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Impact of Covid-19 Virus on Ophthalmology Residents and Fellows in a Tertiary Care Hospital

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ABSTRACT

Purpose: To determine the impact of COVID-19 pandemic on the training of Ophthalmology residents and fellows in a tertiary care hospital.

Study Design: Cross sectional survey.

Place and Duration of Study: The study was conducted in a tertiary care hospital, Peshawar from august 1st to august 20th 2020.

Methods: A self-designed questionnaire was distributed among 50 ophthalmology residents and fellows. Under-graduate students, house officers and post-graduate trainees from other specialties were excluded. Questions comprised of demographic data, and questions which were meant to investigate the changes experienced by the trainees during COVID-19. The data was analyzed by SPSS Software (Version 19).

Results: Among 50 participants of this study, 16 (32%) were females and 34 (68%) were males. The age ranged from 27 to 35 years. There was no statistically significant difference in the perspectives of resident trainees and fellows regarding negative impact of COVID-19 on their training. Ninety-five percent of the residents and fifty five percent of the fellows had effect on their clinical skills with p values of less than 0.05. Hundred percent residents agreed that online case presentation could not replace the traditional long rounds and simulator based training could improve the surgical skills in pandemic. Twenty five (60.97%) trainees and 6 (66.66%) fellows mentioned that pandemic affected them psychologically and they felt fear while working.

Conclusion: COVID-19 has adversely affected the training of post graduate trainees. Training directors should ensure to provide modern technological tools to improve trainees' clinical and surgical skills until the crisis is over.

Key Words: COVID-19, Ophthalmology, Training, Conference.

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INTRODUCTION

The World Health Organization was alerted by Chinese authorities on the 31st of December 2019 of a number of pneumonia cases in Wuhan City.[1] A new virus, coronavirus, was found to be the culprit of the pneumonia and it was phylogenetically similar to SARS-CoV.[2] It was declared pandemic by World Health Organization on March 11, 2020.[3] Till August 15th, 2020, 216 countries were affected with more than 21.29 million people infected and more than 0.7 million deaths worldwide.[4] First two cases in Pakistan were reported on 26th February, 2020 among the pilgrims from Iran.[5] The overall case fatality rate (CFR) of COVID-19 is approximately 6.36% that is preceded by Severe Acute Respiratory Syndrome

(SARS) (9.6%) and Middle East Respiratory Syndrome (MERS) (34.4%).[5] Ophthalmology is among the specialties with the highest proportion of residents with confirmed COVID-19 and at high risk of exposure to other viruses as well.[6] It is due to the nature of their work being in close contact with the patients during routine ophthalmic examination.

Dr. Li Wenliang, an Ophthalmologist, first recognized the symptoms of severe acute respiratory syndrome coronavirus in seven of his patients and then developed the disease himself. He passed away on 7th February 2020 due to Covid-19 infection. This explains the role and risk of ophthalmologists in an infectious disease pandemic.[7]First vaccine against covid-19 was introduced in market in December 2020 but the evidence that shows the duration of the immune coverage and the need for booster is still lacking.[8]

The study was conducted specifically addressing the ophthalmology residents and fellows, aiming to assess the changes they have experienced in ophthalmology training related to the current COVID-19 pandemic. Based on their responses, we have tried to propose potentially beneficial long-term changes in the training.

METHODS

It was a cross-sectional survey that included 50ophthalmology postgraduate trainees and fellows of a Teaching hospital. A self-designed questionnaire was distributed among ophthalmology residents and fellows in August 2020. The principles of Declaration of Helsinki were followed in the study. The purpose and benefits of the study were explained to the participants and a verbal consent was obtained before filling the questionnaire. The participants' identity was concealed, and a single investigator collected the data. Under-graduate students, house officers and post-graduate trainees from other specialties were excluded. Questions comprised of demographic data (age, gender, year of residency) and a set of closed-ended questions which were meant to investigate the changes experienced by the trainees in three areas (clinical activity, surgical practice, and online teaching). Their perception about the impact of pandemic on their training and suggestions for future potential modifications were also sought. The data was analyzed by SPSS software (version 19). Post stratification chi square was applied and p value of ≤ 0.05 was considered significant. Frequencies and percentages were calculated for categorical variables like age and gender. All the results were presented in the form of tables.

