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EFFECTS OF RE-OPENING OF EDUCATIONAL INSTITUTION DURING COVID-19 INFECTION: FACT OR FICTION.

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Abstract:

Objective: To determine the effects of re-opening of the educational institution during COVID-19 infection among faculty members and students at a private Medical College in Pakistan. **Study Design**: Cross sectional study design

Place and Duration of Study: Al-Tibri Medical College Hospital, Isra University Karachi campus Karachi from March 2021 to September 2021.**Methodology**: Both teaching staff and students of either gender were included in the study after receiving informed consent. They were divided into two groups (Basic Sciences and Clinical Sciences). Polymerase chain reaction (PCR) test for COVID-19 through nasal swab were done before joining the physical classes, then after 3 months, and then in 6 months. SPSS version 23.0 was used to analyze the data, and p-values under 0.05 were deemed significant.**Results**: In pre-arrival testing to medical college, out of 513 samples the positivity rates were 26(5.06%). While in 1st phase out of 308, 22(7.1%) and in 2nd phase, out of 209 it was positive in 10(4.78%). All phases of exposure to COVID-19 highlight the association with the age between Basic Sciences and Clinical Sciences groups and was significantly correlated with a p-value of 0.001.

Conclusion: COIVD 19 test positivity rates during closure and phased reopening of medical college/educational institutions were comparable with overall country's positivity rates, hence we think the catastrophe of closure of well-organized sectors like educational institutes of society during pandemic was outweighed the benefits related claims of pandemic confinement. **Key words:** COVID 19, Basic Sciences, Clinical Sciences, Polymerase chain reaction

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INTRODUCTION

The Corona Virus disease (COVID-19) was declared as a global public health emergency of international concern on 30th January 2020 and a pandemic on 11th March 2020 by World Health Organization (WHO)[1]. Right from start of discovery and subsequent declaration as a pandemic COVID-19 has dramatic impact on every aspect of human life. These sensational shifts in lifestyle have created not only health related threats to masses but also exposed every society to multiple socioeconomic challenges. The COVID-19 has shown boundaryless dissemination without exemption of nation or race and this has resulted in dreadfully changes in lifestyles of the entire world with billions of people being compelled to 'stay at home' and work and learn from home. For those reasons the prohibitive and confining measures across the board were implemented to control the transmission of COVID-19 infection and include but are not limited to social distancing and temporary shutdown of schools, companies and recreational facilities.

In Pakistan, first lockdown was announced in March 2020, extended in April 2020 and lifted in May 2020. Then after a smart lockdown was initiated June 2020 to constrain the infection by closing selected areas of high incidence which was continued at different times with different locations when and as required.

Although, every aspect of human life and activities like economy, business, education, research, sports, entertainment, social gathering, worships politics have been affected by COVID-19 pandemic but the educations sector remains the worst-hit by the pandemic and has had a

serious impact on students, instructors, and educational organizations around the globe [2]. Moreover, the repeated confining measures in different types or shapes like complete, smart, selective or targeted lockdowns have been implemented more strictly on education sector as compare to other sectors like political gatherings, markets, transports etc. As a matter of fact, prohibitive or Standard Operating Procedures (SOPs) can be adequately enforced at organized and accountable sectors like education but difficult to impose upon jumbled sectors like political/religious gatherings and open markets. Hence, the decision of those strict closure or functional restrictions should have been determined on these facts rather than fictions. As far as literature is concerned, the findings are inconclusive so far, few studies supporting the evidence that closure of educational institutions is helpful in confining the spread of COVID-19 infection as well as reduces hospitalizations and deaths, [3-6] while, in contrast, there is considerable research witness favoring the concept that there is no effect of closing schools on COVID-19 spread. [7, 8-10]

Examples of lifestyle changes related to education include replacement of in-person schooling with virtual education, loss of interaction with teachers, friends, and peers and cessation of extra-curricular activities along with associated factors like economic/funding/debt issues, limited learning facilities & opportunities especially countries with limited resources like Pakistan, students dropouts, loss of interest of students at one fell swoop lead to substantial loss of education system.

