

IMPACT OF COVID-19 ON EDUCATION OF UNDERGRADUATE MEDICAL STUDENTS OF PAKISTAN

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ABSTRACT:

BACKGROUND & OBJECTIVE: COVID-19 has caused unrest among medical students all over the world including Pakistan. The objective of this study was to assess the impact of COVID-19 on education of undergraduate medical students of Pakistan by assessing their responses to a survey.

METHODOLOGY: A validated questionnaire of this cross-sectional analytical study was distributed among 900 undergraduate MBBS students of different medical colleges and universities across Pakistan. Results were assessed by using SPSS version-24.

RESULTS: The response rate of our study was 85%. Majority of the participants were females (64.4%) while the fourth year MBBS students took part in the survey with the highest number of students, 434 (56.7%). Major part of the participants (90.8%) agreed to the fact that COVID-19 has affected their study duration. Ninety six percent of the students had online classes during this COVID-19 but more than half of the students (52.8%) were of the view that it's hardly effective. Interestingly 91.5% of the students participating in the survey showed that they have lost interest in studies. A great difficulty was faced by the students in establishing boundaries between work and home (84.0%). Almost eighty five percent of the students missed their classroom environments.

CONCLUSION: There is a huge impact of COVID-19 on medical education of the students in Pakistan. It affected them both physically and mentally and created great phobia in them related to future of their education.

KEY WORDS: Undergraduate MBBS students, COVID-19, Survey.

doi: <https://doi.org/10.37723/jumdc.v11i4.448>

How to cite this:

Aziz N, Waseem M, Fatima A, Anwar A, Khalid F, Asghar T. IMPACT OF COVID-19 ON EDUCATION OF UNDERGRADUATE MEDICAL STUDENTS OF PAKISTAN. jumdc. 2020;11(4):7-15.

doi: <https://doi.org/10.37723/jumdc.v11i4.448>

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INTRODUCTION:

The Corona Virus Disease-2019 (COVID-19) pandemic caused by novel coronavirus known as SARS-CoV-2 (formerly called 2019-nCoV) has become global health emergency and the greatest challenge of the present time. The first case of COVID-19 was reported in Wuhan City, Hubei State of China in December 2019 and then it erupted and unrolled with tremendous speed ^[1]. The virus infected more than 118000 people and caused 4291 deaths in 114 countries within 3 months and WHO declared it a pandemic ^[2]. This pandemic followed no boundaries and caused catastrophic effect that spanned the globe. On January 13th, 2020 Thailand recorded first case outside the mainland China and then continued to spread throughout the globe ^[3]. Italy was hit badly by COVID-19 with highest mortality. In Pakistan, first case of COVID-19 was reported by ministry of Health on 26 Feb, 2020 after which it spread swiftly all over the Pakistan ^[4]. The world is still witnessing its spread due to which countries are facing disastrous social, economic and political crisis. Particularly it is affecting already trembling economy of developing countries like Pakistan. Despite of direct burden over health sector, the pandemic has also affected the ways humans facing the world in different ways ranging from transportation to social events including the lifestyle ^[5].

The novel COVID-19 pandemic has hit medical education seriously. Worldwide, the suspension of formal classes of MBBS in the wake of COVID-19 pandemic precipitated a tremendous spike in uncertainty among medical community ^[2]. Due to suspension of classes it was a challenge for medical faculty to re-engage students in study. The COVID-19 pandemic forced a rapid switch to technology to provide students a platform to certify their participation in study during pandemic. The implementation of online forum for study has given a unique method to facilitate the students during pandemic ^[6]. To alleviate viral transmission and to prevent the exposure of medical students to COVID-19 medical colleges and universities have also cancelled clinical work for students. This loss of clinical attachment is raising alarm about the future performance of medical students in wards and causing great confusion among students

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regarding how to proceed during pandemic. Due to this, students are losing opportunities for enhancement of their clinical skills. This situation is particularly troublesome for students of clinical years like final year and fourth year MBBS ^[7].

