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Pakistani perspective, preparation and response to COVID-19: A review

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The recent 2020 emerging infection of COVID-19 was initiated from Wuhan China. At first, it spread around China and now reached more than 213 countries around the globe including Pakistan. The nurses and doctors play an important role before and during the pandemics, nursing plays a leading role in preparation for the outbreak. The clinical symptoms of COVID-19 are very similar to respiratory diseases. Every day the number of laboratory-confirmed cases associated with deaths increasing regularly in different countries around the world. Natural infections of coronavirus are seven (229E, NL63, OC43, HKU1, SARS, MERS and COVID-19). Out of seven four are mild upper respiratory infection, and SARS-CoV, MERS-CoV and COVID-19 are known for their high mortality rate. Among them, COVID-19 is an emerging viral infection responsible for pandemics. Fortunately, the mortality rate of COVID-19 is low as compared to SARS and MERS, the majority of cases are recovered in almost all the countries. The death rate toll of COVID-19 is high even after its mortality because COVID-19 causes a pandemic, while the other can't. Currently, COVID-19 influenced a large segment of the world population, which led to public health emergencies around the world, and an international concern, putting all the health organizations to high alert. The present review is on preparation, response, general continent, virology, epidemiology, clinical presentations, diagnosis, treatment and control of COVID-19 regarding Pakistan.

Keywords: Coronavirus. COVID-19. Emerging Pandemic, Respiratory syndrome. Pakistan

INTRODUCTION

The world health organization (WHO) declared coronavirus infections (COVID-19) a pandemic (Dhama et al. 2020; Malik et al. 2020).

Coronavirus pandemic affects the people globally a crossed the world with high proportion populations. In Pakistan, the number of patients increasing day by day and reached 329,375

patients. In the city of China Wuhan (Hubei province) in December 2019 a cluster of pneumonia of unknown causes was reported by the WHO, and a new virus was identified (Organization, 2020a, b). Subsequently named the 2019 novel coronavirus, and samples obtained from cases and analysis of the virus genetics indicate that this was the causes of the outbreak, this novel virus was named coronavirus diseases 2019 (COVID-19 by WHO (Salehi et al. 2020; Singh et al. Singhal, 2020). The COVID-19 pandemic has an overwhelming impact on the doctor and nurse profession. However little is known about the nursing and doctor profession prepared for the current infection and its response to it. This review aims to describe the preparation and response of doctors and nurses in Pakistan in general DHQ hospitals to the pandemic. Furthermore, aims at preparation, response, general continent, virology, epidemiology, clinical presentations, diagnosis, treatment and control of COVID-19 with reference to Pakistan.

Taxonomy

Coronavirus belongs to the family Coronaviridae which is CoVs group of large enveloped RNA viruses. The Coronaviridae, Roniviridae and Artieviridae are altogether classified in Nidovirales order (Lai and Cavanagh, 1997; Lim et al., 2016; Masters, 2006). According to the International Committee for the taxonomy of Virus, CoVs are divided into four main genera, alpha, beta, gamma and delta coronaviruses based on the sequence comparison of the total viral genome (Gorbalenya et al. 2004; McBride and Fielding, 2012; Yang et al. 2013). Many CoVs species are unclassified and it continues to increase (Fan et al. 2019; Ge et al. 2016; Hu et al. 2017; Huang et al. 2018; Wu et al. 2016). Among all CoVs the human coronavirus (HCoVs) are identified to be either in the alpha or beta coronavirus, HCoV-HKU1, MERS-CoV, SARS-CoV, HCoV-OC43 and 2-19-nCoV. Initially, the coronavirus referred to 2019-nCoV. the Chinese national health commission during a news conference on Feb.8, give a temporary name, the novel coronavirus pneumonia, or NCP. however, the (2019-nCoV) has been recently named COVID-19 by director-general Dr. Tedros Adhanom Ghebreyesus of World health organization (WHO).

Geographical distribution

The identified and verified COVID-19 infection virus originated from Wuhan, Hubei province

China. This outbreak has rapidly evolved and affecting all around China. Now, the COVID-19 infection reached around the globe and affecting more than 213 countries. According to the Global Pandemic Real-Time report(2020), cases have been detected in different countries and territories of Asia, Australia, North America, and Africa (Bahadur et al. 2020; Guan et al. 2020; Guo et al. 2020; Moustaqil et al. 2020).