Indeed, the COVID-19 is fact and its related distress and threats are certain but the belief of opening of educational institutions on COVID-19 spread needs to be reevaluated for better evidence of counterbalance the opening versus persistent closure of education sector. The aim of our study was to assess the effects of re-opening the Medical colleges during COVID-19 infection.

PATIENTS AND METHODS

This Cross-sectional study was carried out at Al Tibri Medical College Hospital from March 2021 to September 2021. After taking informed consent, both teaching faculty and students of either gender were included in the study. Teaching faculty were divided broadly into two groups; Group I; members involved purely in non-clinical teaching (Basic Sciences), and Group II the faculty members belonged to directly or indirectly with clinical teaching (Clinical Sciences). Similarly, students studying Basic Medical Sciences comprise 1st year and 2nd year classes were labelled as pre-clinical and included in Group I, while the next three years' students (3rd, 4th and 5th years) involved in clinical learning and hence used to visit the hospital were called clinical sciences were labelled as Group II. All the teaching faculty members and students were informed and notified to undertake the polymerase chain reaction (PCR) test for COVID 19 through nasal swab before joining the physical classes as per instructions of both Ministry of Education and higher education commission (HEC). Those who reported with laboratory report negative for COVID 19 were allowed to be involved in teaching and learning for physical classes. Confidentiality about the participants' names and their results was strictly maintained. To determine the effect of physical education on potential COVID 19 cases in two distinct phases, the first being joining the institution in three months and the second being joining the institution within six months, random samples from students from each batch as well as faculty members were taken during physical classes throughout all professional years. All the participants included in random sampling were informed of their results. Those whose results turned up positive were assessed by physician and treatment along with precautions were advised and remained in follow up over phone and managed accordingly. The variables included the gender, age, travel history and previous exposure of COVID 19 in Basics and Clinical Sciences group.

Data analysis

The data entry and analysis was done in SPSS version 23.0. Qualitative data were presented in frequencies and percentages while numerical data were expressed in means. The Chi square test was used to compare qualitative data and p-values <0.05 was considered significant.

RESULTS

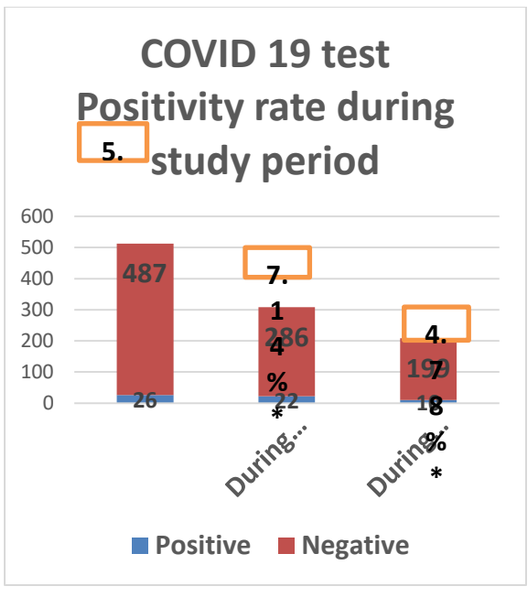
Out of 513 samples used in the pre-arrival testing for medical college, 26 (5.06%) tested positive. Whereas in the first phase, out of 308, 22 (7.1%), and in the second phase, out of 209, it was 10 (4.78%), as indicated in Figure I. Comparing to overall country's COVID -19 tests positivity rate during this study duration was 10.59% as maximum while minimum rate was observed as 2.08%, as shown in Fig II.

