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Original article

Impact of Covid - 19 Pandemic on Medical Training and Well-Being of Medical Students

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Abstract

Introduction: The present study was undertaken to decipher the Impact of revamping teaching-learning modalities on undergraduate medical students and their well-being as a response to the COVID-19 pandemic. ***Methods:*** A Cross-sectional online survey was designed and validated. An online survey was constructed through google forms which were sent to undergraduate medical students through electronic media, emails, and WhatsApp groups. The questions formulated were both open and close-ended. The questions focussed on the well-being of students as well as on online teaching learning and assessment. ***Results:*** Students were mainly stressed, bored and irritable. Mental well-being was the most affected. Most of their free time was spent surfing the internet and on mobile. Baking and cooking became primary hobbies followed by drawing and painting. Family, music, and exercise became the chief source of a mental boost. Zoom synchronous classes and google classroom asynchronous classes were chiefly provided to students in various medical institutes. Most students used mobiles to attend online classes and this led to a lot of eye strain. The PowerPoint presentations and videos used were insufficient to understand the practical and clinical aspects. Assessments were mainly MCQs, short and long answer questions, and assignments. Students hoped for more clinical classes. ***Conclusion:*** Online classes were well accepted with the main complaint of no patient interaction and less gain of psychomotor skills. They affected the mental makeup of the students. Medical education can't do without patient, teacher, and peer contact. The teaching learning and assessment should see a paradigm shift even in post covid era.

Keywords: ***Covid-19 pandemic, Medical Education, Online classes, Mental stress, Assessment.***

Introduction

The world is a Global village - In the 21st century, this phrase holds true. We are connected with our brethren through the borders and through international travel like the extended Central Nervous System. While it has huge benefits, it comes with its own risks. The Covid - 19 pandemic has shown minimal regard for international borders and spread like wildfire. Within 3-4 months of its onset, on March 23, 2020, the Indian Government announced a complete lockdown of the whole nation to contain the spread of the deadly contagion coronavirus. India closed all universities, Colleges, and schools. This was an emergency situation as overnight all kinds of teaching-learning strategies came to a standstill. The covid - 19 Pandemic overhauled the delivery of Medical Education overnight and precipitated the need to switch to online resources.

Due to the urgency in the shift to a virtual mode of education, many departments and content experts and facilitators collaborated to provide at-home learning resources both synchronous and asynchronous. Some institutes also coordinated with multiple institutions to collate resources [1]. Engaging online curricula were created to provide at-home training [2]. Technology and social media can connect learners from across the globe to supplement institutional training and provide a safe environment to learn and become competent and develop their skills [3]. Even though the time is unprecedented, it may act as a catalyst to develop and implement novel scholastic curriculum innovations and transformations [4]. The hampering of Medical Education required instant and earnest efforts from the faculty. In these unsettling situations emphasis has further increased to prepare competent physicians for first contact with the community. Students on their part want to be educated and prepared for being at the forefront of community care [5]. The complete loss of direct association with patients was concerning but it also brought forth the telehealth concept and observed virtual examination which supplemented learning. The emergence of telehealth may bring forth exciting opportunities to increase patient care, health promotion, and disease prevention [6]. Many Medical Universities developed systematic and comprehensive measures during the outbreak to ensure scholastic pedagogically based on the best practice consistency [7].

The medical curriculum needs to be revamped and newer ways of teaching-learning theory and practical skills are being developed by faculty all over the globe to better student education and engagement [8]. We need to adapt to fulfil the needs of healthcare learners with distance learning during the pandemic and in the times to come especially delivering clinical and practical skills [9]. Will these changes partially remain part of the new paradigm of medical education in the post-Covid era, will have to be analyzed later on.

In this study we tried to decipher the Impact of revamping of teaching-learning modalities on undergraduate medical students and their well-being as a response to the COVID-19 pandemic.

Methods

Type of Study: Cross-sectional online survey.

Participants: Undergraduate medical students of all professional years.

Approval was obtained from Institutional Ethics and Research Committee

Procedure: Online survey data was designed by the authors after going through several research works in the field and informal talks with faculty and students. The questionnaire was discussed with faculty members and validated.

All respondents gave their consent before filling in the questionnaire. The questions formulated were both open and close-ended. Questions focused on the feedback on how students were feeling, what was most affected during the pandemic - physical/mental/social or intellectual, how they utilized their free time, what gives them the mental boost. Whether they were attending online classes, what type of online classes - synchronous or asynchronous and which platform of online classes was used. Which device they were using for online classes, whether they were also self-studying, whether online classes were interactive or not, what difficulties they were facing during the classes. Questions were asked if they feel they will get promoted with less psychomotor/clinical skills, what type of classes were being conducted to improve clinical skills. They were asked about the type of assessment taking place in the institute and whether online assessment helps learning and what changes in assessment they would want. They were asked whether they were stressed for the upcoming university exams. They were asked about their interpretation of if they foresee change in teaching learning and assessment methods post pandemic when they subsequently attend onsite classes.

Online survey data was constructed through Google forms. The forms were sent to undergraduate medical students through electronic media, emails and whatsapp groups. Students were requested to voluntarily participate and fill the form. The form was kept anonymous. The access to the form was kept open for one month from May to June 2020.

Repeated reminders were sent to them to fill the form. The data was analyzed and compiled on microsoft excel and descriptive statistical inferences were drawn.

Results

A total of 443 responses were obtained. After analyzing the data obtained through google form and analyzing the answers to the questionnaire, the following results were obtained. Students were from different medical schools, both males and females of age group 17 years to 25 years of age.