Global epidemiology

COVID-19 has a limit with respect to human-to-human transmission, general society has no hard insusceptibility against it, a high death rate, which makes it reasonable operators for pandemic potential and the cutting edge transport framework additionally helps in its fast development. A simple method of transmission, nature of the infection, populace thickness, ecological condition, social culture (like handshaking, and so forth.) are significant supporters of its fast spreading. In this manner, COVID-19 transformed into a worldwide wellbeing worry since its origin from Wuhan, China. Like other respiratory infections, coronavirus is additionally infectious what's more, effortlessly spread starting with one individual then onto the next. Numerous infections created comparable clinical manifestations; in this way, COVID-19 can't be separating based on their clinical side effects, for its precise determination a touchy and explicit test is consistently required. Shockingly, just a couple of nations have a limit with regards to appropriate viral finding or observation by research center tests. Without a laboratory-confirmed test or under the limit of viral finding or observation framework can diminish the realness and precision of information. The Basic Reproductive Number (R0) can be used to compute average the quantity of contaminations created by tainted people in powerless populaces. Essential Reproductive Number is for the SARSCoV (1.4–5.5), MERS-CoV (1), COVID-19 (2.2–2.6). The individuals from the coronaviridae are less infectious than flu infections (Chan et al.2013; Liu et al. 2020; Prompetchara et al. 2020; Qian et al.2013; Raj et al. 2013).

COVID-19 infections are spread around 213 countries within 4 months and caused a large numbers of infections, and causes deaths. In these first four months, COVID-19 laboratory-confirmed cases 5,854,945, confirmed deaths 359,904, and confirmed recovered patients 2,540,105 worldwide till (5/28/2020). The USA (1,757,130), Brazil (418,608), Russia (379,051),

Spain (284,986), UK (269,127), Italy (231,732), France (182,913), Germany (182,385), India (165,362), Turkey (160,979), Iran (143,849), Peru (135,905), Canada (88,464), Chile (86,995), China (82, 995), Saudi Arabia (80,185), Mexico (78,023), Pakistan (61,227), Belgium (57,849), Qatar (50,914), Netherlands (45,950), Bangladesh (40,32), Belarus (39,858), Ecuador (38,471), Sweden (35,727) are the top 25 countries affected due to COVID-19 infections (<https://www.worldometers.info/coronavirus/>) (Figure 1-7). Current cases COVID-19 laboratory-confirmed cases 60.3 million, confirmed deaths 1.42 million and confirmed recovered patients 38.6 million worldwide till (11/26/2020). The USA (12m), Brazil (6.1m), Russia (2.16m), Spain (2.16m), UK (1.455m), Italy (1.48m), France (2.17m), Germany (983,731), India (9.2m), Turkey (467,730), Iran (894,385), Argentina (1.39m), Colombia (1.27m), Peru (954,459), Canada (347,466), Chile (544,092), China (86, 490), Saudi Arabia (356,067), Mexico (1.07m), Pakistan (386,198), Belgium (561,803), Qatar (137,914), Poland (924,422), Indonesia (511,836), Netherlands (498,653), Bangladesh (454,146), Romania (440,344), Philippines (422,915), Switzerland (309,469), Portugal (273,011), Austria (260,512), Sweden (230,514), Nepal (226,026), Jordan (188,021), Ecuador (187,230), Hungary (185,687), UAE (162,662), Panama (158,532), Bolivia (144,276), Kuwait (141,217) are the top 40 countries affected due to COVID-19 infections.

Pakistan perspective

The COVID-19 was started in Pakistan from Iran border two infected Pakistani came to Pakistan. Up to October more than 329,275 cases were confirmed and identified with COVID-19 from various parts of Pakistan; currently (386,198) confirmed cases, the majority of them have travel history to affected regions. Meanwhile, the first death was reported on 18 March from Khyber Pakhtunkhwa (KPK) province. The first victim was 50 years old man, who returned from Saudi Arabia. COVID-19 accelerates its speed of infections, 1000 on 25 April with death toll 32. The number of cases and death is very less as compared to other countries. Now the total cases are 329,275 confirmed cases, 311,440 recoveries, and 6745 deaths. Pakistan is in the fifth world populated country, a developing country of the world with insufficient medical facilities. In Pakistan around 1.5 million people were screened out, out of that around 329,275 people were tested positive by laboratory-confirmed