Unfortunately, the situation is worse in Pakistan where loss of collaboration, no ward rotation and lack of facilities to integrate with technology is highlighting the irreplaceable value of face to face or class room study and most of students are not equipped fully to cope up with this online system of study ^[7]. In addition the knowledge regarding COVID-19 is not upto mark in our population ^[8]. Considering all these problems and ongoing efforts of online classes and assignments managed by our medical educational institutes, we tried to analyze the impact of these efforts which are introduced in consequences of pandemic on medical education by conducting survey over more than 750 medical undergraduates studying in different medical colleges of Pakistan.

METHODOLOGY:

This cross-sectional analytical study was conducted at Sahiwal Medical College Sahiwal from 15th June to 15th July 2020. This web-based cross-sectional survey was conducted after taking ethical approval from institutional review board of Sahiwal Medical College Sahiwal via letter No. 101/DME/SLMC/SWL. Sample size was calculated by using following formula;

$$\text{Sample size} = \frac{Z_{1-\alpha/2}^2 p(1-p)}{d^2}$$

$Z_{1-\alpha/2}$ = is standard normal variate (at 5% type 1 error ($p < 0.05$) it is 1.96. As in majority of studies p-values are considered significant below 0.05 hence 1.96 is used in formula ^[9].

A validated questionnaire was sent to 900 MBBS students of different medical colleges and universities across Pakistan through Whatsapp

and Facebook messenger. Medical college and universities where the questionnaire were sent belonged to different cities of Pakistan including Lahore, Islamabad, Karachi, Quetta, Peshawar, Sahiwal, Multan, Bolan, Bahawalpur and Faisalabad. Such online soft wares were used to make sure that social distancing is maintained due to COVID-19 while conducting this survey.

Only undergraduate MBBS students were included in the survey while allied health sciences students, graduate and post graduate students were excluded. Convenient sampling technique was used.

Data were calculated by using SPSS version 24. Frequencies and percentages of different demographic characteristics and responses of students were tabulated. Significance of the data was checked by Chi-Square test. Significance was taken at $p < 0.05$.

RESULTS:

The questionnaire was sent to 900 undergraduate MBBS students of different medical colleges across Pakistan and out of which 765 responded; hence the response rate of our survey was 85%. Majority of the participants were females, 493(64.4%). Fourth year MBBS students took part in the survey with the highest number of students, 434 (56.7%). Third year was second on the list with 131 students (17.1%). Final year MBBS students responded with least number of students '42 (5.5%)'. An overwhelming of students was resident of urban areas, 612 (80.0%) while remaining belonged to rural areas. As far as the participation of the institutions across Pakistan is concerned, Sahiwal Medical College Sahiwal participated with maximum no. of students, 254 (33.20%). 58 (7.5%) undergraduate MBBS students of Allama Iqbal Medical College Lahore participated. Next on the list were the students of Sargodha medical College Sargodha, 48 (6.2%) and CMH Lahore, 23 (4.1%). Rests of the students were from other institutions, 382 (49.9%) (Table-I).

The impact of COVID-19 on medical education of undergraduate MBBS students was assessed by a validated questionnaire. We calculated the frequencies and percentages of the responses. Major part of the participants (90.8%) agreed to the fact that COVID-19 has affected their

