ISSN 2708-5651 ISSN e 2708 566X

JAMDC

Quarterly

Journal of
Akhtar Saeed Medical & Dental College,
Lahore, Pakistan.

COVID-19 SPECIAL EDITION

April – June 2020 Volume 02 Issue 02

JAMDC

Journal of Akhtar Saeed Medical & Dental College, Lahore, Pakistan.

April–June 2020 Volume 02 Issue 02

JAMDC

April–June 2020 Volume 02 Issue 02

Editorial

Original Articles

Review Articles

Editorial

OCCUPATIONAL CHALLENGES FACED BY HEALTH CARE PROVIDERS DEALING WITH COVID-19

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COVID-19 has proven itself as a major occupational challenge for Health Care Providers (HCP) in the year 2020. Health care professionals have shown a high tendency of contracting COVID-19 due to increased viral load with close contact of patients affected by this deadly virus.[1] Due to the pandemic of COVID-19, the majority of the health care providers are not only at risk of contracting this disease but are also playing a role of the potential risk of transmission to other colleagues, patients, friends and family.[2] According to World Health Orgnization (WHO), one in every 10th health care worker is affected by COVID-19 pandemic with varied rates worldwide.[3] It has been reported that 90000 HCP were infected with COVID-19 in Italy, 9400 in Spain, 3300 in China and 490 in France.[4] According to another report, in USA alone the number of health care workers affected with COVID-19 has reached to 9282.[5] According to a report of Center of Disease Control and Prevention (CDC), published on May 27th, 291 health care providers lost their lives to this infectious disease in one month.[6]

The health care workers in Asian region have also been affected by COVID-19, according to an international agency 12454 health care providers got infected with corona virus and 171 had died. In Pakistan alone, 3196 HCP have been infected and 35 deaths have been reported.[7] In developing countries like Pakistan, major causes of high infection rates were poor understanding of the newly emerging disease, lack of Personal Protective Equipment (PPE), unavailability of diagnostic tests and fear of disease among health care providers.[8] Use of N95 masks by the HCP way is declared as an essential protective measure by WHO.[9] Serious public health measures were suggested by WHO, after reporting of 23 deaths of health care providers in China during this pandemic.[10,11] Inadequate knowledge about disease, its transmission and management has led to an excessive rate of COVID-19 infection in HCP. In UAE, 61% of the health care workers had no knowledge about the transmission mode of COVID-19.[12] According to a study conducted in China, doctors had better knowledge about preventive strategies of COVID-19 as compared to nurses and paramedical staff which further increases chances of infection in this staff.[13] According to another study conducted in India, only 45.4% of HCP were aware of the correct sequence for a mask application, and only 52.5% of participants were aware of the proper hand hygiene method for contaminated hands.[14]

During this pandemic of COVID-19, health care providers were not only affected by challenges on physical health but had a great impact on mental health as well.[15] The psychological pressure on doctors has caused them to suffer from depression, anxiety, and even panic attacks in China.[16] A qualitative study published in Lancet showed that this pandemic was associated with many stressors for health care providers. They were facing a challenge to work with a totally new epidemic with unknown treatment and lack of availability of vaccines. They were exhausted with the workload. Fear of infection and transmitting it to other loved ones was taking its tool on the mental health of HCP.[17] Working with COVID-19 patients has a negative effect on health professional's sleep as well. According to a recent study, more than two-thirds of physicians reported sleeplessness (68.3%) and stress (93.7%)

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during this pandemic.[18] Mental exhaustion was also reported in health care providers due to heavy workload, the pressure of using PPE continuously and feeling powerless to save patients.[19] A study conducted in Pakistan reported that doctors suffered from excessive physical, mental and social stress during this pandemic. Many of them reported increased online work resulting in obesity and disturbance in their social life.[1] Death of patients and colleagues, non-availability of PPE, and lack of efficient management at hospitals were other reported stressors among the HCP.[20] In a study conducted in Pakistan, doctors also reported fear of rapid spread, the possibility of complications during management and missing the diagnosis.[21]

In this time of stress, special measures should be taken to provide comfort to our first line soldiers who are working day and night to protect communities. Health education should be provided to improve compliance with the use of N95 masks. Uninterrupted supply of masks and PPE should be ensured by the government. Lack of appreciation by higher officials and the negative impact of perceptions of the general population can cause further stress, creating a sense of desperation among the health care professionals (HCP). We should try to highlight the urgent need to focus on devising the strategies to alleviate the physical, mental, and social impact of COVID-19 on HCP.

WHO has recommended governments to ensure security and health protection of employees on the front line health service delivery globally. WHO has also recommended mental and psychosocial support for health professionals if needed in this period of stress.

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Original Article

PRESENTATION OF PREGNANT WOMEN DURING COVID -19 PANDEMIC IN FAROOQ HOSPITAL, WEST WOOD

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ABSTRACT:
A descriptive study to evaluate fetomaternal complication in pregnant patients admitted with either symptoms of COVID-19 or with other obstetric indications, who were tested positive for SARS-COV 2.

Material and Methods: Study was conducted from 1st March 2020 to 30th June 2020 in the department of gynaecology of Farooq Hospital Westwood Branch Lahore. A total of 262 pregnant patients were admitted for observation and emergency procedures out of which 28 patients were tested positive for COVID-19. Patient's demographic characteristics, COVID symptoms, obstetrics symptoms and maternal complications were noted. Mode of delivery, fetomaternal complications and fetal outcomes of delivered patients were recorded. The antenatal patients in various trimesters were managed conservatively and are still under follow up. The data was analyzed by SPSS version 20.

Results: Out of 28 tested positive patients, 19 (67.8%) have delivered till now and the remaining 9 (32.1%) are still under follow-up. The mean age of pregnant patients was 28.46 ±4.07. Ten (35.7%) were primigravida. Most of the patients were in 3rd trimester of pregnancy between 35-42 weeks (n=17, 60.7%) at the time of presentation. The mean gestational age at presentation was 31.72±9.55. Eight patients (28.5%) were asymptomatic and remaining 20 (71.5%) were having mild symptoms including fever (n=5, 17.8%), cough (n=4, 14.2%), myalgia (n=2, 7.14%) and headache (n=1, 3.5%). Obstetrical presentation was spontaneous labour (n=8, 42%) and preterm labour (n=8, 42%), 3(15.7%) had intrauterine growth retardation (IUGR) and 1(5.26%) had preterm prelabour rupture of membranes. Out of undelivered 9 patients, 2 (22.2%) were in 1st trimester, 3 (33.3%) in the second trimester and 4 (44.4%) in the third trimester. There is a history of contact in 8 of these patients. Out of 19 delivered patients, 12(63.1%) had cesarean sections, 6 (31.5%) had a normal delivery and 1 (5.26%) expulsion. Regarding the fetal outcome of 19 patients, 10 (52.6%) were delivered at term, 8 (42.1%) was preterm and one expulsion. Five newborns (26.3%) had low birth weights (≤2.5kg). Four newborns (21.05%) developed respiratory distress syndrome and were admitted in the neonatal intensive care unit. There was no case of maternal and perinatal mortality.

Conclusion: Universal testing of all pregnant females helped in identification of asymptomatic carriers and isolation of those cases helped in reducing spread of disease. Mild cases of COVID-19 infection were with good maternal and perinatal outcome.

Key Words: Pandemic, COVID-19, Pregnancy

INTRODUCTION:

The world is facing COVID-19 pandemic for the last few months and millions of people are affected world over. This corona virus disease - 2019 (COVID-19) is caused by "Severe acute respiratory syndrome corona virus-2 (SARS-COV-2)" which is an encapsulated single-stranded RNA virus. The first case was identified in Wuhan China in December 2019 and now the disease had spread all over the globe.[1, 2]

The spectrum of symptoms of the disease ranges from mild flue like symptoms to severe respiratory illness. The effect of COVID-19 infection in pregnancy is still under research and limited data is available

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as case reports, case series and small sample studies, so the findings and results of these studies are diverse.[3]

The mode of transmission of disease is human to human transmission. It can spread by droplets through cough and sneeze, close contact with an infected person and from contaminated surfaces. The virus can be isolated from respiratory secretions, faeces and fomites. Emerging evidence now suggests that vertical transmission is also possible.[4] The usual presentations of COVID-19 are with fever, flu, cough, headache, myalgia, fatigue, shortness of breath and abdominal symptoms like diarrhea, abdominal pain and vomiting.[5]

Pregnant women get the infection in a similar way as the general population.[6, 7] In pregnancy the physiological changes, alteration in body's immune system and response to infections make the women more susceptible to viral illnesses and to suffer from more severe symptoms especially in third trimester.[8] Most pregnant patients experience only mild or moderate symptoms, but the symptoms of severe infection like pneumonia and marked hypoxia are not different from general patients.[4]

Previously viral outbreaks like severe acute respiratory syndrome corona virus (SARS-COV) and the Middle East respiratory syndrome corona virus (MERS-COV) and Influenza A (HINI) virus were associated with poor fetomaternal outcome[9,10] and greater mortality rates than the general population.[11] The data regarding the maternal and perinatal outcome in pregnant women infected with SARS-COV 2 is small, but so far this virus is not affecting mother and fetus as badly as previous viral pandemics. However, the maternal complications encountered in these patients are preterm rupture of membranes, preterm labor, intrauterine growth retardation while fetal complications are prematurity, respiratory distress syndrome and still birth.[12]

This study was conducted to evaluate the maternal and fetal complication in pregnant females admitted in our hospital with symptoms of COVID-19 or other obstetric indications, who were tested positive for SARS-COV 2.

MATERIAL AND METHODS:

This study was conducted from 1st March 2020 to 30th June 2020 in the department of Gynaecology of Farooq Hospital Westwood Branch Lahore, in collaboration with Corona Unit of Farooq Hospital Westwood Lahore, which is the largest Corona Hospital in private sector in Lahore. A total of 262 pregnant patients were admitted in Gynaecology department for observation and emergency procedures out of which 28 patients were tested positive for COVID-19 during the study period.