assays with COVID-19 infections from which 6,745 patients have died, 311,000 recovered, while the 30,000 thousand active patients are admitted in various hospitals (<https://covid.gov.pk/stats/pakistan>). On (May 20, 2020) Azad Kashmir (148), Baluchistan (2968), Gilgit Baltistan (579), Islamabad (1235), Kyber Pakhtunkhwa (6815), Punjab (17, 382), and Sindh (18964) are the laboratory-confirmed cases of COVID-19 (Figure 1-7). The distribution of deaths and laboratory-confirmed cases of COVID-19 infection in the various province of Pakistan on (20 May 2020) is shown here in Azad Kashmir (1), Baluchistan (38), Gilgit Baltistan (Gong et al.), Islamabad (Gong et al.), Kyber Pakhtunkhwa (351), Punjab (297), and Sindh (316) (<https://covid.gov.pk/stats/pakistan>) The highest death ratio is found in Kyber Pakhtunkhwa province. Some patients are recovered from COVID-19 infections, the distribution pattern of recovery and active cases from various parts of Pakistan give in figure 1,2,3,4 (<https://covid.gov.pk/stats/pakistan>). The recovered patients in Azad Kashmir (79), Baluchistan (638), Gilgit Baltistan (402), Islamabad (151), Khyber Pakhtunkhwa (2130), Punjab (5,112), and Sindh (5645). The circulate design COVID-19 other respiratory relies on the different factors like their essential conceptive number (R_0), nature of the infection, ecological condition, exchange/travel with the influenced territory, populace thickness and social culture. The fundamental regenerative number (R_0) and nature of the infection are comparative for the entire world; hence the distinction of flare-up potential relies upon different elements. From the WHO reports and data suggests that colder and humid regions will be affected more as compared to the warmed and dry regions around the world (<https://www.worldometers.info/coronavirus>)

An increasing number of healthcare professionals across the country have started testing positive for the novel coronavirus in the past few days, with at least 257 confirmed infections among doctors and paramedics between May 5 and May 9. The increase has left officials worried about the treatment of virus patients at tertiary-care hospitals and the care of serious or critical cases related to the virus at facilities across the country. 11 health professionals have so far lost their lives to the deadly virus in Pakistan. Another worrisome trend is that several doctors, nurses and paramedic staff have been putting themselves into self-isolation or quarantine daily after someone they

came into contact with tests positive for the coronavirus.

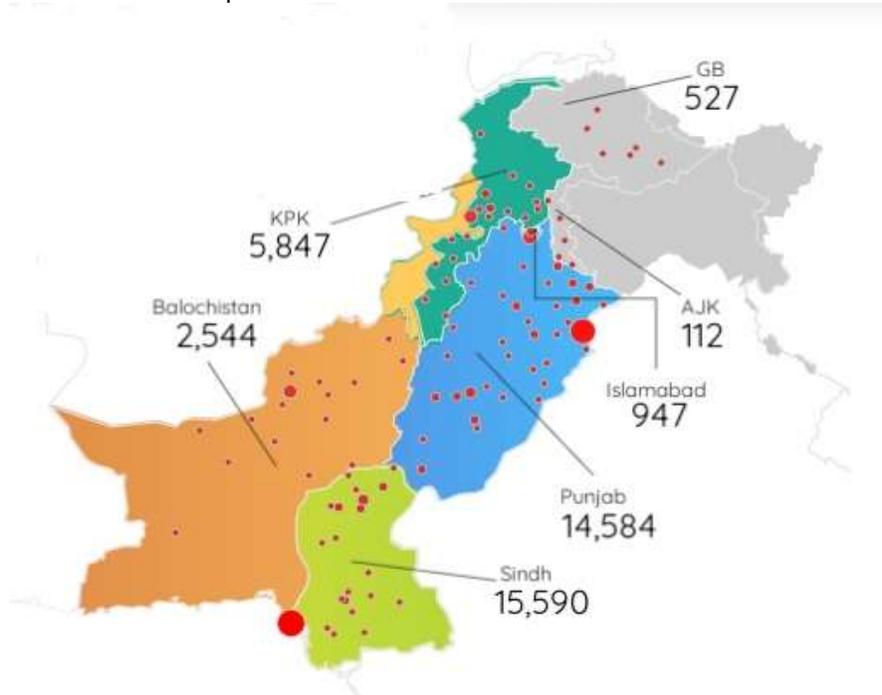


Figure 1: Map of coronavirus COVID-19 infection cases in Pakistan Source (<http://covid.gov.pk/>) (25/05/2020).