study duration. This was also proved by the fact that 75.4% of the survey participants were of the view that this pandemic has caused more wastage of time. Many students (89.8%) were found to be concerned about their professional exam due to current situation. The ward rotation of the MBBS students was also severely affected by the pandemic (67.3%)(Table- II). Slightly more than half of the participants (55.4%) thought about doing some clinical services during pandemic but actually only 6.4% of the students did any clinical service. Majority (65.1%) also agreed that their teachers had given them enough information related to COVID-19. Ninety six percent of the students had online classes during this COVID-19 but more than half of the students (52.8%) were of the view that it's hardly effective. It was also evident by the fact that 69.7% of the students were unsatisfied with this method of learning. Interestingly 91.5% of the students participating in the survey showed that they have lost interest in studies. 90.5% of the students also agreed that increase in social media use has affected their studies. Performance in clinical wards would also be affected by this pandemic according to 89.8% students. Online assessment as an alternative to the physical exam was also rejected by an overwhelming number of the students (88.0%). A great difficulty was faced by the students in establishing boundaries between work and home (84.0%). Almost eighty five percent of the students missed their classroom environments. Though majority belonged to urban areas but still 86.3% thought that e-learning was not feasible for the students living in rural areas. Human connection with instructors was also missed to a great deal (80.7%) by the students. Nearly two third of the students were of the view that students may never come back to the institutions. Students also shared their fears related to this pandemic. Difficulty of studying at home in the current situation was most feared (39.3%) by the MBBS students. Deterioration of psychological state due to negative news and events was feared by 17.6% of the total survey population. Fear of getting sick or passing on the disease to one's relatives was felt by 16.9% of the total 765 students. Loss of loved one

(many people stayed abroad due to the closure of borders) was feared by 15.8% of the students. Finally the fear of losing scholarship due to pandemic was sensed by only 1.2% of the students (Table- II).

Different prevalence rates were also calculated for different attitude of the students towards pandemic. Prevalence of students' fear during pandemic according to MBBS classes was calculated and it was found out that almost 84% of the first year students showed that their time is more wasted than others due to this pandemic. The association was also found to be statistically significant ($p=0.045$) (Table III).

When prevalence rate of students' interest was cross tabulated with MBBS classes then it was found out that 3rd year and final year students lost their interest in the studies with maximum rates (95.4% and 95.2% respectively). Though the association was found to be statistically non-significant ($p=0.127$) (Table- IV).

Students' concern towards the conduction of professional examination was cross tabulated with MBBS classes. Result was statistically non-significant ($p=0.197$) but more than 80% of the students of all the MBBS classes showed great concern that their professional examinations may be affected due to pandemic (Table-V).

Table-I: Frequency distribution of demographic characteristics among undergraduate. Medical students (n=765).

Demographic Characteristics	Groups	n	(%)
Gender	Male	272	35.6
	Female	493	64.4
Class (MBBS)	First Year	59	7.7
	Second Year	99	12.9
	Third Year	131	17.1
	Fourth Year	434	56.7
	Final Year	42	5.5

Table-II: Frequency Distribution of responses by the participants of the survey (n=765).

Sr. No.	Questions	Responses	n	%
1	Has COVID-19 affected your study duration	Yes No	695 70	(90.8%) (9.2%)
2	The pandemic has	1.Caused wastage of time 2.Given you extra time to improve your concept	577 188	(75.4%) (24.6%)
3	Are you concerned about your professional exam due to current situation	Yes No	687 78	(89.8%) (10.2%)
4	How much this pandemic affected clinical work due to no ward rotation	No effect Mild Moderate Severe	60 40 150 515	(7.8%) (5.2%) (19.6%) (67.3%)
5	During pandemic did you think you should do some clinical service	Yes No	424 341	(55.4%) (44.6%)
6	Did you do some clinical service in pandemic	Yes No	49 716	(6.4%) (93.6%)