This is a simple descriptive study and the study was reviewed and approved by the Research Ethical Committee of Akhter Saeed Medical and Dental College. Informed consent was taken from patients and the data was entered on predesigned proforma.

In addition to real-time polymerase chain reaction (rt-PCR) positive cases, we had also included the serological test (IgM and IgG antibody detection) positive pregnant females in our study because when there was need for obstetric procedures to be done in an emergency in suspected or asymptomatic patients this serological testing result was quick, readily available, cost-effective and more convenient for the patients.

Patient's demographic characteristics, COVID symptoms, obstetrics symptoms and maternal complications were noted. Mode of delivery, fetomaternal complications and fetal outcomes were also recorded. The antenatal patients who were in first, second or third trimesters having mild to moderate symptoms were managed conservatively and are still under follow up.

The data was analyzed by statistical software package for social sciences version 20 (SPSS 20). For the main variable, including age, parity and gestational age, we calculated means and standard deviations

(SD). The qualitative variables were expressed as frequencies and percentages.

RESULTS:

The total number of patients admitted in the department of Gynae/Obs, Farooq Hospital, Westwood Branch during study period were 262 and 28(10.7%) were tested positive for COVID-19. Out of these 28 patients, 19 (67.8%) have been delivered till now and remaining 9 (32.1%) are still under obstetric follow-up.

Out of 28 patients, 26 (92.8%) were booked and 2 (7.14%) were unbooked. The demographics of these 28 patients are shown in Table1.All patients were in age range of 20-40 years and mean age at presentation was 28.46 ±4.07. Maximum patients (n=13, 46.4%) were in age range of 26-30 years.

Table-1: Demographics of all patients (n=28)

Booking Status	**n=28**	**Percentage (%)**
Booked	26	92.85
Unbooked	2	7.14
Age (in years)		
20-25	7	25
26-30	13	46.4
31-35	7	25
36-40	1	3.5
Gravidity		
Primigravida	10	35.71
Para 2-4	18	64.28
Gestational Age		
<12 wks	2	7.14
13-24 wks	2	7.14
25-34 wks	7	25
35-42 wks	17	60.7
Travel History		
Yes	1	3.17
No	27	96.42
Contact History		
Yes	9	32.14
No	19	67.80

Out of 28 patients, 10(35.7%) were nulliparous and 18 (64.2%) were between para 2-4.

Most of the patients were in 3rd trimester of pregnancy between 35-42 weeks (n=17, 60.7%) at the time of presentation. Mean gestational age at presentation was 31.72±9.55. Nine patients (32.14%) had history of contact and one patient (3.17%) had history of travel.

The clinical presentation of patients is summarized in Table 2. Out of 28 patients, 8 (28.5%) were asymptomatic and remaining 20 (71.5%) were having mild symptoms. It was observed that five patients (17.8%) presented with fever, followed by cough (n=4, 14.2%), myalgia (n=2, 7.14%) and headache (n=1, 3.5%) in our patients. None of the patients had flu, shortness of breath, sore throat, diarrhea and vomiting.

Table-2: Clinical presentations of patients (n=28)

Clinical Presentation	**n=28**	**Percentage (%)**
Fever		
Yes	5	17.8
No	23	82.1
Cough		
Yes	4	14.2
No	24	85.7
Myalgia		
Yes	2	7.14
No	26	92.8
Headaches		
Yes	1	03.5
No	27	96.4

The obstetric presentation of delivered patients is shown in Figure-1. Out of 19 patients, 18(94.7%) had singleton pregnancy and 1(5.26%) had twin pregnancy. Most common obstetrical presentations were spontaneous labour (n=8, 42%) and preterm labour (n=8, 42%). Three patients (15.7%) had intrauterine growth retardation (IUGR) and 1(5.26%) each had preterm prelabour rupture of membranes (PPROM) and absence of amniotic fluid.

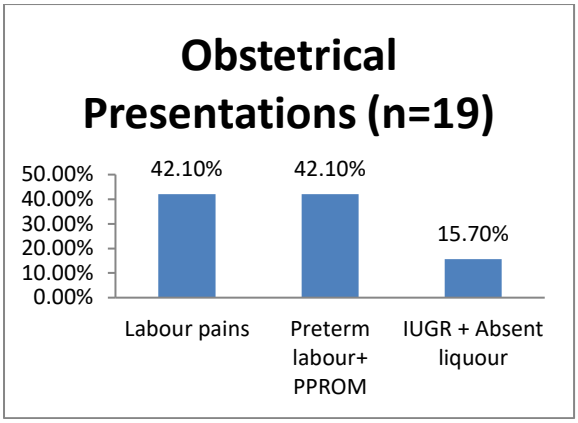

Figure-1: Obstetrical presentation in delivered patients (n=19)

Out of total 28 patients, 9 (32.1%) are not delivered yet and are under obstetric follow-up. Out of these 9 patients, 2 (22.2%) are in 1st trimester, 3 (33.3%) are in second trimester and 4 (44.4%) are in third trimester of pregnancy. All of them are having uncomplicated pregnancies till now. Out of these 9 patients, 8 had history of close contact with COVID positive patients but were asymptomatic and one patient suffered from myalgia and was tested positive.

The mode of delivery of 19 patients is shown in Figure-2. Twelve (63.1%) were delivered by elective or emergency cesarean section due to obstetric indications and 6 (31.5%) were delivered normally. One (5.26%) patient had expulsion at 24 weeks and the outcome was 600 grams male fetus. All patients remained stable in the postoperative and postnatal period and were discharged home in good health.

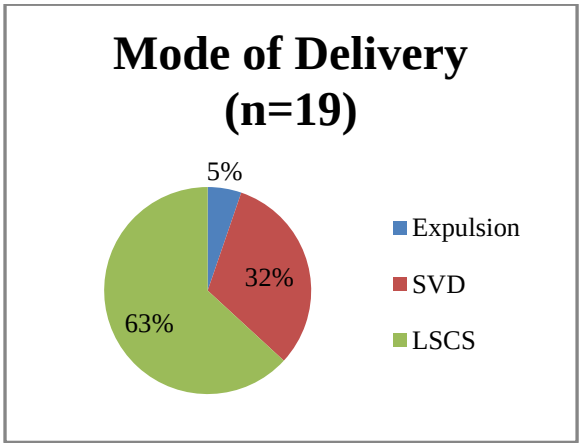

Figure-2: Mode of delivery in delivered patients (n=19)

The fetal presentation of 19 patients is described in Table 3. Ten (52.1%) were delivered at term and 8 (42.1%) were delivered preterm and one expulsion at 24weeks. Five newborns (26.3%) had low birth weights (≤2.5kg). Twelve newborns (63.1%) were in weight range of 2.1kg-3.0kg, whereas three newborns (15.7%) had weight of >3kg. Two newborns (10.5%) had meconium-stained amniotic fluid. Four newborns (21.05%) developed respiratory distress syndrome (RDS) and were admitted in the neonatal intensive care unit. (NICU)

There was no case of maternal and perinatal mortality.

Table-3: Fetal presentation in delivered patients (n=19)

Gestational Age	**n (19)**	**Percentage (%)**
≤ 24 wks	1	5.26
25-36+6 wks	8	42.1
≥37 wks	10	52.6
Birth weight (in grams)		
500-1000 gm	2	10.5
1100-2000 gm	2	10.5
2100-3000 gm	12	63.1
>3000 gm	3	15.7
Meconium		
Yes	2	10.5
No	17	89.5
RDS		
Yes	4	21.05
No	15	78.9
NICU Admission		
Yes	4	21.05
No	15	78.9
Neonatal Mortality		
Yes	0	0
No	19	100

DISCUSSION:

At the peak of COVID-19 outbreak in Lahore, many pregnant women presented to

our hospital with symptoms of COVID-19, obstetric problems or with history of contact with COVID-19 positive patients. Real time PCR was performed on the patients, but those patients who presented in emergency and needed urgent obstetric intervention, serological antibody testing for COVID-19 (IgG and IgM) was done. This test was convenient, easy to perform and economical for patients. Recently many Chinese studies have shown promising results and benefits of serological testing over PCR in case of emergency.[13-15]

In this study, mean age (years) of COVID-19 positive patients was 28.46± 4.01 and the mean gestational age (weeks) at presentation was 31.72±9.55. Most of the patients (n=17, 60.7%) presented in 3rd trimester for obstetrical indications and were tested positive. These results are comparable to a local study done in Sir Ganga Ram Hospital on 20 patients, which showed mean age of 29.3±4.17 and mean gestational age of weeks 29± 9.53.[12] A study done in New York on 43 patients showed mean age of 29.7 years but contrasting result regarding gestational age at presentation as the mean gestational age at presentation was 37 weeks.[16]

Regarding the parity of positive patients, this study showed that 35.7% patients were nulliparous and 64.28% patients were multiparous. Contrasting results were shown by local study where 20 % patients were nulliparous and 80% were multiparous.[12] Another study done in China on 116 patients, concluded that 55.2% patients were nulliparous and 44.8% were multiparous. Almost the same findings were shown by another Chinese study done on 118 patients.

In the current study, 9 (32.14%) patients had a positive history of contact and were also tested positive. A study done in China also displayed comparable results showing positive contact history in 32.8% cases.

Regarding symptomatology, total 8 (28.5%) patients were asymptomatic and remaining 20 (71.5%) were having symptoms. These symptoms included both mild symptoms of COVID-19 (fever, cough, myalgia, headache) and obstetrics symptoms. These outcomes are comparable to a study done in China, where 23.3% of cases were asymptomatic.[17] Another study showed that 92% patients were having mild disease.