RESULTS

Among 50 participants f this study, 16 (32%) were females and 34 (68%) were males. The age ranged from 27 to 35 years. There were 41 (82%) residents and 9 (18 %) were fellows in different subspecialties of ophthalmology.

There was no statistically significant difference in the perspectives of resident trainees and fellows regarding negative impact of COVID-19 on their training. However, there was a difference between residents and fellows regarding impact on the clinical skills. Ninety five percent of the residents and fifty five percent of the fellows had effect on their clinical skills with p values of less than 0.05 (Table 1). Similarly, surgical skills were also significantly affected.

Regarding online teaching and learning, there was significant difference between residents and fellows where 100% residents agreed that online case presentation could not replace the traditional long rounds. However, they agreed that simulator based training could improve the surgical skills in pandemic.

Majority of the participants were economically affected by the Pandemic. Twenty five (60.97%) trainees and 6 (66.66%) fellows mentioned that pandemic affected them psychologically and they felt fear while working. However, no trainee or fellow was infected during their ophthalmological duties (Table 3).

Table 1: *Residents' and Fellows' Perspective of COVID-19 Impact.*

	Residents Total n = 41	Fellows Total n = 9	P value
Have you performed duty in COVID-19 Screening? **Yes**	13 (31.70%)	2 (22.22%)	.574
If yes, were your services effective for the patients? **Yes**	11 (84.61%)	2 (100%)	.986
Have you performed duty in COVID 19 ward? **Yes**	25 (60.97%)	5 (55.55%)	.764
If yes, was your service productive? **Yes**	4 (16 %)	2 (40 %)	.716
Have you stayed in isolation for 2 weeks after your duty in COVID screening or Ward? **Yes**	38(100%)	7 (100%)	.177
Did you get infected with Covid-19 while performing the duty? **Yes**	1 (2.63%)	1 (2.63%)	.229
Has the pandemic affected your clinical skills? **Yes**	39 (95.12%)	5 (55.55%)	.000
How much are your surgical skills affected?			
Mild	1 (2.43%)		.009
Moderate	5 (12.19%)	6 (66.66%)	
Severe	35 (85.36%)	3 (33.33%)	
Which of the following procedures you did in last 4 months?			
Primary Ocular Repair	30 (73.17%)	2 (22.22%)	.022
Lid repair	11 (26.82%)	1 (11.11%)	
Intravitreal injections	10 (24.39%)	1 (11.11%)	
How many surgeries you performed in last 4 months?			
0 – 4	31 (75.6%)	9 (100%)	.098
5 – 8	10 (24.4%)	0 (0%)	
How many surgeries you used to perform monthly before the pandemic?			
0 – 10	13 (31.7%)	0 (0%)	.119
11 – 20	19 (46.3%)	7 (77.8%)	
21 – 25	9 (22.0%)	2(22.2%)	

Table 2: *Showing Effect on Teaching/Learning during Pandemic.*

	Residents Total n = 41	Fellows Total n = 9	P value
Have you attended any web based lectures before the pandemic? **Yes**	3 (7.31%)	2 (22.22%)	.704
Are you attending online classes in the pandemic? **Yes**	39 (95.12%)	8 (88.88%)	.476
Do you think online lectures and webinars and conferences are effective? **Yes**	27 (65.85%)	5 (55.55%)	.231
Do you think online case presentations can replace traditional long rounds? **Yes**	0 (0%)	2 (22.22%)	.002
Do you think the simulator based training can improve your surgical skills in the pandemic? **Yes**	37 (90.24%)	7 (77.77%)	.030

Table 3: *Economic Impact of COVID-19 on Residents and Fellows wellbeing.*

	Residents Total n= 41	Fellows Total n=9	P value
Are you affected economically by the pandemic? **Yes**	37 (90.24%)	6 (66.66%)	.003
Do you feel drained at the end of the day? **Yes**	3 (7.3%)	2 (22.22%)	.177
Do you feel fear while performing duty in the pandemic? **Yes**	25 (60.97%)	6 (66.66%)	.963
Has the fear compromised your work? **Yes**	20 (73 %)	6 (66.66%)	.269
Had you been infected with covid-19 virus while working in ophthalmology unit? **Yes**	0 (0%)	0 (0%)	