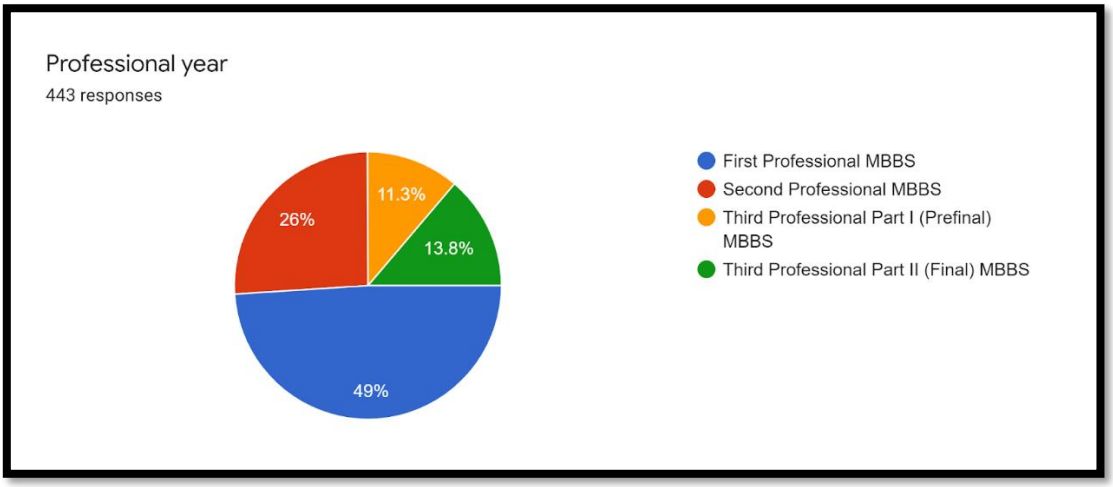

Fig 1- percentage of responding students from each professional year.

Figure 1 shows the percentage of responding students from each professional year.

Out of the total 442 responses, 422 students were attending online classes at home while 20 said they were not attending. While 97 were attending asynchronous classes, 197 synchronous and 147 responded to attend both synchronous as well as asynchronous classes. 129 were attending google classroom, 265 zoom classes, 15 youtube and 33 cisco webex.

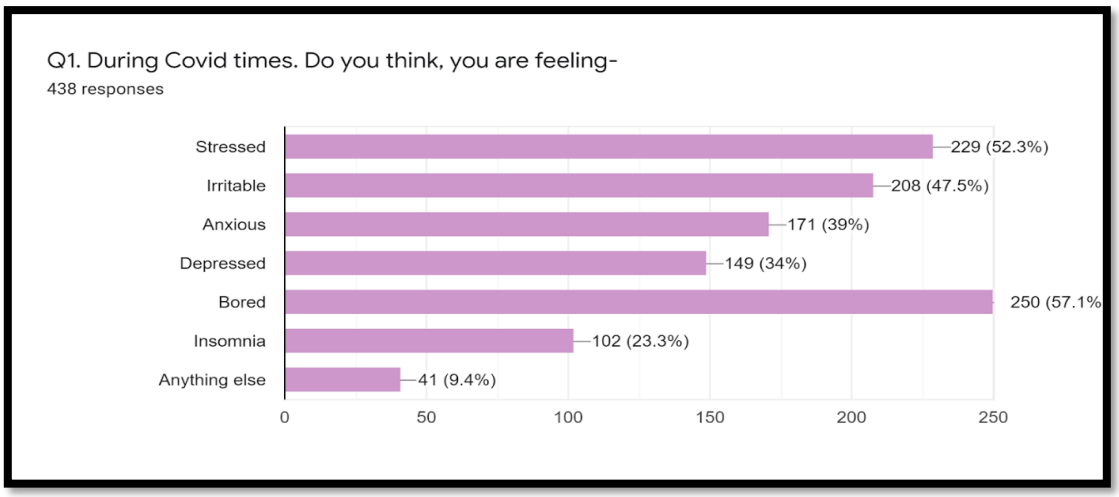

Fig 2: Feelings during Covid Days of Online Classes.

Most of the responders were either Bored, depressed, irritable or anxious during the pandemic as shown in Fig 2. The most affected was their mental well-being, social well-being, physical and intellectual well-being in descending order - Fig 3.

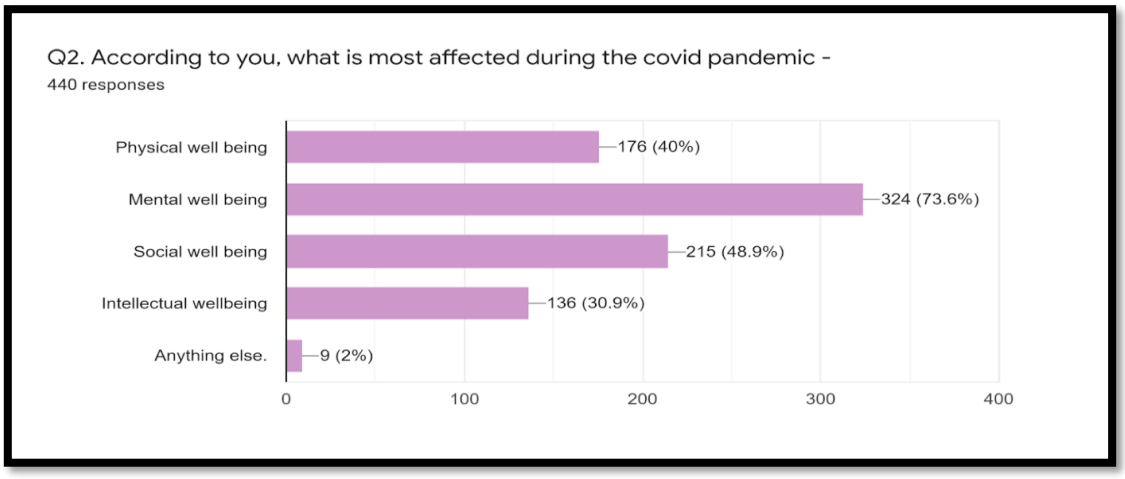

Fig 3 percentage of was most affected during the pandemic.