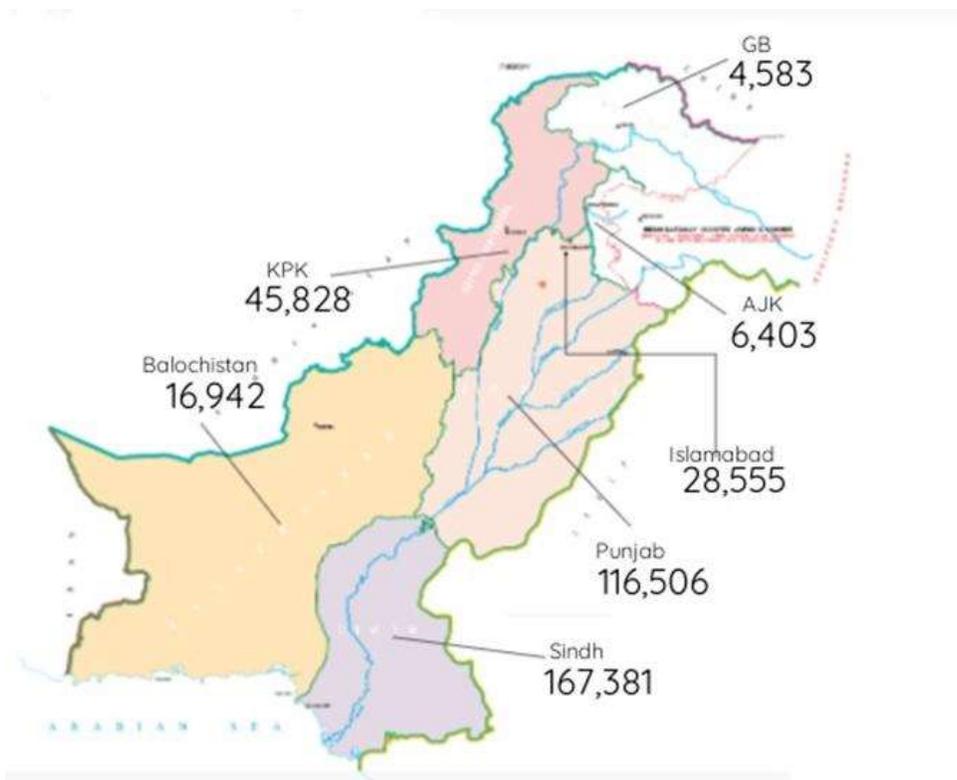


Figure 2: Map of coronavirus COVID-19 infection cases in Pakistan Source (<http://covid.gov.pk/>)