Most common presenting symptoms in current study were fever (17.8%), cough (14.2%), myalgia (7.14%) and headache (3.5%). Contrasting results were shown by a study done in China depicting fever and cough in 75% and 73% patients respectively and myalgia in 6% of cases.[18] Similarly a case series done on 138 patients in Wuhan, documented fever and cough in 98.6% and 59.45 % cases respectively.[19]

Mode of delivery was also noted in the current study. Out of total 19 delivered patients, 12(63.1%) had a caesarean section for obstetrical indications. Other studies had documented even higher rate of cesarean sections like 80%, 100% and 86%.[7,12,17] However study done in New York documented 44.4% cesarean section rate.[16]

Regarding obstetrical presentation of 19 patients, 42.15% patients presented in spontaneous labor and same percentage of patients presented with preterm labour. 15.7% patients had IUGR and 5.26% with PPROM. Regarding IUGR, one patient was 39 years old and presented at 27 weeks with IUGR and absent amniotic fluid. Emergency cesarean section was done and outcome was 900gram male baby admitted in NICU and later discharged in good health. Our two IUGR fetuses were at 34 and 39 weeks of gestation. A study done in Scandinavia showed 42% incidence of preterm labor.[3] A systematic review[7] showed higher incidence of preterm birth (63.8%) and IUGR (42.8%).However, a local study showed 6% incidence of preterm birth.[12] According to WHO 2018 report, across 184 countries around the globe, the incidence of preterm birth was from 5-16% and in Pakistan, the incidence of preterm birth was 15.8% and IUGR was 25%.[20] Keeping these WHO figures in mind, we can conclude that COVID-19 infection, even in milder forms could be associated with poor obstetrical presentations.

As pregnancy is an immunosuppressive state, so pregnant women are more prone to catch infections and fetal and neonatal wellbeing remains a concern. Most studies did not report adverse perinatal outcomes. Out of 19 delivered patients, 42.1% newborns were premature. These findings are comparable to other studies.[3,7] Regarding birth weight, 5(26.3%) neonates were low birth weight (≤ 2.5kg) included one set of twins. Out of these 5 neonates, 2 were born at 34 and 39 weeks of gestation and were also having IUGR. One set of twins was delivered by emergency cesarean section at 32 weeks. Contrasting results were shown by systematic review in which the incidence of low birth weight was 46.15%.[7]

Out of 20 neonates (including 1 set of twins), 4 (21%) neonates were having RDS and were admitted in NICU. A local study also showed 29% incidence of RDS and NICU admission.[12] Few other studies had variable incidence of NICU admission (77%, 16%, 23%) respectively.[7,16,17]

Chen reported that COVID-19 infection during pregnancy could cause preterm birth, IUGR, intrauterine death (IUD), and even neonatal death.[21] Only a study in literature which showed 2 cases of neonatal mortality in COVID positive patients was done by Zhu et al.[22] He showed that two neonates developed disseminated intravascular coagulation (DIC) multiorgan failure and later led to neonatal mortality.

As all mothers in this study presented with mild symptoms therefore they had good fetomaternal outcome with no mortality.

CONCLUSION:

Severity of COVID-19 infection in pregnant women appears similar to non-pregnant females. Universal testing of all pregnant females helped in identification of asymptomatic carriers and isolation of those cases helped in reducing spread of disease. This also helped in protection of their families and health care personnel. Mild cases of COVID-19 infection are associated with good maternal and perinatal outcome.

LIMITATIONS OF STUDY:

There are many limitations of this study including small sample size and vertical transmission was not assessed.

AUTHOR'S CONTRIBUTION:

FF: Supervisor and conception of study
NS: Study design
DN: Data collection
OF: Data analysis
FS: Drafting article
NJF: Data analysis

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Original Article

THE IMPACT OF CORONA VIRUS DISEASE (COVID-19) FROM AN OPHTHALMOLOGIST PROSPECTIVE

Sidrah Riaz[1], Muhammad Tariq Khan[2], Majeed Malik[3], Munir Ahmad[4], Sagheer Ahmad[5], Iram Manzoor[6]

ABSTRACT:

Objective: To know the impact of corona virus disease (COVID-19) on personal and professional life aspects of working ophthalmologists

Study Design: A descriptive cross-sectional qualitative survey

Place and Duration of Study: Akhter Saeed medical and dental college, Lahore. The duration of the study was two months, from April 1 2020 to June 30 2020.

Material and Methods: A survey questionnaire was formed and sent to different ophthalmologists both in the public and private sectors. Qualitative data was analyzed by the analyst.

Results: The questionnaire was sent to over three hundred (300) ophthalmologists, and feedback was received from two hundred and twenty (220) ophthalmologists. All were practicing consultant ophthalmologists, doing private practice for more than 5 years, working in government or private sector.

Conclusion: The COVID-19 pandemic has complex and multifactorial effects. The medical field, like Ophthalmology, where most surgeries are elective, has faced devastating financial effects in terms of the reduced number of patients and routine surgical procedures coupled with the overwhelming psychosocial impact on ophthalmologists. We need to explore workable and sound strategies to cope with fear and depression in such pandemic conditions in the future.

Key Words: COVID-19, Ophthalmologist, Pandemic

INTRODUCTION:

The emergence of corona virus pandemic has added to the sufferings of the world. Within days, the epidemic arising from a small area of China, Wuhan[1,2] outspread throughout the world and became a pandemic. Although the viral infections are known to humans since old times, however, this, "influenza like" disease affected masses at a larger scale irrespective of age, race, gender and international boundaries. The history of viral flu like disease, which affected one-third population on globe dates to the era of the first world war 1914-1918 when Spanish flu killed 50 million people.[3,4]

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SARS-CoV-2 is not the first virus to cause out beaks of respiratory tract infections in humans, there are six more strains, all from animal origin.[5,6]

The virus responsible for the current COVID -19 pandemic in the world was first isolated in China on January 7 and the genome was shared on January 12 2020.[7] This is not a new virus for humans. The famous SARS (severe acute respiratory syndrome) reported in 2002 and MERS (middle east respiratory syndrome) reported in 2012 are also caused by viruses belonging to Corona family, which caused many causalities in China territory and Saudi Arabia respectively.[8-10]

WHO has reported globally 10357662 cases and 508055 COVID-19 related deaths in health reports in the month of July 2020.[11.]

The doctors as front-line human defense against pandemic were one of the categories who are overblown by it. Their admirable services are many folds including sacrificing their lives in this battle.[12-14]

Every aspect of human life, ranging from emotional to economic, suffered from the Corona pandemic. This little word, "Corona", has changed our lifestyle and way of thinking. The motive of private practice varies from person to person. For most doctors, including ophthalmologists, it is necessary to maintain the living standard, and to fulfill the basic financial requirements is greatly affected by Corona disease. The number of patients in the outpatient department and routine cataract surgeries have been markedly decreased, being non-emergency elective procedures. This has resulted in a gross financial loss for eye specialists. The situation is depressing because of news about the deaths of colleagues, relatives which has spread quickly because of social media.

MATERIAL AND METHODS:

A questionnaire was formed keeping in view problems of ophthalmologists, working in Pakistan. It consists of twenty-five (25) questions that were sent to consultant Ophthalmologists. The results were analyzed by an analyst.

RESULTS:

The questionnaire was sent to over three hundred (300) ophthalmologists, and feedback was received from two hundred and twenty (220) ophthalmologists. All were consultant ophthalmologists, doing private practice for at least last 5 years, working in government or private sector. Out of these, 166 (75.45%) were males, and 54 (24.55%) were females. The Government Hospitals were workplace for 120 (54.54%), and 100 (45.45%) were in the private sector. About 89% had family members ranging from two to six. Around 190 (85%) were doing private practice for more than two years and 30 (15%) above ten years. The internet was the main source of information about the pandemic in 124(56%) and television, and other media contributed to 96(44%). 86% were of opinion that their private practice has been affected 30 to 50%, and 14% didn't (probably these were those ophthalmologists who were not involved in regular practice). Around 190(86%) had opted to limit practice hours voluntarily. According to 68% eye specialist, patients agreed for the Corona Laboratory test when advised. More than 50% ophthalmologists, 196(89%) were not satisfied with government policies for Corona; unfortunately, but 24 (11%) were satisfied. (Table-1).

Table–1: Showing data of subjects (n=220)

Gender	Male	Female
	166 (75.45%)	54 (24.55%)
Working sector	Govt	Private
	120 (54.54%)	100 (45.45%)
Number of Family members	1-6	Above 6
	196 (89.09%)	24 (10.91%)
Years of private Practice	2-10	Above 10 years
	190 (85.2%)	30 (14.8%)
Information source about Corona	Internet	Tv and others
	124 (56%)	96 (44%)
Private practice affected	Yes	No
	190 (86.36%)	30 (13.64%)
Extent of decrease Practice	0-30%, 31-50%	Above 50%
	94 (17.4%,25%)/42.73%	126 (57.27%)
Opted to limit the practice	Yes	No
	190 (86.36%)	30 (13.64%)
Did the number of elective surgical procedures decrease	Yes	No
	214 (97.23%)	6 (2.73%)
Extent of decrease	Upto50%	Above 50%
	23 (30%)	77 (70%)
Routinely advice corona test before eye surgery	Yes	No
	160 (72.73%)	90 (27.27%)
Did patients agree for corona test, if advised	Yes	No
	150 (68.18%)	70 (31.82%)
Did patients observe Corona SOPs	Yes	No
	176 (80%)	60 (20%)
Any known person affected from Corona	Yes	No
	196 (89.09%)	24 (10.91%)
Satisfied with govt policies on Corona	Yes	No
	168 (76.36%)	52 (23.64%)

According to 33 (15%) ophthalmologists, their social lives were affected, 17 (8%) said psychological aspect suffered, 10 (5%) had economic aspects affected, whereas 155 (70%) had the opinion that all three aspects were affected. (Figure-1)

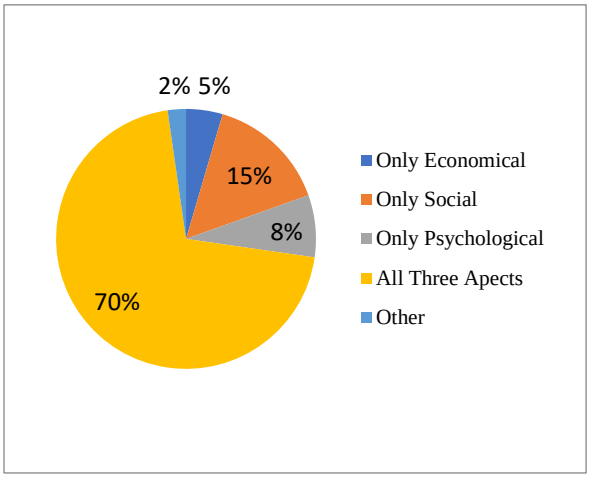

Figure-1: Life aspects affected by COVID–19

DISCUSSION:

The disease affects a person physically and psychologically. The image of the medically advanced world of 20th century has been shattered by COVID -19 even in developed countries like Europe and the United States. Pakistan being a developing country still trying to cope with the detrimental effects of disease burden and its complications where 80 million population is already living below the poverty line.[15] The non-uniformity of disease patterns has further complicated the issues.