In their free time 23.68 % students were busy surfing the internet and using their phones. 13.49% kept themselves busy reading books. 12.77% watched TV and movies. 8.6% spent time with family and 8.4% listened to music and played sports as shown in Fig 4.

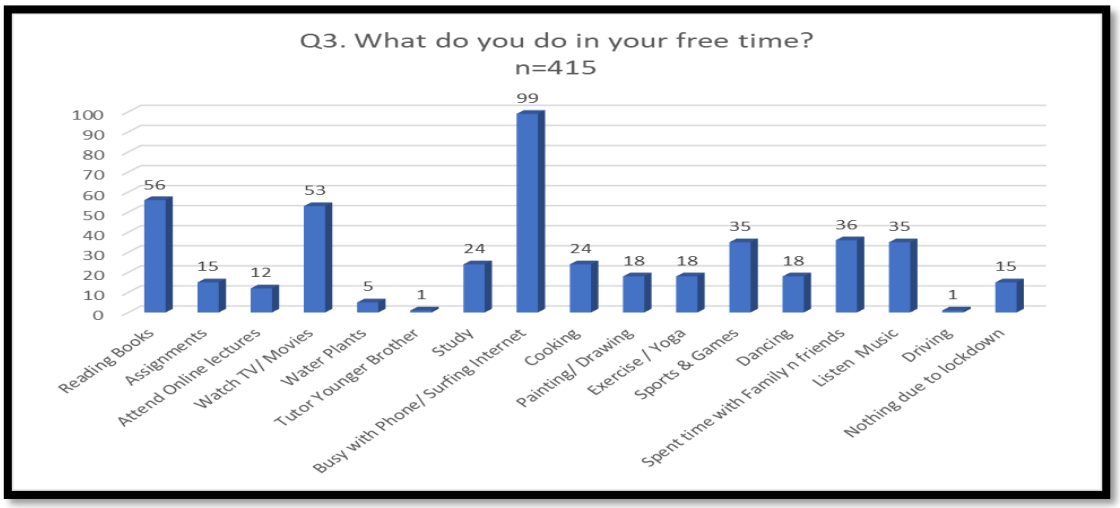

Fig 4: What students did in their free time?

The main hobby pursued by these students were baking and cooking - 16.58%. while 15.08% pursued painting/drawing/ sketching. 12.06% had no hobbies and did nothing concrete. 10.55% read books, while 8.79% exercised - Fig 5

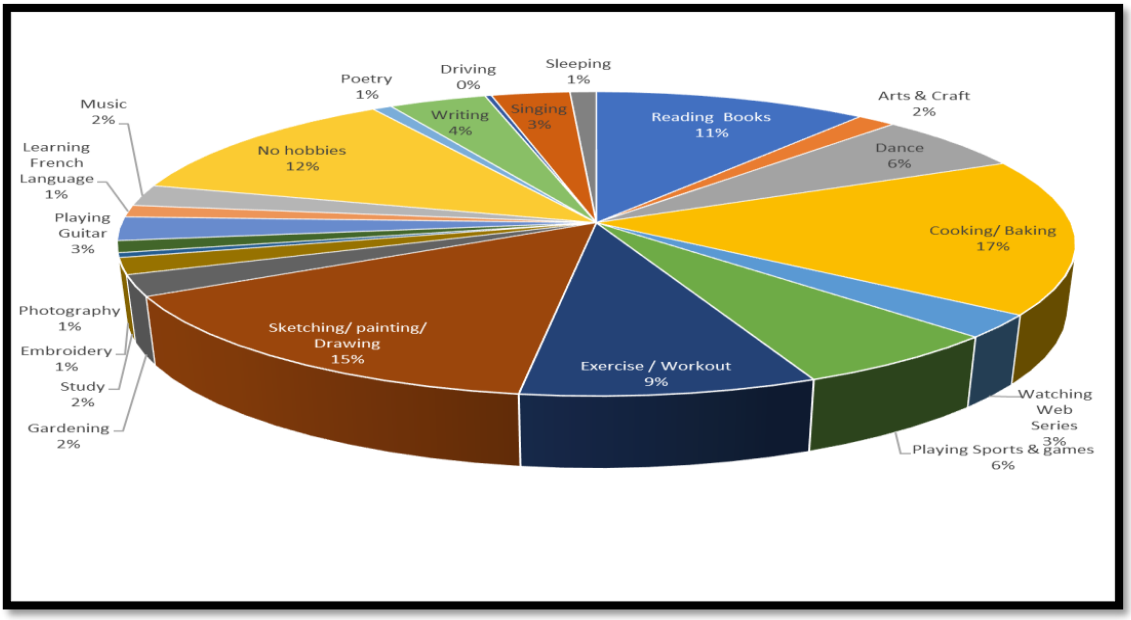

Fig 5: Hobbies pursued by Students in their free time.

Mental boost during covid times was provided by family and friends 14.48%. 8.31% relied on music, while 9.01 % on exercise, cycling and games, 7.77% on nothing particular - Fig 6.