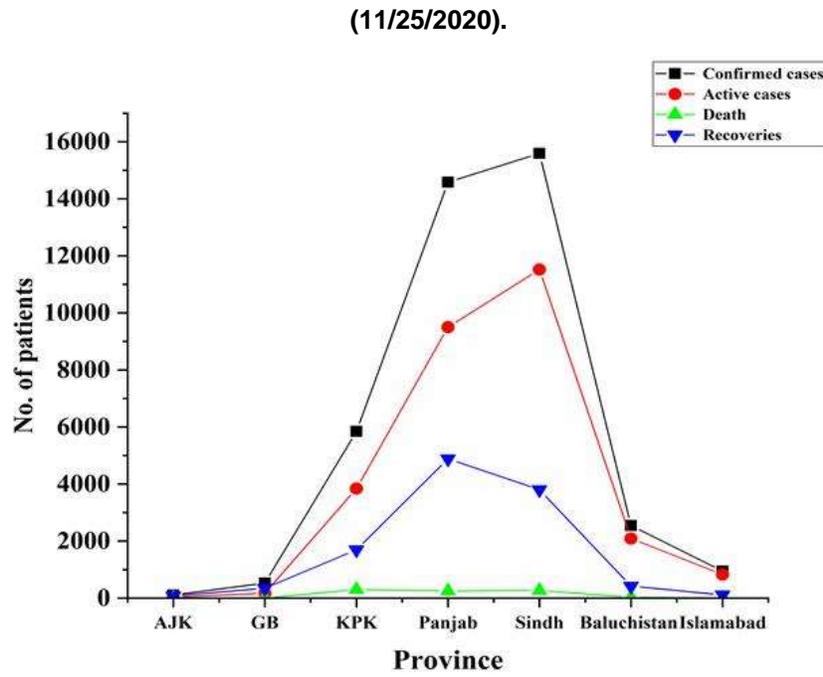


Figure 3: COVID-19 pandemic confirmed, active, death and recoveries in Pakistan (April 2020)

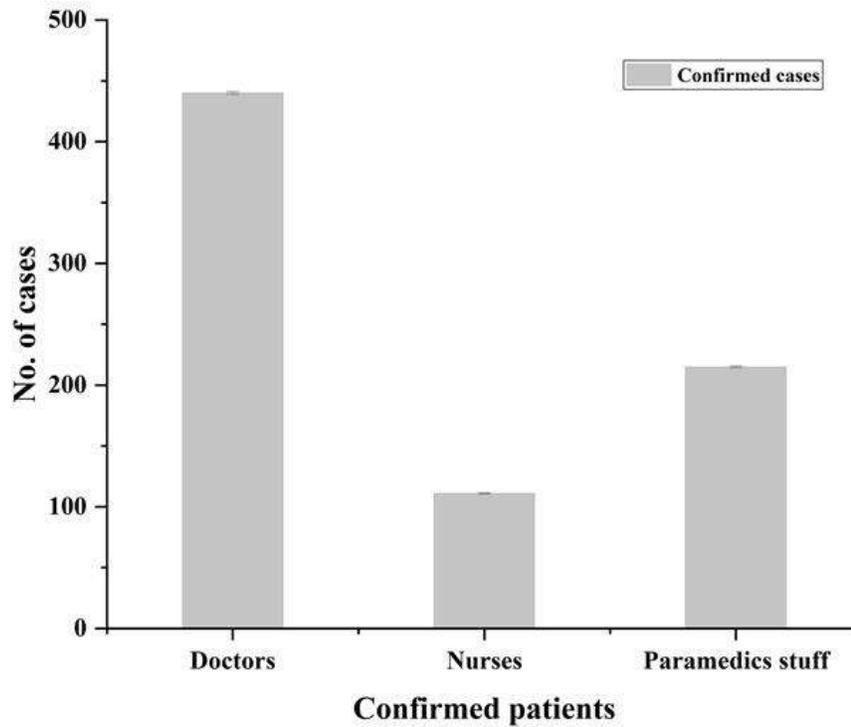


Figure 4: All the doctors, nurses and paramedics stuffs effected during COVID-19 in Pakistan

(April 2020).

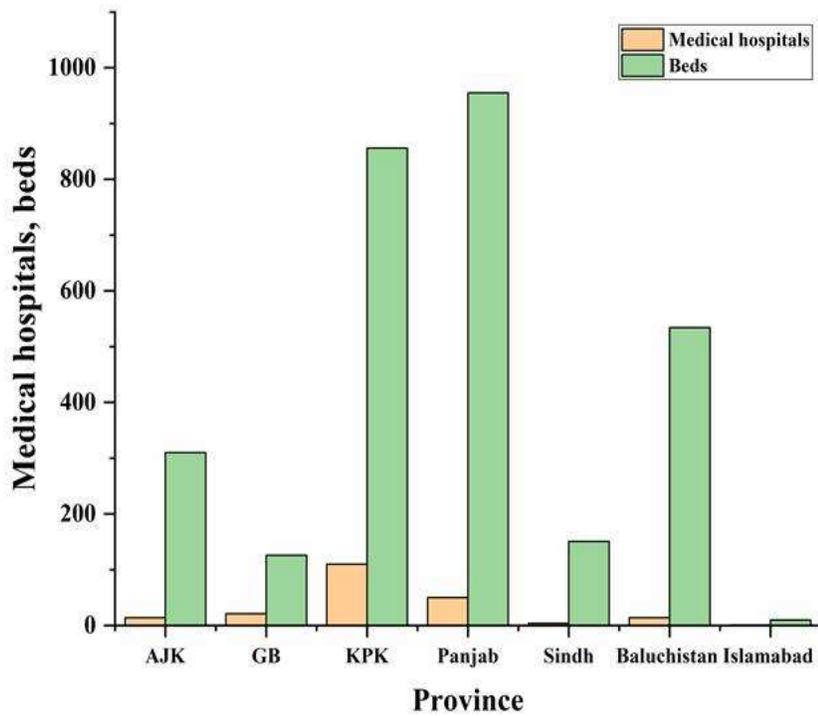


Figure 5: The preparation for COVID-19 before and during the pandemic in Pakistan (April 2020).