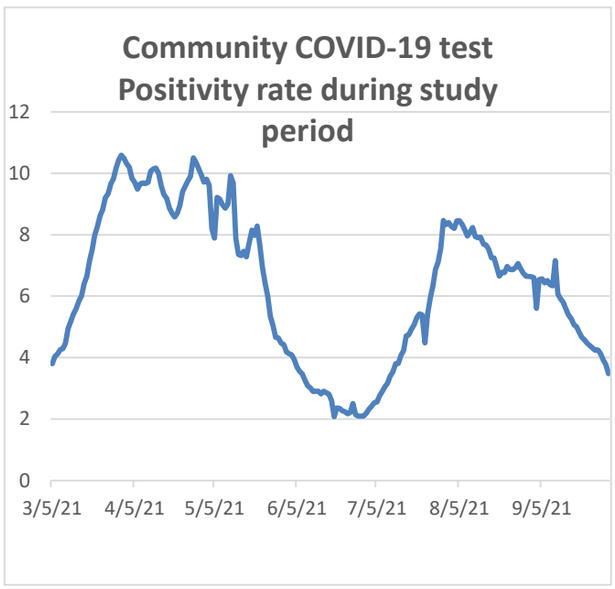
Table I, which depicts the pre-arrival phase of exposure to COVID-19, highlights the correlation between age and gender in the groups of basic and clinical sciences and demonstrates a significant p value of 0.001 for each.

Tables II and III indicate the statistically significant correlation between age and greater positive rates in the clinical group. However, there were no appreciable variations in the two groups of travel history and prior clinical exposure in all phases.

But, overall COVID-19 test positivity rates of study subjects were comparable to timeline of online as well as during physical classes and with community positivity rate too.

Figure I: COVID 19 Positive Cases in Different Phases of a Medical College





***Positivity Rate**
Fig. II: Overall country's COVID 19 test Positivity rate during study period.

Table I. Data of Participants Before Physical Classes/Teaching (n=513)

Category	Basic Sciences (pre- clinical) n=71		Clinical Sciences n=237		P value
	Positive	Negative	Positive	Negative	
Role/job at institution					
Faculty/Doctors 38	02	11	03	22	0.163
Students 270	05	53	12	200	
Gender					
Male 187	03	32	12	140	0.0762
Female 121	04	32	03	82	
Age (years)					
<20 95	05	53	01	36	
20-40 186	00	03	13	170	0.001
41-60 16	01	04	00	11	
>60 11	01	04	01	05	
Previous clinical exposure					
Yes 15	00	01	02	12	0.433
No 232	05	49	12	166	
Don't know 61	02	14	01	44	
History of travel					
Yes 15	01	02	00	12	0.446
No 293	06	62	15	210	
Management plan					
Home/self-isolation 18	06		12		NA*
Hospitalized 04	01		03		

Table II. Data of Participants During Physical Classes in 1st phase of first 03 months (n=308)
***NA: Not Applicable**

Category		Basic Sciences (pre- clinical) n=136		Clinical Sciences n=73		P value
		Positive	Negative	Positive	Negative	
Role/job at institution						
Faculty/Doctors	15	01	09	01	04	
Students	194	04	122	04	64	0.447
Gender						
Male	113	01	64	04	44	0.041
Female	96	04	67	01	24	
Age (years)						
<20	145	04	122	01	18	
20-40	53	00	03	03	47	0.001
41-60	06	01	02	00	03	
>60	05	00	04	01	00	
Previous clinical exposure						
Yes	07	00	03	00	04	
No	163	04	101	04	54	0.813
Don't know	39	01	27	01	10	
History of travel						
Yes	09	00	07	00	02	0.777
No	200	05	124	05	66	
Management plan						
Home/self-isolation	08	04		04		NA*
Hospitalized	02	01		01		

Table III. Data of Participants During Physical Classes in 2nd Phase of 06 months After Re Opening Schools (n=209)
***NA: Not Applicable**