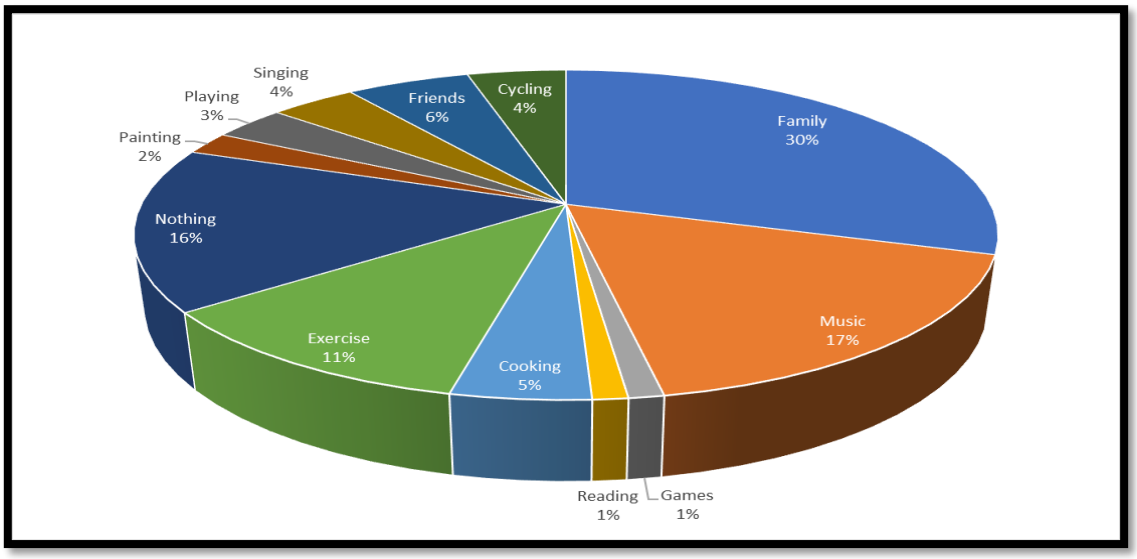

Fig 6 - What provided Mental boost to students during the pandemic.

60.10% students were attending zoom classes, 29.92% google classes, 7.42% cisco webex and 2.56% were attending you tube lectures- Fig 7.

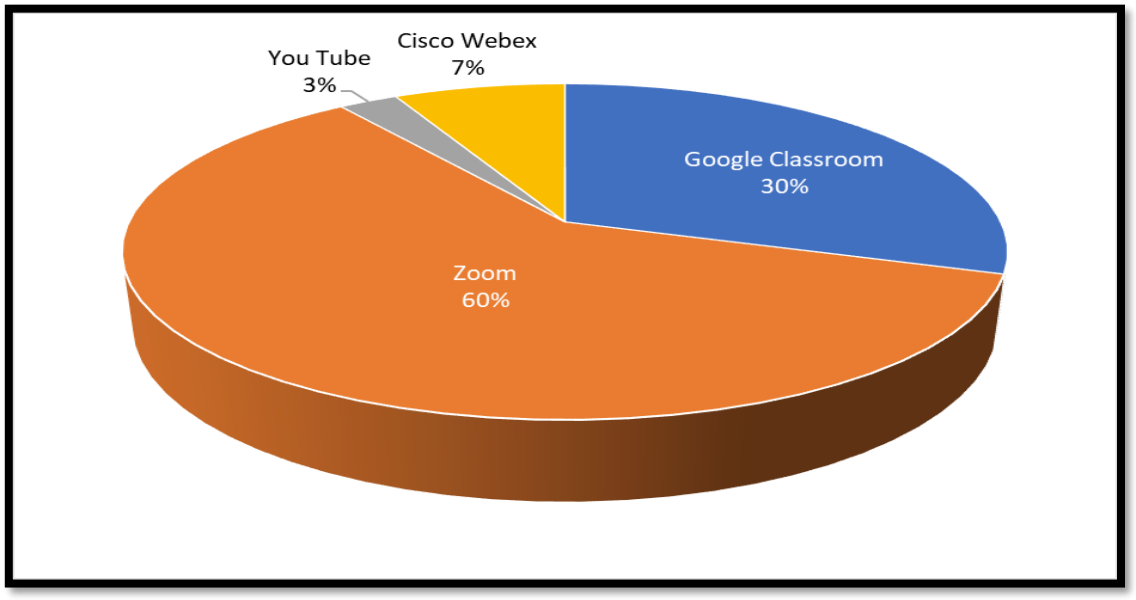

Fig 7: What platforms were used for online classes.

95.87 students were attending online classes at home. - Table 1. Majority of students 44.52% were attending synchronous classes - Table 2. Most of the students 60.14% had allocated area at home to attend online classes - Table 3.

Table 1: Students attending online classes at home.

	Responses 436	Percentage
Yes	418	95.87
No	18	4.13

Table 2: What type of online classes are you attending - Synchronous or Asynchronous or both.

	Responses 438	Percentage
Asynchronous	96	21.92
Both	147	33.56
Synchronous	195	44.52

Table 3: Whether they have allocated area for study at home

	Responses 439	**Percentage**
Neutral	97	22.10
Yes	264	60.14
No	78	17.77

64.81% wanted to study through asynchronous classes at their own will. 59.55% used mobile phones for attending classes. 14.55% used laptops, 22.27% used either laptop or mobile, while 3.64% used any other device like Ipad etc.

Among the major difficulties- 21.33% felt the online teaching schedule was too long. 18.67% felt difficult to analyse the concept of practical classes, 16.67% had eye strain and stress, 14.67% said there was less teacher student interaction, while 14% had difficulty keeping track of assignments and topics - Fig 8.