Emergency and intensive care units are overburdened by COVID-19 infections, whereas electives like ophthalmology have shown a marked decrease in the number of patients and surgeries as it was withheld in an effort to control the disease.[16,17] The probable contributing factors can be day to day changing policies of the government, lockdown and poor access to the ophthalmologist for common complaints, non-availability of separate operation theater, compulsory COVID-19 test before surgery that is additional financial constrain on the patient, misinformation among the general population, myths regarding Corona, and false news in the air about the ailment, etc.

The spectrum of COVID-19 related psychological effects is broad. Everyone is facing "insecurity" nowadays. The educational activities of junior ophthalmologists and residents are affected badly in the outpatient department (OPD) as well in the operation theater. Due to close contacts with patients, health professionals are at greater risk of acquiring infections even from asymptomatic carriers.[18,19] The commonest route of infection transmission is respiratory tract via droplet and aerosol[20,21] so eye specialists are slightly alarmed while performing an ocular examination of patients, which can sometimes be the cause of misdiagnosis. The anxiety levels among ophthalmic residents are markedly increased as pointed by Brogan et al in United Kingdom.[22]

The person who first pointed towards some association between viral conjunctivitis and pneumonia was Dr. Li Wenliangan, A young ophthalmologist in Wuhan, China, who unfortunately also died of corona infection in Wuhan on February 7, 2020. It was very sad that he was accused of making false claims and misleading public, but later, his reservations proved to be true. He got an infection from a glaucoma patient who was COVID-19 positive with symptoms.[8] The viral conjunctivitis is a common presentation of COVID-19 patients. Being ophthalmologist, during the ocular examination, distance maintenance is problematic, especially performing fundoscopy and examining children. We need special shields during OPD and surgery. COVID-19 testing is also mandatory before any surgery, as per hospital rules, so it has added to the cost of treatment for poor patients.

The ophthalmologists are also anxious, apprehensive, and financially insecure like other health professionals of the country.[23,24] As pandemic has caught the attention of unprepared medical world, anxiety, and depression are not unusual.[25] There is a need for future strategies in order to minimize unwanted, unforeseen, unexpected, and undesirable disease impacts.

CONCLUSION:

The COVID-19 pandemic has complex and multifactorial effects. The medical field, like

Ophthalmology, where most surgeries are elective, has faced devastating financial effects in terms of the reduced number of patients and routine surgical procedures coupled with the overwhelming psychosocial impact on ophthalmologists. We need to explore workable and sound strategies to cope with fear and depression in such pandemic conditions in the future.

AUTHOR'S CONTRIBUTION:

SR: Conception of idea and study design
MTK: Conception of idea and supervision
MM: Drafting the article
ZA: Data collection
SA: Data Analysis
IM: Study Design

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Original Article

ONLINE OPINION ON GOVERNMENT POLICIES REGARDING COVID-19 BY HEALTH CARE WORKERS OF PAKISTAN

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ABSTRACT:

Introduction: COVID-19 emerged in December 2019 and has spread quickly and aggressively and became a major health concern worldwide. The main aim of this study was to assess and evaluate online the opinion of health care workers (HCWs) regarding policies of government of Pakistan in the management of the COVID-19 pandemic.

Material and Methods: A self-designed electronic questionnaire was created using Google Forms. The questionnaires were distributed to HCWs via e-communication apps and social media. The collected data was coded, entered, and assessed using SPSS version 20. Statistical relationship of the opinion of HCWs in association with education level was evaluated using the Pearson Chi-square test and two-sided Fisher exact test. $p \leq 0.05$ was considered statistically significant.

Results: A total of 625 participants sent their responses. Almost half of the study participants were of 15-24 years of the age range, and 24.6% were Bachelor in Medicine and Bachelor in Surgery (MBBS). More than 90% of HCWs expressed that the Government should restrict travelling from the affected countries and provide free screening nationwide. The 42.2% of HCWs were not satisfied with the Government measures and 44% HCWs disagreed that Government institutions will be able to control the pandemic. 88.5% of HCWs agreed with the effective communication strategies of authorities about COVID-19, and they showed satisfaction that public health messages were clearly delivered to the public, whereas, 81.8% of HCWs were not satisfied with the public response. A significant association was seen between the level of education and demand for a free screening of COVID-19 by the Government ($p = 0.000$) and satisfaction level about the Government precautionary measures for the prevention of the spread of COVID ($p = 0.006$).

Conclusion: Majority of the HCWs were satisfied with the awareness strategies and communication by the Pakistani Government, but were not satisfied by the public response to these strategies and measures. The mainstream of HCWs also demanded travel ban, free screening, information of suspected cases to the health authorities. However, they also expressed their concern that the Government institutions will not be able to control the pandemic.

Key Words: COVID-19, Pandemic, Prevention

INTRODUCTION:

2019-nCoV, a viral infectious disease emerged from Wuhan, China, in December 2019 and was later named as Severe Acute Respiratory Syndrome Corona virus-2 (SARS CoV-2). It was declared a global pandemic by the World Health Organization (WHO) on Mar 11, 2020. Since then, socioeconomic, religious and cultural life is being rearranged globally with an improved understanding of this disease and its management. 15 million confirmed cases and 618 thousand deaths, had been reported by Jul 23 2020, due to COVID-19 in 213 countries.[1] COVID-19 is highly communicable as it is transmitted through respiratory droplets and close contact with infected persons. Air borne transmission of virus is also reported in some close settings which is observed due to certain medical conditions and treatment procedures.[2] The risk of increased disease severity is highly

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associated with underlying chronic disease as well as elderly age. WHO reported mild symptoms in more than 80% patients who recovered without any medical intervention. Up to 20% infected patients showed severe illness like septic shocks, organ failure and shortness of breath and 2% cases were fatal.[3] Being easily and highly transmissible, COVID-19 is being proved to be a worldwide ongoing threat for social and economic infrastructure. As world took time to understand the nature of disease, the measures taken to control and treat the disease were also delayed. Preventive measures were taken all over the world to contain the spread of virus within countries as well as across the borders and included halting flight operation and shutting down borders for people and trade, restricting domestic transport and travelling, baning the religious, public gatherings and imposing lock downs and curfew.[4] All these steps with suspension of economic activities, had lead to negative socioeconomic consequences and have posed a major threat to the global economy.[5] According to the World Bank, global economy will be shrinking by 5.2% by the end of this year representing the deepest recession since World War II, secondary to workers falling sick, restriction on internal and cross borders trade and overwhelmed healthcare system.[6] Disease propagation within Pakistan is not different from the global context. Pakistan is sharing borders with Iran, Afghanistan, China and India. Pakistan has strong relations with China in terms of trade and religious attachments with Iran. First two COVID-19 cases in Pakistan were also from outside Pakistan and UAE. Intensive travelling among the countries could be a strong cause of disease propagation in Pakistan, thus government of Pakistan had shut down its border with China and placed strict screening on Iran-Pakistan border.[7] Pakistan uses 2% of its GDP for healthcare sector as compared to average 10% globally. Pakistan focuses on health sector sporadically especially in response to such episodes.[8] So, Pakistan's health system may not scale up for timely detection and treatment of disease outbreaks. Along with unsound health system Pakistan had to deal with political, social and religious contexts too.

Pakistan's Government has implemented many strategies to control and prevent COVID-19 viral infection. These include partial and smart lockdown, closure of non-essential services like hotels, shops, restaurants and shopping malls etc. Government and private institutions, academic institutes, schools, colleges, and universities remained closed to avoid crowds and virus spread. Online classes and work from home were introduced and implemented. Public and religious gatherings were banned or restricted, social distancing and mask-wearing were trended, and people were made to stay home through partial and smart lockdown, but a complete lockdown was not imposed.[9] For the country's emergency preparedness, OPDs of many hospitals were directed to close and only selective surgical procedures were performed. Specific hospitals and health care establishments were designated to manage COVID-19 suspected and infected patients.[10] Public awareness was created and extended through print and electronic media. The Government used innovative smart solutions and technology to aware common people. Messages were sent in cooperation with telecommunication companies. Helplines were there to answer queries and help. Along with public awareness centers, quarantine centers and testing facilities were established.[11] Curfew and the complete lockdown was avoided in economic perspectives, but prices of commodities and essential goods grew due to false facts, rumors, fear, and misinformation spread through social media.[12] However COVID-19 outbreak also exposed gaps, flaws, and fractures in the healthcare system globally which didnot have any design and capability to cope with such a crisis. The timely unavailability of personal protective equipment for healthcare workers all over the world has debunked the actual condition of the healthcare system. Healthcare workers,

having administrative, educational, and clinical roles were at high risk of getting an infection during patient care or medical procedure, and they could also be a potential source of spreading the infection to the community (their families as well as other patients). A study shows healthcare workers as an important group being the cause of virus spread.[13] Knowledge and awareness of HCWs regarding nature and handling techniques of this disease are quite important to contain the virus in a healthcare setting and to provide better care to the patients. High-level training and availability of preventive equipments such as N-95 respirators, goggles, protective clothing, gloves, surgical masks, and face shields must be ensured for health workers treating and taking care of COVID-19 patients.[14]

Being front line fighters, HCWs are the most affected ones in terms of disease burden handling in hospitals, clinics, or other healthcare facilities, providing patient care and prevention of infection. Hence, we have conducted this questionnaire-based study, which to the best of our knowledge, is the first in Pakistan to explore and evaluate the opinion of HCWs on the effectiveness of policies of the Pakistani Government against COVID 19.

