by their fellows"

Future Advice to teach online effectively

a. Teacher training: Faculty believed that frequent workshops and courses should be conducted to increase knowhow of the teachers about online teaching. One participant suggested "Administration should consider funding online courses for faculty to learn how to use anatomy resources for online teaching, this could make a real difference"

According to another member "Innovative resources to teach anatomy must be available to the faculty because online teaching is different from teaching on campus, it demands different syllabus and different teaching methods like virtual dissection and 3D resources." Faculty felt that administration should understand the limitations of online teaching. One participant said, "They should understand that more effort is required to teach students online and still they learn less than they would in face-to-face sessions" Another participant said "The syllabus should be modified and decreased for online teaching as it is not possible to teach in a similar way"

Student motivation: It was felt by the faculty that additional measures should be taken to motivate the students to learn online. A participant suggested that "Students could be more motivated if they are frequently tested in the form of viva and group discussions.

c. Connectivity: it was suggested that internet issues should be resolved at the government level. One participant said, "Due to slow internet we face problems to teach effectively. 4G, Fast internet connection is essential if online teaching is to continue"

Table-1 Demographic characteristics of the participants n=15

Characteristic	N(%)
Age	
A1: 30-40	05 (33)
A2: 40-50	10 (67)
Gender	
Females	15 (100)
Males	0 (0)
Qualification	
MBBS FCPS	03 (20)
MBBS Mphil	04 (27)
MBBS	05 (33)
BDS	03 (20)
Designation	
D1: Professor	02 (13)
D2: Associate professor	06 (40)
D3: Lecturer	07 (47)

Table 2:

Code: Challenges	
Subthemes	Themes: Teaching effectiveness
Disconnection	"Students need to know that the teacher is connecting with them and that was hard to establish in online teaching" (P4, A1, D2)
Feeling ineffective	"I was frustrated because how I teach in person, was not possible in an online environment."
Technological issues	"The drawing tools are difficult to use and are not as good as drawing on board in class"
Administration issues	"Administration thinks that we are not doing as much when we deliver lectures from home. They don't realise that it requires much more effort and time to prepare and deliver these lectures."
Student issues	"Students feel that I have to be available day and night 7 days a week and they expect response without any delays" Students are not motivated enough to learn online, most of them are not attentive"
Internet issues	"Students are unable to turn on their cameras due to slow internet connections" "Some students take time to join the class and keep on disconnecting due to slow internet speeds in different areas."
Code: Strengths	
Opportunities	
Professional development	"I have never used zoom before this and, now I am an expert, which is good"
Logistics	"I could work from the convenience of my home with flexible timings and that was great"
Blended learning	"Online learning with face-to-face sessions is a good way to teach anatomy"
	Code: Advice
	Continuing development of online teaching
Teacher training	"Administration should consider funding online courses for faculty to learn how to use anatomy resources for online teaching, this could make a real difference"
Student motivation	"Fun activities are important to keep students interested to learn"
Connectivity	"4G, Fast internet connection is essential if online teaching is to continue"

DISCUSSION

Overall, the results are indicative of the preliminary experience of faculty through online teaching platforms used during the pandemic. Through this study we identified the faculty perspective of the weaknesses, strengths and their advice to teach anatomy online. The data is unparalleled as it was gathered during the time of the pandemic. The analysis shows that one of the main challenges faced by the

faculty was lack of adequate resources to teach anatomy. These finding confirms previous literature suggesting difficulties associated with teaching anatomy online. Aziz et al documented that teaching anatomy without letting the students hold bones, models and pro-sections was difficult[8]. This may be because understanding of anatomy requires comprehension in 3D. This is possible on campus by through cadaveric dissections and using 3D models and prosections. Longhurst described lack of these resources as an impediment to learn anatomy

and inability of online resources to simulate sensory learning[9]. Studies show that in order to comprehend, students have to mentally rotate and reconstruct 2D images into 3D structures which places excessive cognitive load reducing understandability[10,11]. The faculty recommended that 3D resources should be made available by the institutions to improve the teaching of anatomical concepts. This suggestion is in agreement with previous literature showing that 3D resources improve understandability[12].

Other main weaknesses considered by the faculty were inability to build rapport with students, increased workload, lack of motivation by the students, technological issues and connectivity problems. All of these challenges are reported by other researchers as well[9,13]. Abid et al also described inability to connect with the students online as compared to during face-to-face sessions[1]. It is not possible to replace on campus training by online teaching however in the light of faculty's recommendations, workshops and online courses could prepare them better for this comparatively new method of teaching anatomy. Similarly, group assignments, online social meetings could help develop meaningful relationship among peers and educators. For this faculty could be guided and trained through workshops[14]. Better connection with students may also help them to be more motivated. Similarly use of novel methods to teach may also pique their interest[12]. Increased workloads should be acknowledged by the institutions and support educators through funding workshops and online courses as well as counselling[14,15].

of online teaching, perceived by the faculty include ease of teaching from home and flexibility which it provides. These results replicate the findings of other similar studies[16]. Our results also show that internet connectivity issue was considered a barrier to teach effectively. This must be addressed at the government level through expansion of high-speed internet throughout the country in order to facilitate online learning.

CONCLUSION

The study depicts weaknesses, strengths and possible solutions as perceived by educators involved in online teaching of anatomy during covid-19 pandemic. Results could inform policy makers to make decisions for online teaching in future.

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