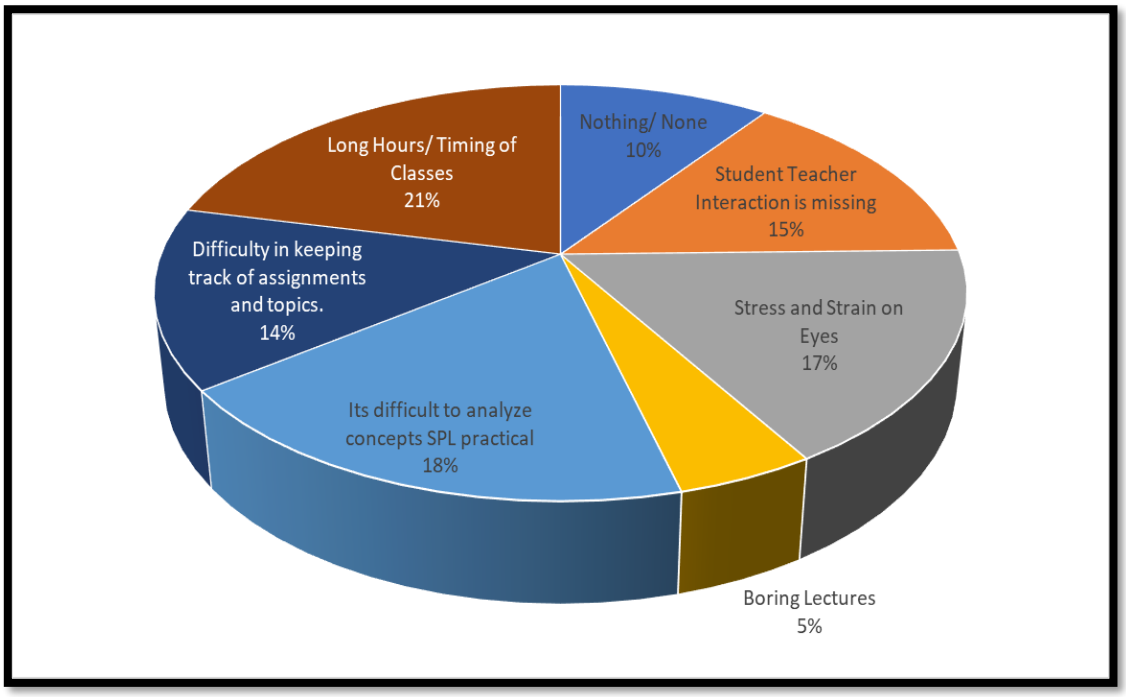

Fig 8 - Major difficulties faced during online classes.

49.51% students attended 4-5hours of continuous online classes daily - Figure 9.

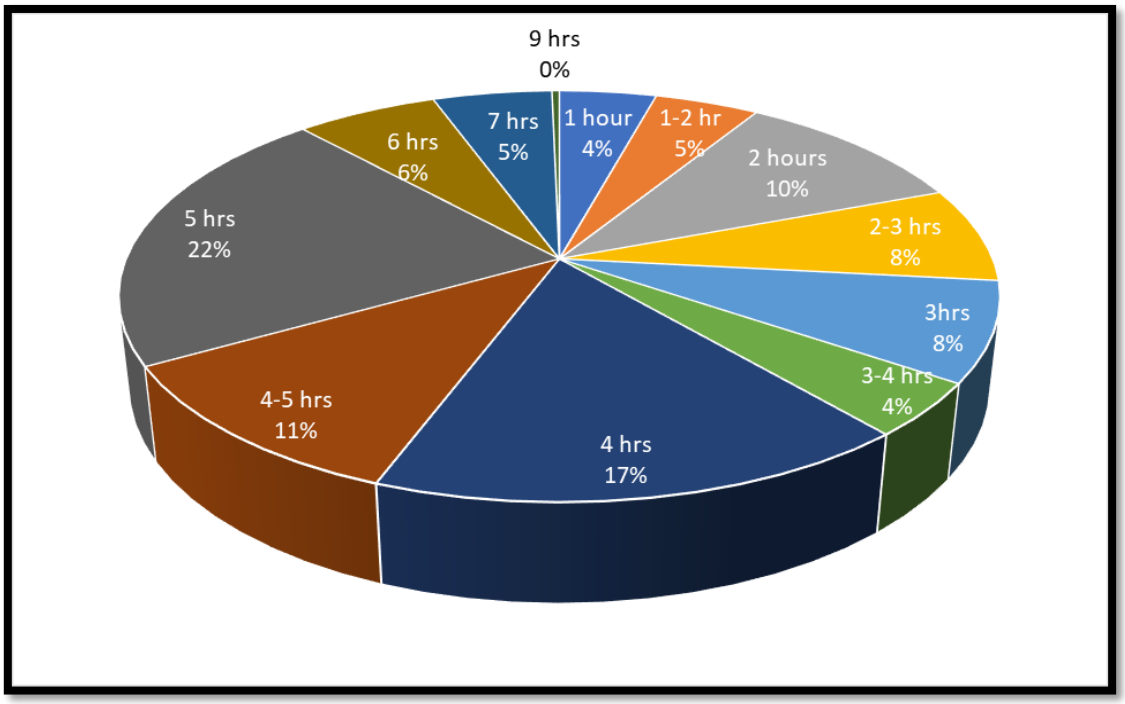

Fig 9: No. of hours of online classes bound to attend daily

41.95% felt interactive teaching happened during online classes, 29.71% were neutral, while 28,34% didn't feel interactivity took place.

48.24% students felt that they will be promoted to the next class with fewer psychomotor/practical or clinical skills. 30.58% were neutral, while 21.18 said no as their answer - Table 4.

Table 4: Whether they will be promoted with less psychomotor/clinical/practical skills

	Responses 425	Percentage
Yes	205	48.24
Neutral	130	30.59
No	90	21.18

87.07% reported stress for the upcoming university exams.