MATERIAL AND METHODS:

A cross-sectional survey was carried out among HCWs of Punjab, Pakistan, from May 1 to May 15, 2020. During this social distancing period, it was not feasible to do a community-based sampling survey. So as an alternative; an electronic questionnaire was used to collect data via a web-based survey. An online google survey was used to gather reliable data. The ethical review committee of Akhtar Saeed Medical and Dental College, Lahore, approved the study processes and method.

Based on the objectives of the study, a 13-item survey instrument was devised after a thorough search of the literature. Demographic variables included age, gender, marital status, education, and employment status. The second section was specifically designed to assess the HCWs attitude towards Pakistani Government policies during this pandemic. A total of 660 participants sent their responses. Incomplete forms were discarded (35), and only complete forms (625) were included in this study for statistical analysis. The collected data was coded, entered, and assessed using SPSS 20 version. Frequencies were presented through tables and figures. The statistical relationship was evaluated among attitudes of HCWs in association with education level using the Pearson Chi-square test and two-sided Fisher exact test. The p-value ≤ 0.05 was considered statistically significant.

RESULTS:

Among 625 HCWs, majority were females (n = 444; 71%). The most frequent age range was from 15-24 years of age (n = 316; 50.6%) and 52.8% of them were unemployed. The detail of other demographic characteristics is given in (Table-1).

Table-1: Showing the Demographic Information of HCWs

Variables	n = 625	%
AGE OF HCWs (years)		
15 - 24	316	50.6
25 – 34	238	38.1
35 – 44	49	7.8
45 – 54	7	1.1
55 - 64	15	2.4
GENDER		
Male	181	29
Female	444	71
MARITAL STATUS		
Married	187	29.9
Single	438	70.1
EMPLOYMENT STATUS		
Private Job	235	37.6
Govt. Job	56	9
Un-employed	330	52.8
Retired	4	0.6

In this study, the majority of participants were MBBS doctors (n = 154; 24.6%), followed by Bachelor in Dental Surgery (BDS) doctors (22.2%). (Figure-1)

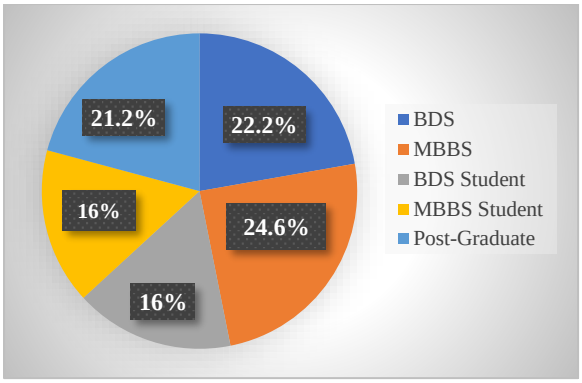

Figure-1: Percentages of Education Level Among HCWs

As shown in table 2 majority of HCWs 617 (98.7%) answered that the Government should restrict traveling from the affected countries to avoid the spread of disease in Pakistan, whereas 3 (0.5%) were uncertain and 5 (0.8%) disagreed with this. The mainstream of HCWs 596 (95.4%) answered that the Government of Pakistan should provide free screening nationwide, though n = 13 (2%) HCWs have disagreed on this question.

Regarding, the opinion to inform the suspected COVID-19 case to the health authorities 618 (98.9%) participants agreed, however (1.1%) participants were uncertain; about treating COVID-19 patient at home majority of HCWs n = 300 (48%) responded that COVID-19 should be treated at home, while 247 (39.5%) did not agree in treating COVID-19 patients at home.

About 286 (45.8%) participants were satisfied with the Government precautionary measure to avoid the spread of COVID-19 in the country, however, 42.2% were not satisfied with the Government measures and (12%) were not sure that either the Government precautionary measures are adequate to avoid the spread of COVID-19 in the country or not.

Regarding ability of Government institutions to control the pandemic, 44% of HCWs disagreed while 31.8% agreed and were satisfied.

In this study, 81.8% of HCWs were not satisfied with the public response towards the COVID-19 pandemic, whereas 88.5% of HCWs replied that authorities communicated very well about COVID-19 and delivered public health messages to the public.

In the current study, the level of education was significantly associated with satisfaction for government policies regarding free screening of COVID-19 (p=0.000) and measures to prevent the spread of COVID-19 (p=0.006) (Figure-2).

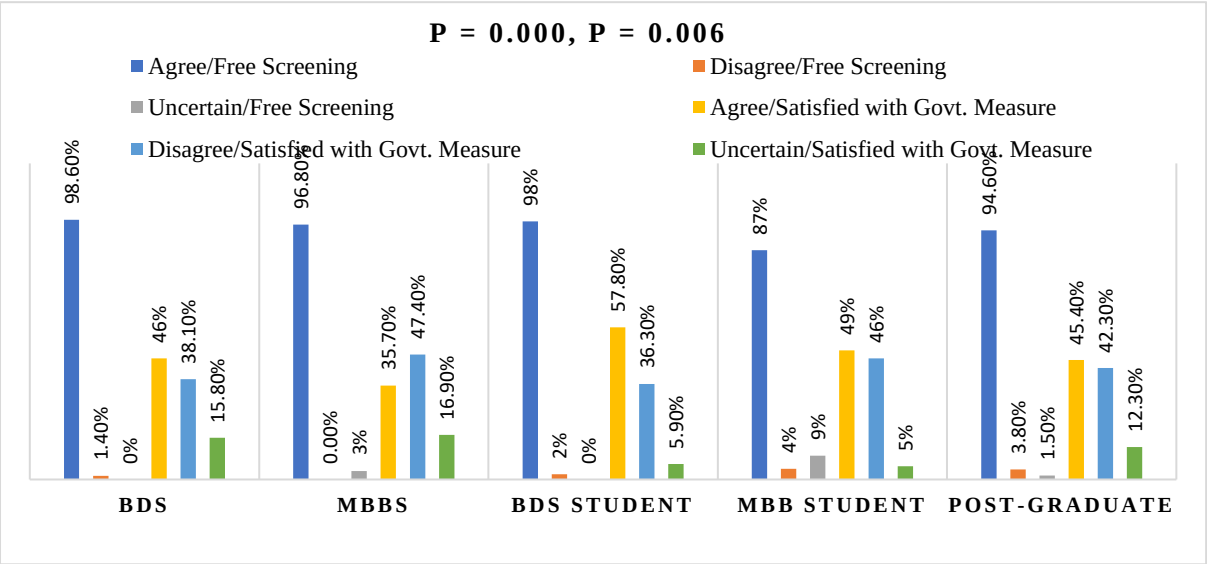

Figure-2: Association Between Education Level and Satisfaction Regarding Government Policies and Free Screening.

Table-2: Attitude of HCWs (n = 625) towards Pakistani Government Policies

VARIABLES	n (%)
The Government Should Restrict Travels From The Affected Areas To Avoid	
Agree	617 (98.7)
Disagree	5 (0.8)
Uncertain	3 (0.5)
Is it important to report a suspected case to health authorities?	
Agree	618 (98.9)
Uncertain	7 (1.1)
Can corona infection be treated at home?	
Agree	300 (48)
Disagree	247 (39.5)
Uncertain	78 (12.5)
The government should provide free screening nationwide?	
Agree	596 (95.4)
Disagree	13 (2)
Uncertain	16 (2.6)
Satisfaction with the government precautionary measures to avoid the spread of novel covid 19	
Agree	286 (45.8)
Disagree	264 (42.2)
Uncertain	75 (12)
Perception about government institutions ability to control pandemic	
Agree	199 (31.8)
Disagree	275 (44)
Uncertain	151 (24.2)
Satisfaction with public response to covid 19	
Agree	24 (3.8)
Disagree	511 (81.8)
Uncertain	90 (14.4)
The authorities communicate evidently and steadily regarding covid-19 and deliver public health basis for their conclusions	
Agree	533 (88.5)
Disagree	14 (2.2)
Uncertain	58 (9.3)

DISCUSSION:

COVID -19 is the pandemic of the century that no country or healthcare organization foresaw and hence prepared for ahead of time. The global spread of COVID-19 has generated aggressive medical and public health responses, including testing, screening, contact tracing, social distancing, travel restrictions and orders to staying at home when sick or exposed, yet many members of the society have distrust in the policies of the Government.

This study was conducted in the middle phase of the pandemic in the country from May 1 to May 15, 2020. Pakistan, at this point, was one of the first countries transitioning from lifting up the lockdown to opening the country in stages, as well as heading towards its peak of the COVID-19 cases. China and Spain lifted the lockdown after the peak passed.[15] However, Pakistan had a strict lockdown before the surge of cases, but then owing to economic pressures, the Government decided to implement smart lockdown only in disease concentrated areas while still facing the threat of an explosion of COVID -19 cases.[16] HCWs, who were forefront fighters and one of the major stakeholders in the policy-making against COVID-19 showed a lot of concern on the decision to lift the lockdown. Since this topic is not much addressed, we were unable to find enough data to compare. Hence more local and international studies need to be conducted for evaluation of Government policies on COVID-19.