7	Do you think clinical service will impact on your medical education	Yes No	628 137	(82.1%) (17.9%)
8	Have your teachers given you enough information about the disease	Yes No	498 267	(65.1%) (34.9%)
9	Do you have online classes	Yes No	740 25	(96.7%) (3.3%)
10	How much effective is the E-learning	Not effective at all Somehow effective Quite a lot	294 404 67	(38.4%) (52.8%) (8.8%)
11	Are you satisfied with this method of learning during COVID-19 pandemic	Yes No	232 533	(30.3%) (69.7%)
12	I am of the opinion that	Students are more interested now Students have lost interest in studies	65 700	(8.5%) (91.5%)
13	Transition increase use of social media have affected your study	Yes No	692 73	(90.5%) (9.5%)
14	Do you think that E-learning would be real substitute	Yes No	104 661	(13.6%) (86.4%)
15	Concerned about future performance in wards	Yes No	687 78	(89.8%) (10.2%)
16	Do you think online assessment is good alternative to physical exam	Yes No	92 673	(12.0%) (88.0%)
17	Are you facing difficulty in establishing boundary between work and home	Yes No	643 122	(84.0%) (16.0%)
18	Do you miss classroom engagement	Yes No	633 132	(82.7%) (17.3%)
19	Feasible for students in rural areas	Yes No	105 660	(13.7%) (86.3%)
20	Do you miss human connection with your instructors	Yes No	617 148	(80.7%) (19.3%)
21	Worst case scenario that students may not come back	Yes No	432 333	(56.5%) (43.5%)
22	Fear the most	1.Burnout due to overabundance of information 2.Deterioration of psychological state due to negative news and events 3.Difficulty of studying at home in the current situation 4.Fear of getting sick or passing on the disease to one's relatives 5.Fear of losing a scholarship or funding 6.Loss of earning or loss of income from parents 7.Loss of loved one (many people stayed abroad due to the closure of borders)	16 135 301 129 9 54 121	(2.1%) (17.6%) (39.3%) (16.9%) (1.2%) (7.1%) (15.8%)

Table-III: Prevalence of Students' Fear during pandemic according to MBBS classes.

			MBBS Year					P-value
			1st Year	2nd Year	3rd Year	4th Year	Final Year	
The pandemic has	Caused wastage of time	Count	49	75	108	311	34	0.045
		%	83.1%	75.8%	82.4%	71.7%	81.0%	
	Given you extra time to improve your concept	Count	10	24	23	123	8	
		%	16.9%	24.2%	17.6%	28.3%	19.0%	

Table-IV: Prevalence of Students' interest during pandemic according to MBBS classes.

			MBBS Year					p-value
			1st year	2nd Year	3rd Year	4th Year	Final Year	
I am of the opinion that	Students are more interested now	Count	9	10	6	38	2	0.127
		%	15.3%	10.1%	4.6%	8.8%	4.8%	
	Students have lost interest in studies	Count	50	89	125	396	40	
		%	84.7%	89.9%	95.4%	91.2%	95.2%	

Table-V: Prevalence of Students' Concern during pandemic according to MBBS classes.

			MBBS Year					p-value
			1st Year	2nd Year	3rd Year	4th Year	Final Year	
Are you concerned about your professional exam	No	Count	8	14	13	36	7	0.197
		%	13.6%	14.1%	9.9%	8.3%	16.7%	
	Yes	Count	51	85	118	398	35	
		%	86.4%	85.9%	90.1%	91.7%	83.3%	

DISCUSSION:

Response rate of our survey was found to be 85%. This was a unique survey conducted among a huge number of students of different medical colleges across different provinces of Pakistan. Students participated in the survey with great zeal and zest and showed their doubts about different aspects of COVID-19. Students from Sahiwal Medical College Sahiwal constituted almost one third of the total participants. It was attributable to the fact that this study was the project of the same college.

Students (90.8%) were agreed upon the fact that COVID-19 has affected their studies a lot. A recent study done in Karachi also showed the same result ^[9]. A big wastage of time during COVID-19 is also suggested by majority (75.4%) of the participants of the survey. It can be attributable to the fact that students were mentally drained because of the phobia created by COVID-19 ^[10]. Many students (89.8%) also showed their concern about their professional examination. There was much news circulating in the media regarding postponement of final exams of MBBS due to