Table 5: Are you stressed for the upcoming university exams?

	Responses 433	**Percentage**
Yes	377	87.07
Neutral	39	9.01
No	17	3.93

77.47% teachers used power point presentations, 17.61% used videos, 4.93% did not use any tools during online classes.

76.77% assessments were through MCQs, short and long answered questions, 21.85% only through MCQs, while 1.38 % through assignments - Fig 10. 36.07% students agreed that online assessment helped them to learn better, and 46.17% students felt that online assessments were reliable in present circumstances.

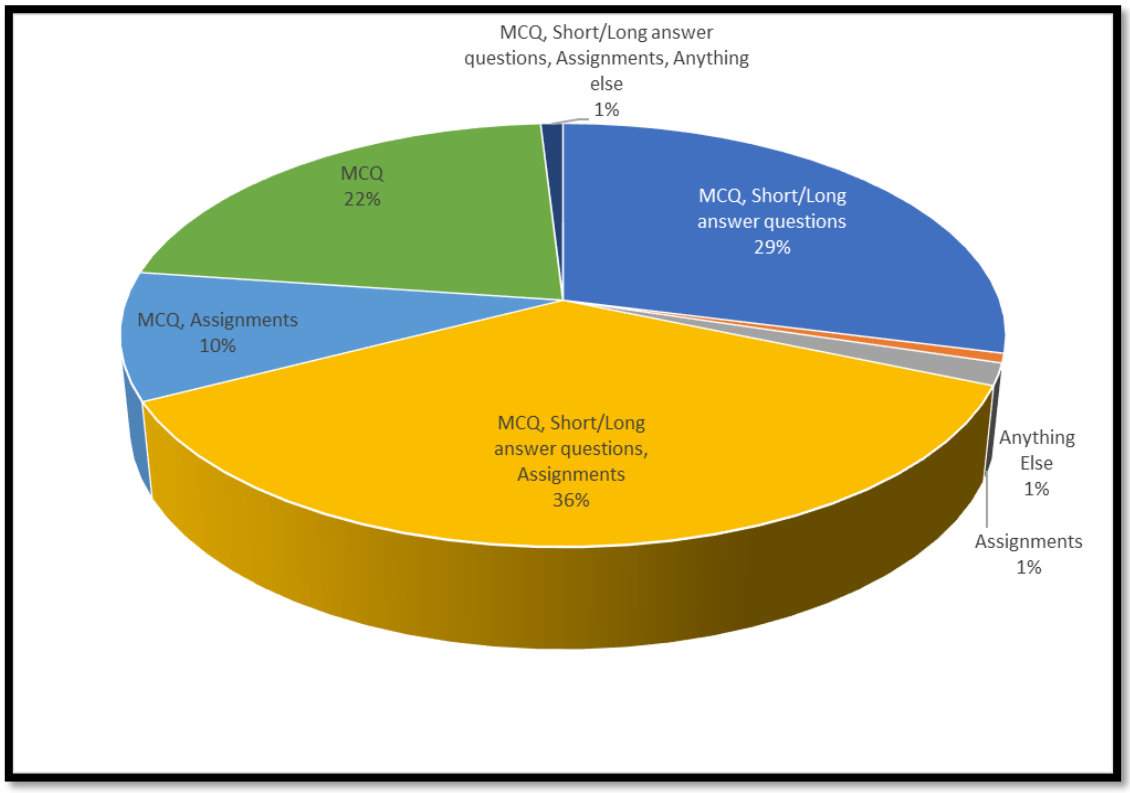

Fig 10: Type of assessment taking place in the institutes.

55.55% students wanted more clinical and practical oriented assessments, 12.70% students wanted subjective and viva voice tests - Fig 11.

