

COVID-19 Infection among the Health Care Staff at Frontier Medical and Dental College and Hospital

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ABSTRACT

Background: First case of pandemic COVID-19 was diagnosed in December 2019 in China from where it spread throughout the world. In Pakistan, first case was diagnosed in February 2020 which resulted in a complete and several smart national lockdowns. National Command and Operation Center (NCOC) and Ministry of Health published guidelines for patient's treatments during pandemic which includes: 1) providing only emergency Treatments 2) Patient's pre-admittance Questioning, 3) Increasing intervals between appointment, 4) prevent crowding in waiting rooms, 5) Wearing masks at all times. 6) Wearing PPE.

Methods: Data from all clinical departments of Frontier Medical and Dental College and Hospital Abbottabad was collected between March and December 2020 which included Number of; 1) Patients treated 2) Medical Staff 3) patients with positive COVID-19 reports 4) healthcare workers suffering from COVID-19. And 6) Post treatment Virus Infected patients.

Results: 291 health care staff including 135 medical and dental doctors, 4 dental hygienists, 82 paramedics and 70 Administrative staff worked during the study period and 3280 procedures were performed. Out of these, thirty-eight (38) staff members treated 190 verified COVID-19 patients. During the study period 6 dentists (2.06%) and 9 (3.09%) medical doctors, 2 (0.7%) assistants and 3 (1.03%) admin staff were tested positive for the virus.

Conclusion: Present study highlights the importance of education and stickiness to the infection control guidelines thus minimizing the risk of transmission of corona virus among the Healthcare professionals in hospitals.

Keywords: COVID-19; Infection control, PPE, NCOC

INTRODUCTION

COVID-19 is the term used to define the infection caused by SARS-CoV-2. The severe acute respiratory syndrome corona virus (SARS-CoV-2) is a novel enveloped RNA beta corona virus that emerged from Wuhan city of China in December of 2019^[1]. This viral infection was named as COVID-19 by WHO on February 11, 2020 and on January 15, 2019 as severe pneumonia by the Taiwan CDC and the Ministry of Health and is of 5th category communicable disease. Being a potential zoonotic disease, COVID-19 has a low to moderate (2% to 5%) mortality rate². The infection with the novel virus can manifests as pneumonia, myocarditis, acute renal injury and skin manifestations. The symptoms typically manifest between 5 and 14 days after infection occurs and range in severity from mild to severe, including fever, cough, shortness of breath, fatigue, myalgia, loss of taste sensation and at times diarrhea. Due to the involvement of multiple organ systems, the illness can go from mild to severe in a short period of time³.

Respiratory system is the main portal of entry for COVID-19 virus and oral cavity being the primary reservoir of the virus⁴. Since the dentists sit very close to the patient's uncovered mouth and most of the treatments involve aerosol- forming equipment, this exposes them to the virus⁵. Frontier Medical and Dental college Hospital is one of the busiest health care facility in the Area, catering thousands of walk-in and entitled Patients seeking Medical and dental treatments across the region. It has 7 dental clinical departments having 102 dental units and several medical departments fully equipped with latest machinery and facilities operated by 135 medical and dental staff, 4 dental hygienists, 82 paramedical staff, and 70 admin staff.

The first COVID-19 patient in Pakistan was reported on 26th Feb. 2020⁶. First lockdown in all over the country was imposed on March 16, resulting in closure and evacuation of all educational institutes and suspending all social activities across the country. The infection rate peaked on 18 June 2020 and then gradually

dropped. The corona cases started to rise again in late October, reaching highest on November 25th. The infection indices started falling down after 2nd lock down from 24th Nov. 2020⁷.

During this whole period of infection, Pakistan's NCOC and Health Ministry issued several clinical guidelines for medical and dental treatment. According to the guidelines, the patients in emergency and at risk of future medical and dental deterioration should be treated, thus preventing the spread of infection while sticking to the distancing procedures and use of Personal protective equipment (PPE) in all procedures.

METHODS

We collected data about treatments done, health care workers and patients infected with COVID-19 for the 9 months period between 20th March and 30th December 2020 after permission from IRB. Data was collected monthly from all departments and summarized. The data included total number of:

1. Medical and Dental treatments done.
2. Doctors and staff participating in the procedures.
3. COVID-19 positive Patients seeking treatments.
4. COVID-19 infected healthcare workers during this time period.
5. COVID-19 infected paramedical and administrative staff.
6. Patients infected by the virus after the treatment by doctor.