COVID-19^[11] that caused great unrest among medical students^[12]. As majority of the study population belonged to higher classes of MBBS (final year, 4th year and third year), so there was a big worry (86.9%) among the students that their clinical ward rotation is affected a lot. This concern was also shown by students in a study conducted by Wang et al.,^[13]. Though students agreed that they should do some clinical service in this pandemic yet a bleak number of students actually did some good service clinically in this pandemic (6.4%). This difference in thinking and actual work by medical students can be due to many factors like non-availability of proper resources, social distancing and complete lockdown in some areas of Pakistan and non-cooperation from their families^[14]. Majority of our survey population (65.1%) agreed that the knowledge about COVID-19 was abundantly and precisely given by the teachers. A recent study showed that the faculty members of medical fraternity were a major factor in spreading the correct information related to COVID-19^[15]. Many medical universities and colleges across the country did arrange the online classes within their own domains and students confirmed that in our study. But only 8.8% of the students agreed that these classes were quite effective; hence they rejected this mode of learning. It can be attributed to the fact that students generally lack interest in E-learning courses because they are not used to it. A recent study conducted in Bangladesh in contrary showed that students accepted e-learning as mode of learning^[16]. 69.7% of the students were dissatisfied with this mode of e-learning again contrary to a recent study^[17]. Even 91.5% of the students lost their interest in studies due to online classes which was a surprising fact found by our survey. A great number of students (90.5%) also blamed the increase use of social media as the cause of decrease study periods during COVID-19. This fact is also supported by the former study conducted at China. Including only 321 medical students, much smaller sample size than current study^[18]. Increase in social media use is addictive for students as they are the sources of entertainment. E-learning should be discontinued according to the view of our survey population (86.4%) because they thought that this mode of learning cannot

replace the physical mode of learning as done in the classrooms. It was contrary to a previous study done by Kamal Z et al., but that study was also conducted on lesser number of students as compared to our study^[19]. Ward rotation was also affected badly in this pandemic as outdoor services for general public were closed in Pakistan and this led to the concern shown by the students in our survey related to future performance in wards (89.8%). Major part of our survey population (84%) faced difficulty in establishing boundaries between work and home routines. This finding was similar to the one found in a recently concluded study^[20]. As there are other family members living in the same vicinity hence it is always difficult to create such classroom environments at home. Classroom involvement and human connection with teachers was greatly missed by the students (82.7% and 80.7% respectively). As there is long history of class room teaching in Pakistan and students are habitual of it. Though majority of our survey participants belonged to urban population yet 86.3% of the students showed that e-learning mode of teaching are not feasible for rural areas.

We also calculated the inferential statistics of our data by calculating prevalence rates according to MBBS classes. Our results showed statistically significant results ($p=0.045$) when compared between MBBS classes and students' thought that this pandemic has caused more wastage of time than being useful (Table-III). Though the other results did not show statistically significant P-value yet majority of students agreed that they have lost interest now in studies. Students of senior classes were more concerned about their professional exams as they are senior most classes but the results were statistically non-significant. A previous study though showed statistically significant result for students' fears towards pandemic^[10]. Students who responded to the questionnaires also showed their fears related to this wrath of COVID-19. Students feared that there was a great difficulty for them to study at home. It could be due to non-ideal conditions for many to study at homes and could also be due to the fact that there was great panic among general public because of COVID-19^[21]. Mental impact of COVID-19 also put a huge effect on psychological status of the students as

demonstrated by our study. It was similar to the result shown by a previous study by Waseem M et al.,^[22]. This pandemic continued its wrath by creating a fear in our participants' minds that they themselves might get sick or could pass the disease to others as well. Many also feared the loss of their loved ones (15.8%) especially those living abroad.

CONCLUSION:

Therefore our survey concludes that there is a negative impact of COVID-19 on medical education of the students in Pakistan as it affected them both physically and mentally.

ACKNOWLEDGEMENT:

The authors are deeply indebted to Prof. Dr. Zahid Kamal, Principal and Head, Department of Ophthalmology, Sahiwal Medical College Sahiwal for his motivation to initiate and complete this project successfully.

CONFLICT OF INTEREST: All authors disclose no conflict of interest.

GRANT SUPPORT & FINANCIAL DISCLOSURES: None

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Author's Contribution:

Nauman Aziz: Designed the study.
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Anmol Fatima: Writing the manuscript.
Aqsa Anwar: Collection of Data.
Fahad Khalid: Biostatistics.
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Submitted for publication: 27.07.2020

Accepted for publication: 11.11.2020
 After Revision