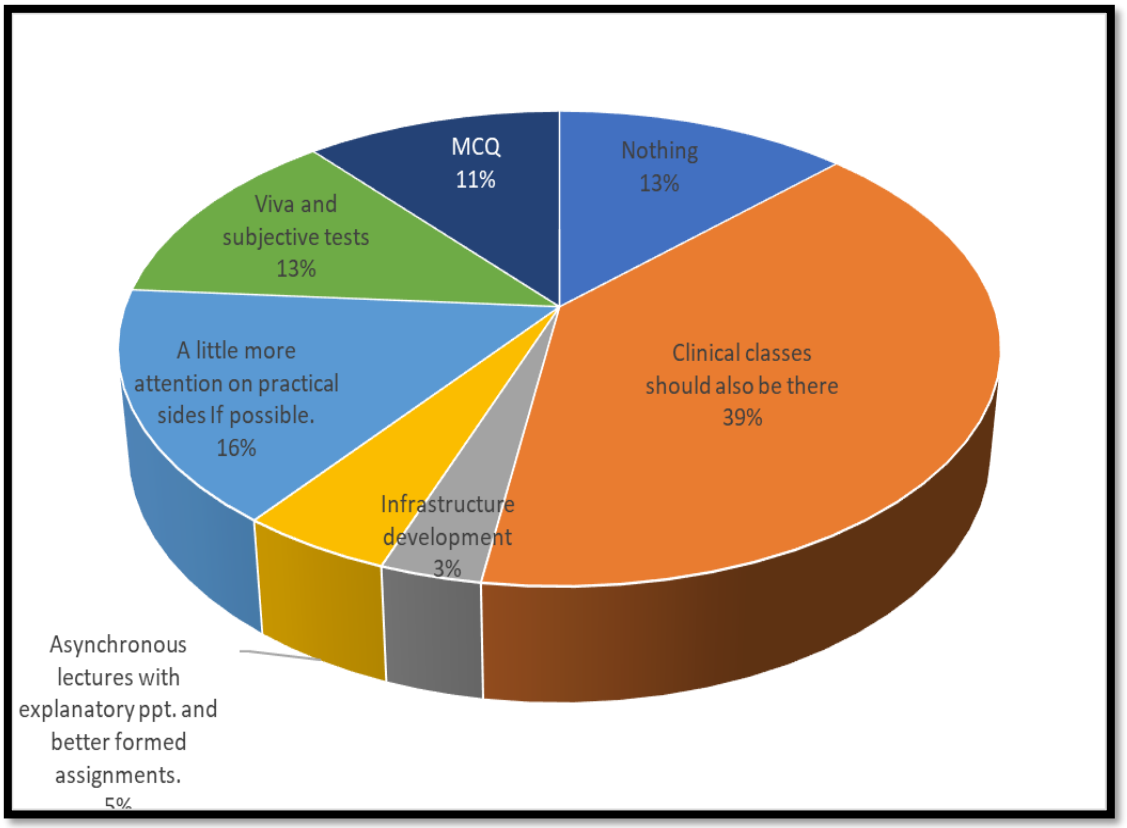

Fig 11: Suggestions on changes in assessment pattern to enhance learning.

Most of the students wanted more clinical and practical based classes and scenarios to be taught after the pandemic gets over. 69.54% students agreed that online mode of teaching at present is the best way forward during the pandemic. - Fig 12.

52.78% students felt that teaching, learning and assessment will change after the covid era.

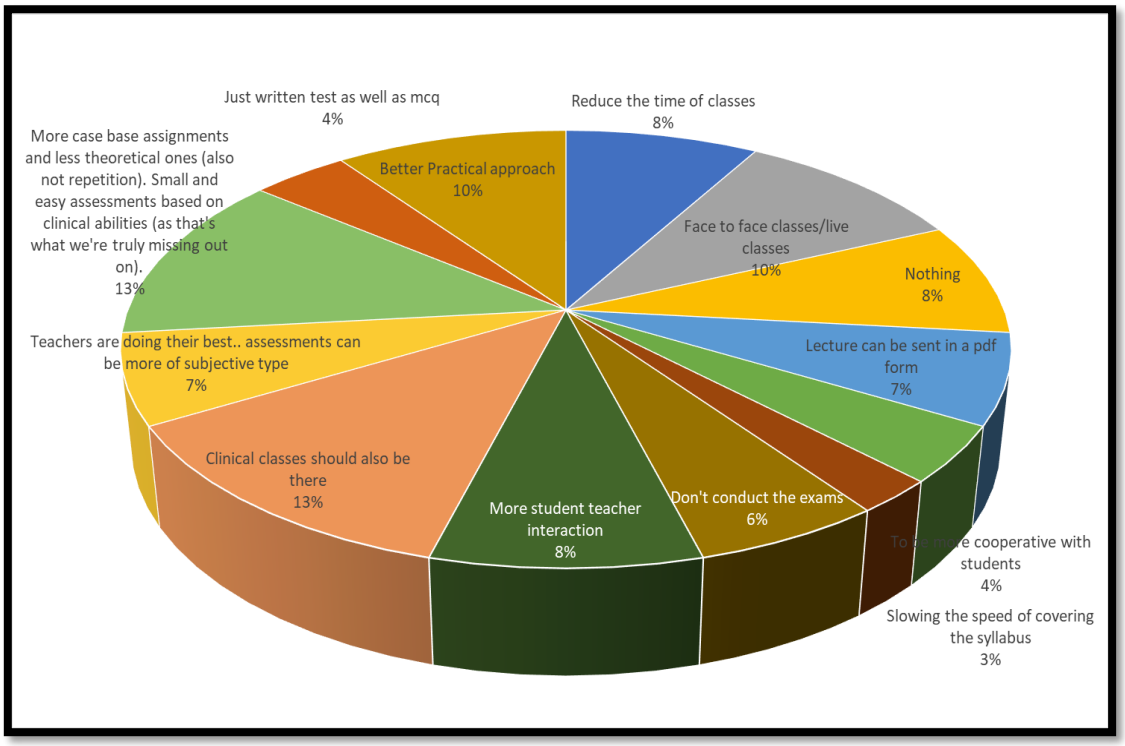

Fig 12: Institutional changes in teaching learning and assessment would you want during such times.

Most of the students said the help they can render during covid times is to raise awareness on social distancing, hand hygiene, mask wearing. Only 3.62% students wanted to come forth to help in the hospital setting - Table 6.

Table 6: How can students be involved in patient care during the pandemic.

	Percentage
By suggesting different distance techniques	7.25
We can help people be more aware! Help them understand the importance of masks and washing hands. Prevention is better cure.	25.36
We can volunteer in hospitals	3.62
Case studies	4.35
Apart from treating them with medicines, encouraging them by involving them in sketching or any activity and supporting them	1.45
Aware people regarding covid19	18.12
Firstly, taking preventive measures for myself. Secondly, precautions for the patients and counselling them.	3.62
By webinar and symposium on patient care by giving suggestive topics to learn prior to the event.	1.45
Since we r not trained and skilled doctors. We r just first yr students nd lacking our classroom touch but we can help doctors by self-isolating ourselves.	3.62
By boosting them and removing their fear n spreading positivity	0.72
Through helpline numbers	0.72
None	5.07
Learning from a distance but practical learning is important	2.90
By visiting patients in Outdoor only	1.45
By guiding our family and friends. Online awareness	6.52

51.50% students were happy to be part of their profession during covid times.40.62% were happy they chose this profession, 37.50% were neutral, while 21.88% felt it was dangerous as doctors were themselves getting infected - Table 7.