In terms of demographics, there was active participation by females as compared to males. 71% were females which confirms the new trend of female education, and their representation in the education system as students and professionals which is comparable with the study carried out in Lahore, Pakistan which also stated that 71.5% of HCWs were female,[17] while other knowledge, attitude and practice studies conducted in Pakistan and China are in contrast with this study.[18,19]

Another encouraging aspect of this study was the involvement of younger age groups, which shows the political and public health awareness among young professionals, a similar trend observed in other developed countries. The most participation was from 15-24 years of age (50.6%), which is supported by the studies conducted in Pakistan by Khan and his colleagues and Saqlain and his colleagues, where 50.9% and

74.9% of participants were below the age of 30 years.[17,18] Respectively, it is in contrast with a study conducted in India which reported 88.1% of HCWs who participated were between 18-30 years of age.[20] In present study the least participation was reported by age group of 45- 54 (1.1%) which is even lower than 55-64 years of age (2.4%), this is in contrast with the study carried out in China where participants greater than nine years of experience had the most response (36.0%).[19] The reason for the higher participation of the two younger age groups could possibly be that our survey instrument was distributed electronically and these age groups are tend to indulge more in the use of electronic devices and social media, but the reason of less participation by the middle age groups needs to be probed into more.

24.6% HCWs were MBBS doctors, and 22.2% were BDS doctors, and this is similar with the results reported in Chinese and Pakistani studies[18,19] whereas, the study carried out in India stated that 33.3% were medical students and 9.1% were dental students which is in comparison with the existing study.[20]

In this study, 9% were working in the Government sector, while 37.6% were employed in the private sector, and this is in contrast with the study conducted in Pakistan where 12.58% of the participants were Government employees, and 7.61% were from the private sector.[17] Another striking finding of the present study was that 52.8% of the participants were unemployed, out of which 32.35% were students, and 20.5% were doctors, which is a conceivable matter of concern. Thus, this raises another crucial research question, whether this unemployment was precipitated by Covid-19. Travel is the single most important contributor to COVID-19 transmission.[21]Absolute travel bans tend to increase anxiety and affect the travel of indispensable resources and their timely movement. However, according to our study, most of the HCWs (98.7%) supported the travel ban by the Government from the affected areas to avoid the spread of disease in the country. There are very limited studies carried out on the opinion of HCWs on the travel ban for the COVID-19 pandemic. In contrast, a study conducted in India found that most (98 %) of the participants thought social distancing is essential to stop the virus from spreading.[22] but, 88.7 % of them considered traveling within the country to be safe during the pandemic. Studies conducted on the association of communicable diseases with travel ban suggest a positive outcome when combined with other preventive measures. A study conducted by CDC on Ebola, and a study conducted by WHO (2014) on the spread of influenza, both reported that travel ban can be effective if applied extensively and timely, along with other supporting necessary measures like risk assessment and management program at the borders and traveler's education.[23, 24]

Pakistan, like most of the other developing countries, faced a huge economic crisis due to shut down businesses. The country reported a loss of $ 5.3 billion to $9.6 billion in the fourth fiscal quarter alone, with an expected shrink of $15 billion as a result of the pandemic.[25] Crushed under the pressure of shrinking GDP growth from 5.8% in 2018 to 0.98% now, Pakistan looks towards its strategic allies like China and Saudi Arabia, after WHO and International Monetary Fund (IMF) for stability[6] However, surprisingly despite being in the healthcare system and aware of the economic situation and healthcare budget of the country which was 2.90% of the total % of GDP in 2017, the majority of HCWs answered that Pakistan Government should provide free screening nationwide (95.4%).[6] Developed Countries like China with GDP of $ 13.61 trillion provided both testing and treatment for free, while USA despite having a GDP of $ 20.54 trillion in 2018, although offered free testing but charged in thousands for the treatment. Italy and the UK with GDP of $ 2.855 trillion and $ 2.084 trillion respectively in 2018, and also known for their world-class healthcare systems have been providing free screening through the Government hospitals, but in the private setup testing cost up to $ 460 in

UK.[6,26] While Pakistan, with a GDP of $ 314.6 billion (2018) and Government Debt to GDP ratio of 84.04%, also offered free testing to the suspects and contacts of the suspects.[6] However, private healthcare services in Pakistan charged up to $ 47.01 for testing of COVID-19, which is comparatively cheaper and more extensive as compared to its neighboring country, India. India with an economic worth of $ 2.719 trillion (2018), strictly tested suspects only with a travel history from an affected country, and their contacts. While the Indian private healthcare sector charged up to $ 60.22 for testing. [6,27] Pakistan, despite being a smaller economy under debt, still offered free national screening to the suspects and contacts, which is according to the suggestion of the HCWs of Pakistan, comparable to the world's largest economies.

Regarding the importance of reporting suspected cases of COVID-19 to the health authorities, 98.9% participants believed that they should be reported. Although the response has been very encouraging on opinion towards reporting, a separate study should be conducted to determine the practice, quality and trend of reporting. Even, if regular and strict reporting of the suspects is being observed, the confirmation can only be done through lab testing. Currently, worldwide, no country knows the exact number of COVID-19 cases, as only lab tested positive cases are confirmed COVID-19 cases. The lab testing of a country depends on various factors like the capacity of lab testing, the severity of COVID -19 strain and the tendency of the public to get tested. So, the true number of COVID-19 cases in any country may be much higher than the tallies we have till now.[28] On June 13th 2020, Pakistan conducted 29, 546 tests, the greatest number so far, and reported 6825 new cases. However, on July 25th 2020, the newly reported cases have dropped to 1226/day, with a relative decline in the number of tests conducted 23,254 tests/day.[29] Hence, it is crucial that further studies must be conducted to establish other criteria for confirming positive cases, attitudes towards testing as well as to determine the effectiveness of the in-place reporting system.

Regarding practicing management of COVID-19 patients at home, CDC released guidelines on May 8th 2020.[30] Pakistan also announced that patients without hypoxia could be isolated and treated at home on April 2nd 2020. China also used home quarantine as a strategy for isolation of contacts.[31,32] But in current study, almost 57.4% HCWs still believed that COVID-19 patient should not be managed at home, while 25.3% were of the opinion that COVID-19 patients could be treated at home.

Although Pakistan was able to restrict its COVID-19 cases in May, despite being neighboured by the major outbreak areas at the time, China and Iran, only 45.8% participants were satisfied with the Government's precautionary measures to avoid the spread of COVID-19 in the country, while 42.2% were unsatisfied and 12% were unsure. In terms of confidence in the Government institute to control the pandemic, only 31.8% of HCWs agreed, while 44% did not believe in the Government and this was in contrast to a study conducted in another developing country Nepal, in which majority of the participants (80%) had confidence that their Government will be able to control COVID-19 in the country.[33] While a study conducted in China, a developed country 90.8% believed that the country would be successful at controlling the pandemic and 97.1% had confidence that China can win the battle against the virus.[33] Nonetheless, despite showing lesser confidence in the Government, 88.5% of HCWs were of the opinion that authorities had communicated and delivered public health messages effectively regarding COVID-19. The reason for this distrust and unrest among HCWs in current study could be because of the decision of Government to lift the strict lockdown despite the approaching COVID- 19 peak and foreseeing the lack of adherence to the preventive measures by the public.[12] This concern of HCWs is proved by this study where the

majority (81.8%) of HCWs were dissatisfied by the public response towards the COVID-19 pandemic. WHO in June has also suggested the re-implementation of lockdown, considering the lack of compliance by the public.[34] Hence, this study shows that HCWs were satisfied with the effective communication of Pakistani Government regarding COVID-19 however, they did not agree with the policies and the decision of the Government to ease the lockdown due to lack of compliance by the public.

CONCLUSION:

This study was possibly the first in the region and among the first few to explore the opinion of HCWs on Government policies on COVID -19. According to this study, HCWs were unsure of the ability of the Government institutes to control the pandemic in the country; however, were satisfied with the Government's performance on public awareness. The current study reports one factor of this lack of confidence in HCWs, which is; the lack of proper practice of preventive measures by the public, but it may also be due to the policies of the Government. Pakistan made some unprecedented decisions and strategies. Hence, it is crucial that evaluations and comparisons be made with the policies of the other countries which were successful or not, at arresting the disease. Such comparisons will allow us to find effective evolved strategies to prevent and better prepare for similar situations in future.

AUTHOR'S CONTRIBUTION:

SM: Supervisor of study and study design
RC: Study design and conception of an idea
ZR: Data analysis and Drafting article
SB: Drafting article
QT: Data collection
SH: Data collection

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Original Article

STUDY ABOUT KNOWLEDGE, PERCEPTION AND ATTITUDE AMONG FINAL YEAR MBBS STUDENTS AND HOUSE OFFICERS REGARDING COVID-19

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ABSTRACT:
The coronavirus pandemic is the defining global health crisis of our time and the biggest challenge we are facing. The goal of the study is to evaluate the existing knowledge, perception, and attitude of medical students and house officers regarding the SARS-COV 2 pandemic.
Material and Methods: A web-based cross-sectional study was conducted from 15th to 30th June, 2020, targeting final year MBBS students and house officers working in Akhtar Saeed Trust Hospital and Farooq Hospital. A questionnaire was designed and filled by 220 participants showing their demographic information, knowledge, perception and attitude towards corona virus.
Results: Our participants were between 22-26 years of age, predominantly females 168 (76.4%). Regarding the knowledge about the cause and mode of transmission of corona virus, 99% knew that it's a viral infection. Majority 157(71%) of the participants used social media as their main source of information. Ninety nine percent knew about common symptoms, risk factors and preventive measures. Around eighty two percent of participants thought this infection is associated with some social disgrace and 124(56.3%) considered that media had exaggerated the outbreak and that the virus is purposefully manipulated virus. Nearly sixty-five percent of our participants thought that the government has not succeeded in controlling the epidemic.
Conclusion: In the present study, it was observed that participants had ample knowledge regarding COVID-19 and showed good perception of disease symptoms, risk factors, incubation period and its prevented measures but; their attitude towards the disease was not too positive and needs to be changed.