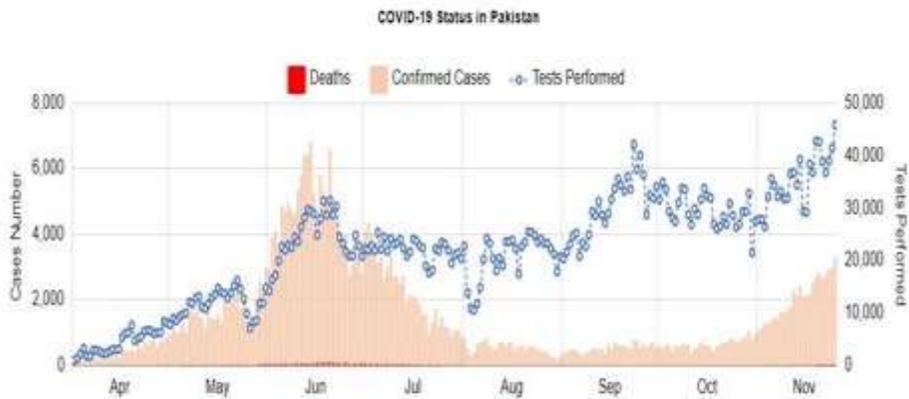


Figure 6: COVID-19 infection status in Pakistan (11/26/2020) (<http://covid.gov.pk/>)

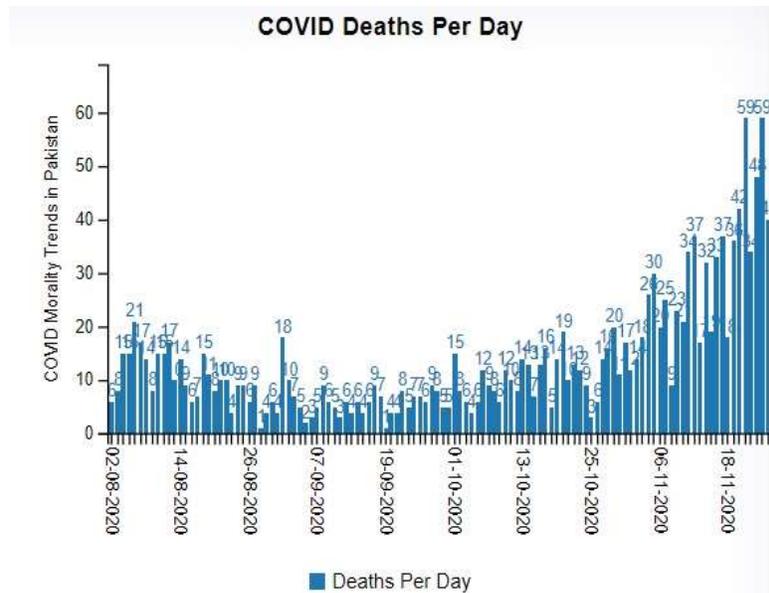


Figure 7: COVID-19 infection daily death rate in Pakistan (11/26/2020) (<http://covid.gov.pk/>)

Eighteen staff members of Karachi's only specialized burns center at the Dr Ruth KM Pfau Civil Hospital Karachi have tested positive for COVID-19 and have been asked to go into self-isolation." They include the staff that disinfects the equipment and bandages, several male and female dressers and other essential staff as well as two qualified doctors. If this trend of infection among healthcare providers continues in the coming days, the center would be closed for seriously burnt patients. Every day, two to three dozen healthcare providers are contracting the coronavirus from their patients throughout the country, while in some cases, healthy patients have acquired the infection from healthcare workers. There have seen 257 healthcare providers contracting the disease during the last one week, which is an extremely alarming situation. 144 of the 766 of health workers caught the virus at critical care facilities. The official added that many others contracted the virus in wards, outpatient departments and other clinics. The figure of healthcare providers affected across the country is 766 so far. One of the healthcare providers is on life support at the moment and a large majority of them and many of their contacts are in isolation, while dozens of others are waiting for their test results. "Several wards at different public and private hospitals in the country have been closed. This is very alarming, and if this trend continues, we are heading towards a disaster.