Table 7: What is your take on your chosen profession vis a vis - before, during and after covid era.

	Responses 352	**Percentage**
Very happy - profession is revered today.	133	40.62
Neutral	132	37.50
It's a short time, Its dangerous - more chances of infectivity.	2	0.57
Its dangerous - more chances of infectivity.	44	12.50
It's a short time	31	8.81
Very happy - profession is revered today., Neutral, Its dangerous - more chances of infectivity.	10	

Discussion

The present study was undertaken to decipher the Impact of revamping of teaching-learning modalities on undergraduate medical students and their well-being as a response to the COVID-19 pandemic. Overnight the class experience was taken out from the face-to-face realm to different online modes of teaching-learning. Ordinary life was suspended and replaced by emergency contingency measures.

Most of the students reported boredom and depression, irritability, and anxiousness. Increased stress and anxiety have also been reported by other studies, where 71% of student respondents reported stress and anxiety, and depressive thoughts. This was due to fear of health of their own as well as their loved ones, difficulty in concentrating, sleeping decreased social interactions, and concerns about academic performance 10. In another study in Hubei province, China 22.6% of students reported depression while 18.9% of students reported anxiety symptoms during covid pandemic [11].

Students adopted different coping strategies and utilized their free time to cope with anxiety. Many surfed the internet and got busy on their mobiles, some read books, some watched television and movies, some spent quality time with families while others listened to music or played sports. Mental boost during trying time was provided by family and friends, music, exercise, games and cycling. In another study 34% students used the support from their family and through online platform from their friends to overcome the difficult period [10]. Large majority of students noticed changes in social relationships.

The main hobby pursued by these students were baking and cooking followed by painting/drawing/sketching. Few read books or exercised while a few said they had no hobbies. In another study 92% of students listened to music, 92% watched movies/series, many were on social media while students rated outdoor activities as most rewarding. Listening to music did not appear as one of the main hobby in our study, may be because students think of it mainly as a recreational activity and not as a hobby. Interestingly many students rated cooking and baking as their main hobby in our study [12].

Students used different platforms to learn, which depends on the formal education platform used by the medical school or university, at the same time other platforms like you tube or marrow and prep ladder virtual apps were also used by students. So, we see vast difference in the type of platforms used, this is similarly also reported in other studies from other parts of the world as well [13]. The main challenge for students was not technical issues but of the learning environment at home.

While our study showed 41.95% agreed that interactive discussion happened during online classes, while a study in Libya reported that 54.1% of respondents agreed that interactive discussion is achievable by means of e-learning. 21.1% felt that clinical aspects were covered well in comparison to 54.8% who disagreed [14].

49.51% in our study were studying for 4-5 hrs online. 19.67% of students reported not understanding concepts, especially of practical and clinical ones. 16.67% of students reported eye strain and stress. In another study in India 50.23% of students had digital eye strain (DES), they were studying online for more than 5 hrs daily, and 61.7% of students were using smartphones for online classes [15]. In our study the medical students were mature, they could understand theoretical concepts but understanding clinical and psychomotor aspects was challenging on online platforms.

48.24% of students felt that they will be promoted to the next class with fewer psychomotor/practical or clinical skills. A study reported that 70% of students felt lack of interaction with patients during online teaching was a big hurdle. There was no statistical difference in knowledge in online and face to face learning, but it was less effective in acquiring psychomotor and social competency skills [16].

In our study, 87% of students reported stress from exams. Medical schools are stressful, with Covid-19, they have become more stressful. Students are not able to work on patients and go to Electives or Observation clinics, leading to the stress of falling behind [11,17].

Different platforms mainly Zoom, MS meet, and google Forms assignments, and assessments were used. MCQs were majorly used for assessment purposes, but also short answer questions and long answer questions were used for assessments. Faculty also used WhatsApp video calls for viva voce and practical skill assessment. Many other studies also reported using different platforms and question types [18]. Assessments have to be re-planned and re-imagined. Multiple tools have to be used for both formative and summative assessments. Monitoring of online assessments which should be aligned to a competency-based curriculum has to be thought of [19].

51.50% of students were happy that they chose this profession which was revered during covid times, they expressed professional pride and new sense of purpose for advocacy of public health. Very few students opted to work directly with covid patients because of fear of getting infected and lack of proper skills to deal with such patients [20]. In another study in Brazil, 13.4% of participants felt that students should participate in covid pandemic response, while 47.6% felt only Interns should be participating [21]. Students were stressed from working in hospitals and catching infections and they felt they were skilfully not prepared to deal with patients.

52.78% of students felt that teaching-learning will change after the covid-19 pandemic. Another study in the UK reported the further addition of online teaching methods along with traditional medical education. This may further lead to a shift of medical practice to virtual consultations [22]. Despite limitations, online classes were popular among students and appeared to be feasible, interactive, and could supplement classroom teaching during the pandemic.

Conclusion

Covid lockdown had a phenomenal and instantaneous effect on medical students' teaching, learning, and assessment. It did affect the mental make-up of students. Everyone is braced to give medical students better education through virtual platforms. This was well accepted with the main complaint of no patient interaction and less gain of psychomotor skills. Medical education cannot do without patients and teachers and peer contact. The teaching learning and assessment should see a paradigm shift even in post covid era. In fact the emergency situation and the innovations thereafter and their acceptance will see further change and innovation in medical education, which will be feasible, acceptable, economic and collaborative across borders with sharing of teaching learning and assessment resources.

Ethical Approval

The study was approved by Institutional Ethics Committee. Project No: Patho162/2020. Date - 24/06/2020. This study was performed in line with the principles of the Declaration of Helsinki.

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Conflict of Interest

We have no conflict of interest to declare.

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