Key Words: Knowledge, Perception, Attitude, COVID-19

INTRODUCTION:

The World Health Organization (WHO) has detected a pandemic over a new corona virus, which causes a deadly disease called COVID-19 that has spread to almost every country. The disease has killed more than 610,000 people and infected over 14 million. On 31st Dec. last year, China alerted the World Health Organization to several cases of this viral disease in Wuhan. The virus was unknown at that time, but then corona virus was officially named as severe acute respiratory syndrome corona virus 2 (SARS COV-2) by WHO on 12 Jan. 2020.[1]

This virus is highly contagious and has spread rapidly in the human population with significantly greater case fatalities than previous outbreaks.

Pakistan became part of this deadly disease (COVID-19), when a student in Karachi arrived from Iran. His test came out to be positive on 26th Feb. 2020. After this, by 18th March, positive cases had been recorded in all four provinces of Pakistan including the federal territory of Islamabad. In the mid of July 2020, there have been about 261, 917 confirmed cases with 198, 509 recoveries and 5522 mortalities in the country and many health care workers including doctors, nurses, paramedic staff and young students also got infected. WHO ranked Pakistan among the top ten countries in the world reporting the highest number of new cases of COVID-19.[2]

The new corona virus is an enveloped RNA virus and four out of six species of corona

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viruses are quite common and cause respiratory, hepatic and neurological disease.[3] Knowledge about the mode of disease transmission is important for developing effective control measures. COVID-19 is a communicable disease and spreads mainly through close personal contact and through respiratory droplets by coughing and sneezing of the infected person and maybe by touching contaminated objects. Some asymptomatic people may be able to spread the virus.[4] The incubation period of disease is about 2 to 14 days. The disease may infect the patient in a milder form or can be quite severe. The most common symptoms are fever, dry cough and tiredness, while less common symptoms include headache, sore throat, rhinorrhea, diarrhea, body aches and loss of smell and taste. More severe symptoms may include shortness of breath and chest pain.[5,6]

Health care workers are the frontline defense against COVID-19 pandemic so it is important for medical students and house officers to be aware of such epidemics. They must have adequate knowledge, and better attitude towards such diseases as their inadequate knowledge and incorrect attitudes can lead to poor infection control practice and spread of disease and in the future may influence clinical practices. Our study was aimed to identify the existing status of knowledge, perception and attitude of medical students and house officers regarding COVID-19 pandemic.

MATERIAL AND METHODS:

An online cross-sectional survey was carried out to collect data from respondents regarding their knowledge, perception and attitude towards COVID-19 from 15th to 30th June, 2020. A total of 220 participants, including students (Final year MBBS) and house officers working in Akhtar Saeed Trust Hospital and Farooq Hospital, Westwood branch, were included in the study. An electronic questionnaire was developed. Online Google survey (https://docs.google.com) was used through the medium of social networking (WhatsApp and facebook) groups of students to collect data. A hard copy was filled by the house officers. A written informed consent was taken from respondents explaining the purpose of study. The confidentiality of participants was also maintained. The study was reviewed and approved by the Research Ethical Committee of Akhtar Saeed Medical and Dental College.

The questionnaire was divided into different sections. The first section had information about age, sex and discipline (MBBS or House officers). The knowledge section had three parts including cause, mode of transmission of disease and commonly used source of information. The participant's perception about symptoms, risk factors, preventive measures and treatment was assessed by different questions, each answering in yes or no. The attitude section had 11 items and each item was also answered yes or no.

The data was analyzed by SPSS 20. The participant's SAR-COV-2 related knowledge, perception and attitude was analyzed using frequencies and percentages which were presented through tables.

RESULTS:

Two hundred and twenty participants from final year MBBS of Akhtar Saeed Medical College and house officers working in Akhtar Saeed Trust Hospital and Farooq Hospital, Westwood branch completed the survey. Table 1 shows that nearly 2/3rd (76.4%) were females. About 103(46.8%) were aged 22-23 years and 117(53.2%) were in age group of 24-26 years. Most of the participants 156 (70.9%) were final year MBBS students and rest 64(29.1%) were house officers.

Table-1: Demographic Information of the participants

Characteristics	Participants (n=220) (%)
Gender	
Male	52 (23.6%)
Female	168 (76.4%)
Age	
Group A (22-23 years)	103 (46.8%)
Group B (24-26 years)	117 (53.2%)
Discipline	
MBBS	156 (70.9%)
House officers	64 (29.1%)

Table 2 describes the knowledge of participants. Almost all participants knew about the causative agent of the disease and its mode of transmission. The most commonly used source of information was social media 157(71%), TV and newspaper 25(11%), followed by other internet web pages 20(9%). Other sources include medical journals, session/webinars and colleagues 18 (8%) collectively.

Table-2: Knowledge of participants about corona virus

Question	n=220 (%)
1. Cause of disease	
Virus	219 (99.5%)
2. Mode of transmission	
By respiratory aerosol of infected patient	219 (99.5%)
By handling infected objects	205 (93%)
Eating infected food	138 (62.7%)
Close contact with infected patient	211 (5.9%)
3.Source of information	
Social media	157 (71%)
Medical journal	8 (3%)
Colleagues	5 (2.5%)
Other internet web page	20 (9%)
Sessions/ webinars on update of COVID management	5 (2.5%)
TV and Newspaper	25 (11%)

Almost 219(99%) participants knew about the symptoms, risk factors and preventive measures. Only 185(85%) knew the incubation period of the disease. (Table 3)

Table-3: Perception about symptoms, incubation period, risk factors and preventive measures

Question (Correct Answer)	(Correct Answer No.) (%)
1. Fever, cough, dyspnoea, generalized body aches are symptoms of corona virus. (Yes)	219 (99%)
2. Incubation period is 2-14 days. (Yes)	185 (85%)
3. Predisposing factor (s) of COVID-19	
• Old age **(Yes)**	211 (95.9%)
• Individuals with malignancy, chronic respiratory disease, diabetes **(Yes)**	215 (97.5%)
• Immunocompromised **(Yes)**	217 (98.6%)
• Travelling to infected areas of world **(Yes)**	208 (94.5%)
• Pregnant women **(Yes)**	162
4. For which of the following situations is medical advice indicated	
When someone acquires any of the symptoms (mentioned above) **(Yes)**	212 (96.3%)
Have been in close contact with a person known to have COVID-19 **(Yes)**	183 (83%)
Recent travel from an area where disease is already prevalent **(Yes)**	182
5. Which of the following is (are) preventive measure (s) of corona virus	
Clean your hands with soap and water or alcohol-based hand rub **(Yes)**	220 (100%)
Don't touch your eyes, nose or mouth **(Yes)**	219 (99.5%)
Avoid contact with infected people **(Yes)**	219 (99.5%)
Wear mask and gloves **(Yes)**	200 (100%)
Avoid going to public places **(Yes)**	219 (99.5%)
Maintaining social distance **(Yes)**	219 (99.5%)
Pay attention to other health habits **(Yes)**	218 (99%)

Table 4 represents the attitude of participants towards corona virus. Nearly, ninety-four percent of participants thought that the disease is hazardous. Similar percentage thought that if they take precautions,

COVID-19 can be prevented, and 91.8% were practicing these safety precautions.

About one hundred and eighty-one respondents (82%) thought that the virus was associated with disgrace in society and 56% thought that the media has overblown the pandemic and that the virus was a purposefully manipulated virus.

One hundred and eighty-four respondents (83.6%) were willing for vaccination in the future, when available. About seventy-seven percent were concerned about the possibility that they or their family members, 175(79%) can get an infection. One hundred and five participants thought that available information in Pakistan is insufficient and 35% thought that the government has not succeeded in controlling the epidemic.

Table-4: Attitude towards corona virus

Question (Correct Answer)	Response No. (%)
1. Do think that the disease is dangerous? **(Yes)**	208 (94%)
2. Do you think that your family members are at risk? **(Yes)**	175 (79%)
3. If you take precautions can COVID-19 infection be prevented? **(Yes)**	207 (94%)
4. If there is a vaccine, would you take it? **(Yes)**	184 (83.6%)
5. Is the available information about COVID-19 in Pakistan sufficient? **(Yes)**	105 (47.7%)
6. Has the government succeeded in controlling the epidemic? **(Yes)**	73 (35%)
7. Do you think yourself at risk? **(Yes)**	171 (77.7%)
8. Do you take safety precautions and prevention? **(Yes)**	202 (91.8%)
9. Do you think this virus was purposefully manipulated virus? **(Yes)**	124 (56.3%)
10. Do you think media has overblown the pandemic? **(Yes)**	124 (56.3%)
11. Do you think the virus is associated with some disgrace in society? **(Yes)**	181 (82.3%)

DISCUSSION:

COVID 19 has established itself as deadliest fastest moving pandemic since 1918 and has caused about half a million mortalities. In the history, previous outbreaks of corona virus including severe acute respiratory syndrome (SARS COVID), Ebola, Middle East respiratory syndrome (MERS-COVID) and several other flu pandemics have been recorded.[7] Now a new virus has been identified as SAR-COV 2, which is different from previous viruses in genetic makeup, clinical presentation, number of mortalities and rapid rate of spread around the globe.[8]

This study was conducted to evaluate the knowledge, perception and attitude of MBBS final year students and house officers towards COVID-19 in our institution. Our respondents were between 22-26 years of age, predominantly females (76.4%).