The sense of panic and fear among healthcare professionals is increasing as 11 of them have so far lost their lives to the virus across Pakistan. Five of these have been identified as doctors, one as a nurse, and the remaining as paramedical staff. As many as 766 healthcare providers 440 doctors, 111 nurses and 215 paramedics and other support staff have been infected [until May 9] and forced to live in home isolation or are under treatment at hospitals. Khyber Pakhtunkhwa is the worst-hit with respect to the number of healthcare providers infected with the coronavirus as 186 have tested positive there, followed by 184 in Punjab, 149 in Sindh, 138 in Balochistan, 83 in the Islamabad Capital Territory [ICT], 22 in Gilgit-Baltistan and four in Azad Jammu & Kashmir [AJK]. Providing a breakdown of the numbers, the official said that of the 440 infected doctors, most (122) were from KP, followed by 97 from Balochistan, 90 from Sindh, 85 from Punjab, 43 from the ICT, two from GB and one from AJK. The highest number of the 111 nurses infected with COVID-19 are in Punjab (46), followed by 22 in the ICT, 20 in KP, 18 in Sindh, four in Balochistan and one in GB, added the official. Total of 163 health workers have recovered from virus. Similarly, the highest number of the 215 infected paramedics and support staff are also in Punjab (Gong et al. 2009), followed by 44 in KP, 41 in Sindh, 37 in Balochistan, 19 in GB, 18 in the ICT and three in AJK. The official said that 220 healthcare providers afflicted with COVID-19 are undergoing treatment at hospitals at the moment, while one of

them is on life support. At 114, Sindh has the highest number of healthcare providers hospitalized, followed by 89 in Punjab, eight in KP, six in GB and three in the ICT. A total of 163 healthcare providers have also recovered from COVID-19 and are performing duties at their respective healthcare facilities in the country.

Currently, the COVID-19 infections cases (on dated 11/26/2020) in Pakistan reached, total test (5,343,702), Total Cases (386 198), Recovered Patient (334,392), Deaths (7,843), then in Azad Kashmir (6,403), Baluchistan (16,942), Gilgit Baltistan (4,583), Islamabad (28,555), Khyber Pakhtunkhwa (45,848), Punjab (116,506), and Sindh (167,381) (<https://covid.gov.pk/stats/pakistan>) (Figure 1-7).

Clinical symptoms

The COVID-19 infections present with respiratory symptoms, the infected will show respiratory symptoms and some didn't show. Those who have developed the COVID-19 infection may have mild to moderate with similar symptoms to seasonal flu (R., March 2020.; Thomas et al. 2020). Major symptoms are respiratory symptoms, fever, cough, shortness of breath, breathing difficulties, fatigue, bluish lips or face, and sore throat.

Diagnosis

COVID-19 infections diagnose using diagnostic testing kits have been developed and available in testing labs (COVID-19, Accessed 14 March 2020. ; Stokes et al. 2020). The gold standard for testing COVID-19 is RT-PCR. A person who has been infected with COVID-19 in contact with other and has respiratory symptoms are advised to contact local health practitioner, the main criteria for test COVID-19 are location, age, medical history and risk factors, exposure to the virus and contact history, and symptoms duration (COVID-19, Accessed 14 March 2020.). Based on these ((COVID-19), Accessed 14 March 2020) collect and test the upper and lower respiratory tract specimens, using a nasopharyngeal swab, cough then sputum specimen should be collected.

Control and prevention of COVID-19

Until now, there is no particular treatment for this COVID-19 infection, so the methodology used to treat the patients with coronavirus related prevents and care yourself from an infected person. Nonetheless, the scourge that once appeared miserably crazy could be contained at this point. The careful steps taken by the Chinese

Government have been unprecedented and were seeing the impacts. China has secured a few urban areas, compromised isolated violators with solid disciplines for their wellbeing and to conquer the episode of COVID-19. There are some essential defensive measures against the COVID-19 should be followed suggested by WHO 2020. Pakistan government announced lockdown and closed all the borders with all the countries, all kinds of transport systems, business activities, stop the social gathering, religious activities gathering. that's why the spreading of this disease is very low in Pakistan and fewer people are affected as compared to the other countries.