RESULTS & DISCUSSION

Two hundred and ninety one health care staff including 135 active medical doctors and dentists, 4 dental hygienist, 82 paramedics, and 70 administrative staff are employed at Frontier Medical and Dental College Abbottabad. There are 7 dental clinical Departments having 102 operational dental units/chairs and several clinical departments of general medical hospital. Following the guidelines of providing only emergency treatments, a total of 3280 emergency procedures were done during this study period. 190 confirmed COVID-19 patients were treated by 38 doctors. Six dental surgeons (2.06%), 9(3.09%) medical doctors, 2 paramedical

Received on 24-06-2021

Accepted on 05-11-2021

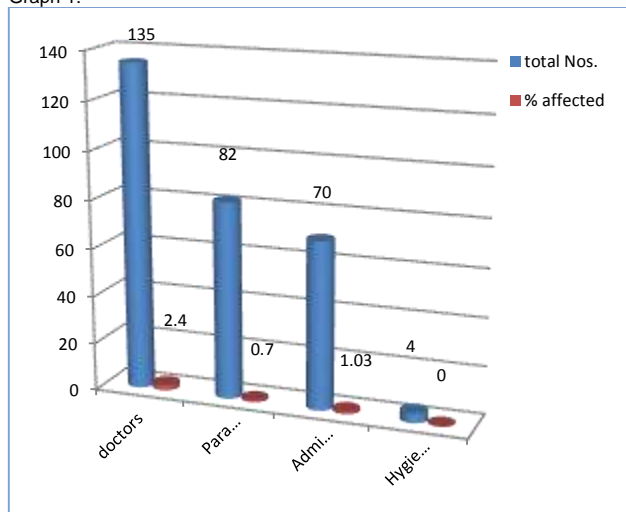
staff (0.7%), and three administrative staff (1.03%) were found COVID-19 virus infected. Since health care Staff's infection was diagnosed within a week they performed treatments, there were chances that they contracted the virus during the treatment. A total of 20 health care staff of medical and dental college (6.87%) were positive for COVID-19 (Table 1 & Graph 1).

Table 1:

Health care staff	Total staff	Affected with Covid-19	Affected staff
Medical and Dental doctors	135	15	5.14 %
Paramedical staff	82	2	0.7 %
Dental Hygienists	4	0	0 %
Admin Staff	70	3	1.03 %
Total Staff	291	13	6.87 %

After several emergency procedures performed on patients by doctors, 19 patients were also found positive for corona virus retrospectively. Also five patients were diagnosed with COVID-19 positive soon after treatments. It is not clear whether they became infected during treatment or infected from some other source.

Graph 1:



CONCLUSION

COVID-19 is a pandemic infection. Due to its contagious nature, health professionals are trying to continue patient's treatments while minimizing infection transmission. As COVID-19, (Sars-cov2) enters the body mainly through mouth and nose, dental procedures, in combination with uncovered mouth and use of aerosol spray forming equipment, impose high risk.

The level of infection among health care workers was found to be 6.87%, higher infection rates found among medical workers than in Philippines (0.085%), Italy (2.61%) and in Spain (3.44%)⁸ with comparatively higher death rate⁹. Dental treatment is usually necessary for relief of pain, infection cause, and to restore normal dental functions. Routine treatments usually comprise of various clinical and laboratory procedures. Delaying or postponing certain treatments can result in irreversible damage to the patient's dentition. Similarly certain medical emergencies need to be dealt without delay. Thus, doctors are needed to continue providing

necessary and emergency care in hospitals. The key role of the healthcare providers is to take all required precautionary steps towards minimizing the transmission of infection between healthcare workers and patients¹⁵. It is important to provide certain treatments in a safe hygienic environment¹⁰. The controlled cases in the hospital at 6.87% were surely due to following protective guidelines by Health professionals and Authorities in Pakistan.

A new corona virus named SARS corona virus, fulfilling the Koch's postulate, and having mortality rate around 10-15% also originated from Guangdong Province of China in 2003^{7,11,12}. This global epidemic affected about 8,096 persons, marking 774 deaths of which one third were health care providers¹³. On the basis of our data, we can say that with proper protection and following guidelines, the health care staff at Frontier medical and Dental College hospital Abbottabad, Pakistan are at low risk of viral infection like the health professionals in other countries. Also if any pandemic starts, important thing is to understand its epidemiology, characterize its impact and make strategies to avert any pandemic-related mortality^{14,15}.

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