Category		Basic Sciences (pre- clinical) n=206		Clinical Sciences n=307		P value
		Positive	Negative	Positive	Negative	
Role/job at institute						
Faculty/Doctors	38	02	11	03	22	0.1003
Student	475	08	185	13	269	
Gender						
Male	293	05	93	07	188	0.001
Female	220	05	103	09	103	
Age (years)						
<20	250	08	185	02	55	
20-40	236	00	03	13	220	0.001
41-60	16	00	05	00	11	
>60	11	02	03	01	05	
Previous clinical exposure						
Yes	21	00	04	02	15	0.308
No	395	07	153	11	224	
Don't know	97	03	39	03	52	
History of travel						
Yes	23	00	09	01	13	0.887
No	490	10	187	15	278	

DISCUSSION:

During the COVID-19 pandemic, the continuous debate is going on whether closing down the educational institutions can constrain and restrain the pandemic or not. But the evidence of this practice of educational institutional closure is being implemented by majority of countries without weighing of its impact in terms of harm versus benefit. Limiting quick outbreaks and ensuring adequate resources are available for support, minimizing the number of active infections at the beginning of the session. Rapid breakouts deplete university resources and force institutions to stop on-campus activities in favor of a purely online curriculum. One study indicated that the simultaneous entrance of all students on campus causes early and significant outbursts unless extremely effective mitigation techniques, such as periodic testing, are used. [11]

First phase of COVID 19 testing revealed comparatively higher incidence as compare to pre arrival and 2nd phase of reopening the medical college and this might be because scaling up testing capacity was difficult in the early stages of the pandemic, which caused delays in finding cases and contacts. But when these rates were compared with overall timeline of community or national positivity rate turned to be either comparable or bit lower (mean positivity rate of 6.3569% with maximum 10.59% on 31st March 2021 and minimum 2.08% on 19th June 2021). [12] This might be explained by the fact that SOPs of COVID 19 can be adequately implemented or followed at educational institutes in contrast to other public places like open markets, shopping malls, public transport or gatherings. Personal Protective Equipment for healthcare personnel initially fell short, which raised the danger of transmission in our medical college and hospital. In contrast, a previous study reported a staggered reopening with pre-arrival testing significantly lowers the peak number of daily infections during the semester and saves university resources. [13]

These results support the hypothesis that clinical faculty and students exhibit a greater COVID-19 frequency than basic sciences. This discrepancy may be due to their higher propensity to interact with COVID-19-infected patients. Hani et al. confirmed the same findings. [14]

In this study, both faculty and students' positive COVID 19 test results in clinical sciences were substantially correlated with their gender. The cause could be that they had more patient contact, and that intimate contact with peers, teachers, and patients during clinical rotations and practical sessions increases the risk of transmission during medical education. One study reported that women were more sensitive to the need for good hand cleanliness and protective masks when it came to infectious diseases. [(4) 15]

This study found a strong correlation between age and COVID 19 test positive results in clinical sciences for both faculty and students. Although age is an important factor, COVID-19 risk is not solely determined by age. One study reported that elder age, male gender, and the manifestations of underlying diseases such as hypertension, and diabetes are the risk factors for the progression of the disease. [16] In addition to immunization status, general health, living conditions, and community transmission rates, other important factors have a significant impact on COVID-19 incidence in all age groups. The effectiveness of university-based public health measures, such as mask use, social exclusion, and immunization programs, may have an impact on the rate of transmission across different age groups. [17]

There were few limitations of the study. The samples included in three phases were not evenly distributed in the study. It was a cross sectional study so the findings could not be generalized.

CONCLUSION:

COIVD 19 test positivity rates during closure and phased reopening of medical college/educational institutions were comparable with overall country's positivity rates, hence we think the catastrophe of closure of well-organized sectors like educational institutes of society during pandemic was outweighed the benefits related claims of pandemic confinement. The clinical faculty and students exhibit a greater COVID-19 frequency than basic sciences groups.

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