- Stay aware of the latest information on the COVID-19 outbreak through your local and national health authorities.
- Wash your hands with an alcohol-based rub or wash them with soap and water frequently.
- Maintain at least one-meter distance between yourself and anyone who is coughing or sneezing.
- Avoid touching eyes, nose and mouth.
- Practice respiratory hygiene.
- If you have fever, cough, and difficulty in breathing, seeks medical care at the earliest possible.
- Stay informed and follows the advice given by the healthcare provider.
- Avoid physical contact when greeting.
- Be supportive, careful, alert, kind and ready to fight COVID-19.

A solid immunization or antiviral could be the most appropriate response for any infection. Without these, anticipation is just the decision. The flare-ups of MERS, SARS, Nipah (Sharma et al. 2019), Zika (Sharma et al. 2020) give an exercise to us that social separation, visit handwashing, staying away from the contact of creatures and contaminated people will ensure us. The COVID-19 is like other respiratory infections, which can be transmissions from contaminated to vulnerable people, by means of beads, tainted body parts, what's more, targets. A helpless individual got the contamination through these defiled targets, enhance the infection, what's more, spread to different people. The contaminated or suspected individual ought to follow the hack decorum, look after separation, spread hacks/sniffles by means of tissues or dress, habitually wash their hands and safely arrange off tainted material to a decreased viral transmission. The emergency clinic, analytic research center, crisis divisions, and other human services offices ought to observe standard

contamination avoidance what's more, control practices to maintain a strategic distance from nosocomial diseases (Emami et al. 2020; Patel and Jernigan, 2020).

In Pakistan, Corona hospital units (CHU) are set up in broad daylight or private lodgings, inns, schools, arenas, lodges and so forth. COVID suspected patients can be separated into three; Groups a): These are suspect cases with gentle fever, what's more, upper respiratory tract disease. They might be conceded, what's more, screen for COVID-19. Negative patients should release after the indicative administration while COVID-19 positive patients should be admitted to CHU. Their wellbeing screen normally and suggestive treatment will be given. Gathering b): Suspect pneumonia with respiratory rate 15–30/min and SpO₂ 90–94% go under moderate classifications. They will be conceded as speculate cases in the area of devote COVID-19 wellbeing community and screen for contaminations of COVID-19. Negative patients move to Non-COVID emergency clinic/square and oversee as indicated by clinical evaluation furthermore, release according to clinical evaluation. While COVID-19 positive need to move into the affirmed case segment of CHU. Screen for clinical seriousness can be a move to COVID-19 committed emergency clinic. Their wellbeing screen consistently and suggestive treatment will be given. Gathering c): COVID-19 suspect patient with pneumonia and respiratory rate more than 30/moment and SpO₂ over 94% go under serious classifications. They will be confessed to devoting COVID-19 wellbeing places with ICU offices and screen for contaminations of COVID-19. Negative patients ought to be a move to the Non-COVID clinic/square. While COVID-19 positive patients ought to stay in ICU and their administration will be finished by clinical evaluation.

CONCLUSION

COVID-19 infection caused due to coronavirus and has been identified as a mild respiratory pathogen that affects the human population. COVID-19 infections increase day by day around the world. However, it was the emergence of COVID-19 that push these HCoV into the attention of the research field. This pandemic is more severe than the SARS-CoV and MERS. We accept that the brief and facilitated endeavors in this way for limited the spread of infection inside the emergency clinic. To date, no medical doctor and nurse have been tainted with

COVID-19 during their course of work in the COVID-19 unit in Pakistan. Any medical doctor or nurse who was tainted contracted it from the network or abroad. We trust that sharing these measures will be invaluable to the more extensive social insurance network.

CONFLICT OF INTEREST

The authors declared that present study was performed in absence of any conflict of interest.

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AUTHOR CONTRIBUTIONS

MS designed and wrote the manuscript. AAS, MT, FH, NA, AF, SA prepare the figures and data analysis from Origin. FJ, MR, SB reviewed and revised the manuscript. All authors read and approved the final version.

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