DISCUSSION

The cross sectional survey in Peshawar specifically investigated the impact of Covid-19 on ophthalmology Residents' clinical and surgical training and highlighted the uncertainty, anxiety and higher stress levels among ophthalmology trainees due to the disruption of training program schedules. All the trainees and fellows should quarantine for 2 weeks after their duties in COVID areas, as recommended by the Accreditation Council for Graduate Medical Education in the United States.[9] With the rising scores of infected medical personnel, it has become a necessity to modify the training protocols. In a correspondence published in Royal College of Ophthalmologists, it was stated that ophthalmologists could learn basic ventilator parameters and modes after guidance.[10]

It was also recommended by the American college of surgeons that all elective procedures should be cancelled until the infection is controlled.[11] This resulted in reduction in the number of surgeries and hence adversely affecting the surgical skills of the trainees. This particular study showed that number of surgeries reduced by more than 60%, a similar reduction was noted in a study published in Acta Med Port.[12]

During the lockdown, there has been a surge in the number of online classes and webinars in ophthalmology. This survey showed that 27 (65.85%) trainees and 5 (55.55%) fellows found ophthalmic classes and webinars being conducted useful. Conferences are an essential part of medical training and continuing education as it presents an opportunity to know new advances in the field around the world and opinions on how to improve in the field. Many conferences across the globe have been cancelled or postponed. However, some societies very successfully conducted online conferences to overcome the gap produced by this pandemic. One of the many examples is the World Ophthalmic Congress.[13] A positive impact of these virtual conferences was that the trainees who could not afford to travel were able to attend these meetings without bearing the expenses of travel and accommodation.

This is an undeniable fact that there is no substitute for learning and practicing clinical examination techniques on patients and surgical procedures in real life. As elective procedures and routine clinical examinations are not possible in pandemic, medical simulators came out as very useful tool of training.[14] In this particular study, 37 (90.24%) post-graduate trainees and 7 (77.77%) fellows suggested that the simulators could help improve their skills in this era.

Many ophthalmologists around the world have proposed that for surgical skill refinement, besides wet laboratory training, simulators may be used to recreate the surgical experience.[15,16] Moreover, a study done by Co M, et al, showed no difference between surgical techniques taught to students face to face and Web based surgical skill learning session.[17] Unfortunately, there is no simulator available at our tertiary care hospital. The hospital needs to invest in simulators in such draining time to prepare better ophthalmologists for future.

Not only the training of the residents and fellows affected in this pandemic, extreme psychological burden was also noticed in frontline health care workers.[18,19] Majority of participants of our study reported that they felt fear of getting the virus and ultimately infecting their families. Appropriate psychological training can improve to reduce this fear as shown by a study published in European Journal of Ophthalmology in which the ophthalmology trainees' anxiety and fear reduced significantly after appropriate training.[20] Training institutes must offer psychological counselling and psychiatric support to those who are combating on front line.

In this study, participants reported that the pandemic had enormously affected the surgical and clinical skills of the trainees and fellows. A study conducted by Hussain Rohan, Sing B, Shah N et al stated that the trainees in the start of their training were more affected than their seniors.[21] In another study published in PLOS ONE, the residents were affected both economically and psychologically by the pandemic and not only by the training gaps.[22]

Leaders and hospital authorities should implement measures to promote the well-being of the health care workers who are exposed to COVID-19. Enough PPEs should be provided so that the front liners may be able to combat the pandemic without worrying about acquiring the virus.[23]

The study has several limitations. Firstly, the duration of study was short, that is, 20 days due to continuous changes in the situation. Secondly, only one tertiary care hospital was included in the study. However, it every effectively highlights the importance of urgent steps which need to be taken for the learning and training of doctors.

CONCLUSION

COVID-19 has adversely affected the training of post-graduate trainees. Training directors should ensure to provide modern technological tools to improve trainees' clinical and surgical skills until the crisis is over.

Ethical Approval

The study was approved by the Institutional review board/Ethical review board (**1012/Eye/2021/HMC).**

Conflict of Interest

Authors declared no conflict of interest.

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Authors' Designation and Contribution

Maryum Nawaz; *Concepts, Design, Literature Search, Data Acquisition, Data Analysis, Statistical Analysis, Manuscript Preparation, Manuscript Editing, Manuscript Review.*