Regarding the knowledge about the cause and mode of transmission of corona virus 99% knew that virus is the cause of this COVID infection. A similar response rate was seen in another local study conducted among students of Combined Military Hospital showing 97.4% response.[9] Another cross sectional survey from Pakistan conducted among health care workers showed 93.2% response.[10] Similarly, an Egyptian study had reported that 80.4% respondents had sufficient knowledge about the disease.[11] On the other hand, in a study from the United Arab Emirates, poor knowledge about disease transmission and symptoms was found in a significant proportion of health care workers.[12] Another study done in Iranian nurses showed 56.5% knowledge about the disease, mode of transmission and its symptoms.[13]

Social media was the most commonly used source of information in the majority of respondents (71%). About 9% used an internet web page and 11% used newspapers and TV. These findings were in line with another study done in health care workers in Pakistan[1] and other international studies.[12,14] This was unlike another study done in Egyptian health care workers where health care workers followed the WHO web site as their main source of information.[12] It is important for medical students and house officers to be aware of new infectious disease and they should use reliable sources like the Centers for Disease Control and Prevention

(CDC) and WHO guidelines for disease awareness.[15]

In this study, respondents showed a very good perception of symptoms, risk factors, incubation period and preventive measures of the diseases. Ninety nine percent knew about the common symptoms, risk factors, and preventive measures. Eighty five percent had knowledge about the incubation period and when to seek medical advice. The findings were consistent with other local and international studies.[9, 10, 16]

Our survey showed a satisfactory attitude of respondents towards COVID-19. Ninety four percent of our participants thought that the disease is hazardous and if they take precautions, the disease can be prevented and they were practicing it. In spite of this, 22% of participants still thought that they are not at risk and 21% were not worried that their family members could get an infection, and 16.4% were not willing for vaccination, if available in future. A similar attitude of students was observed in another study.[9]As our respondents are future health workers, their negative behavior will significantly affect their attitude and risk perception regarding the disease.

Eighty two percent thought that the infection with virus is associated with some disgrace in society and 56.3% believed that the media had overblown the corona virus outbreak. A similar fraction of participants thought that it was a purposefully manipulated virus (a reference to table 4 question no 9,10 and 11). That is contradictory to the study conducted among the Egyptian adult population which showed a more positive attitude towards these indicators (reference to table 4 question 9,10 and 11).[12] This maybe because majority of our population including health care workers still consider it as propaganda or over-exaggeration of the media. So, the need of hour is that our future health workers must be aware of the gravity of disease as their positive attitude can help to avoid the disease as well as its spread in the community and clinical settings.

Sixty five percent of our participants thought that the government has not succeeded in controlling the epidemic and 52.3% thought that the available information on COVID-19 is not sufficient.

LIMITATIONS:

The limitations of the study were the small sample size. Secondly, we could not correlate our results with the general population as this study was conducted in people belonging to the medical field.

CONCLUSION:

In the present study, participants showed high level of knowledge and perception. However, they need to improve their attitude towards COVID-19 pandemic. It may be because our respondents are using less authentic sources of information, i.e., social media, which has its own pros and cons.

The present study highlights the need to create a better attitude and practice among future health care workers as they play a vital role in combating this outbreak. They should be aware of recent developments, especially those related to public health, and should follow the WHO and CDC guidelines in defending the war against this pandemic.

AUTHOR'S CONTRIBUTION:

AM: Conception of an idea, study design and supervisor
US: Data collection
NS: Data analysis
NS: Drafting article
QUA: Drafting article

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Original Article

FREQUENCY OF BLOOD GROUPS AND DURATION OF HOSPITAL STAY AMONG DIFFERENT BLOOD GROUPS IN COVID-19 PATIENTS

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ABSTRACT:
COVID-19 pandemic is the greatest global challenge, the world is facing from the past few months. Pakistan is currently going through this ongoing health crisis that is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). This virus, named as coronavirus disease (Covid-19), specifically acts on angiotensin-converting enzyme, which was widely found in vascular endothelium, respiratory epithelium, alveolar monocytes, and macrophages. It is reported that there is an unusual trend of abrupt inflammation and hypercoagulability in critically ill COVID-19 patients.
Antigenic expression of different blood groups are linked with the development of certain infections. Several blood groups play an important role in the modification of immune response and by providing receptors for microorganisms. Recently, researchers have reported a strong association of COVID-19 disease and certain blood groups.
Objective: To determine the frequency of ABO blood group and its association with the duration of hospital stay in the hospital in COVID -19 patients.
Material and Methods: This was a retrospective study analyzing the ABO blood group distribution in 150 patients of COVID-19 admitted in the corona unit of Farooq hospital Westwood branch Lahore from 1st May 2020 to 30th June 2020. These admitted cases were confirmed by RT-PCR.
Results: The results showed that among COVID-19 patients, blood group B (40%) was more common as compared to O (21%) blood group. Most of the patients (61%) with blood group A required prolonged hospital stay (≥7 days) than patients with blood group O (42%).
Conclusion: We concluded that certain blood group types have a strong association with developing COVID-19 disease.

Key Words: COVID-19, Macrophages, Monocytes, Vascular Endothelium

INTRODUCTION:

The coronavirus (COVID-19) is a major concern all over the world these days. As this is a new virus attacking humans, less is known about it. Researchers from all over the world are working diligently to find out ways to understand its pathogenesis and risk factors to improve management of the patients. World Health Organization designated severe acute respiratory syndrome coronavirus-2 (SARS COV-2) as COVID-19.[1]

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This single-stranded RNA virus shows the tropism for angiotensin-converting enzyme receptors on respiratory epithelium leading to widespread inflammatory response and systemic coagulopathy in severe cases.[2]

A number of studies have shown an association between host susceptibility to infections and different blood groups.[3] ABO groups denote the presence of carbohydrate antigens present on glycosphingolipids and glycoproteins on RBCs and a wide variety of human tissues.[4] Walls A et al studied the structure, function, and antigenicity of the SARS-CoV-2 spike glycoprotein. The SARS-COV spike (S) protein is a glycoprotein with potential N-glycosylation sites.[5]

A study published on data from Wuhan (China) revealed that people with blood

group A are at a higher risk for Coronavirus infection as compared to people with blood group O. The susceptibility of low-risk blood group and high-risk blood group could be attributed to certain natural group-specific antibodies.[6]

The results from another study conducted in New York also revealed positive linkage between different ABO groups and COVID-19 disease.[7] The present study was conducted to assess the frequency and association of different blood groups with a hospital stay in COVID-19 patients admitted to Farooq Hospital Westwood.

MATERIAL AND METHODS:

Demographic and blood group data were collected retrospectively from COVID -19 patients admitted in the Corona Unit of Farooq Hospital Westwood Lahore, from1st May 2020 to 30th June 2020. A total of 150 patients were included in the study. The diagnosis of COVID-19 was confirmed by reverse transcriptase polymerase-chain-reaction test (RT-PCR) of SARS-CoV-2 on nasopharyngeal swabs from these patients.

RESULTS:

The data was analyzed using SPSS 21. The frequency of ABO blood groups were collected using frequencies and percentages. All the patients admitted in Farooq Hospital, Westwood colony, Lahore were included in this study. The age range of the patients infected with Coronavirus was 30-90 years. The male to female ratio was 3:1. The percentage distribution of blood group types A, B, AB and O in 150 patients with COVID-19 was 27% (n=41), 40% (n=60), 12% (n=18) and 21% (n=31) respectively (Table-1).The patients with blood group O had a lower risk of COVID-19 than non-O blood group patients. (Table-1)

This study also showed that the distribution of patients is the same between all ages and different sex groups.

The percentage distribution of patients with prolonged hospital stay (≥ 7 days) in blood groups A,B,AB and O is 61%, 53%, 54%, 42% respectively. (Table-2)

Table-1: Frequency of ABO blood groups in different age groups of COVID-19 patients

Blood Groups				
Total patients	A % (n=41)	B % (n=60)	AB % (n=18)	O % (n=31)
150	27% (41)	40% (60)	12% (18)	21% (31)

Table-2: Frequency of COVID-19 +ve patients with different duration of hospital stay among ABO blood groups of patients

Duration of Hospital stay	A % (n=41)	B % (n=60)	AB % (n=18)	O % (n=31)
Less than 7 days	39% (16)	47% (28)	45% (8)	58% (18)
≥ 7 days	61% (25)	53% (32)	54% (10)	42% (13)

DISCUSSION:

SARS coronavirus is causing major concern all over the world these days. Many variations have been observed in clinical symptoms and the severity of COVID disease.[1] Cheng et al proved that there is a strong association between certain blood groups and the SARS coronavirus. It has been documented that populations with blood group O are at lower risk of developing COVID-19 infection.[8] Recently during the outbreak of COVID-19, analysts from China, Columbia University, and Iran observed the relationship of ABO blood groups to corona disease.[6,9,10]

Moreover, this study showed that the median age of the patients was 60 years which was in accordance with research done by Murthy et al, in 2020.[11] The results of the single-arm meta-analysis done by Li Lq et al[12] showed that there was a higher percentage of male gender among COVID-19 patients (60%) and this outcome is in conformity with our data showing 75% males of COVID-19 patients who presented in corona unit of Farooq Hospital Westwood.

In the present study, the percentage distribution of blood groups in COVID patients showed that the majority had blood group B (40%). Data from previous studies revealed that blood group B is dominant in Pakistan Population.[13] On the other hand, patients having blood group O are less

(21%) than non-O groups. A genome-wide association study in Europe discovered people with O blood group are at less risk of acquiring infection and developing severe COVID disease than people with non-O groups.[10] We also observed that 61% of patients with blood group A required prolonged hospital stay (≥ 7 days) as compared to patients with blood group O (42%). Wu Y et al also suggested that patients with blood group A were at higher risk than other blood groups (OR = 1.544).[14] Some other researchers also found a consistent negative association of blood group O to COVID-19 patients as compared to non-O groups.[5,6]

CONCLUSION:

In conclusion ABO blood groups have a strong association with COVID-19. More research work with a large number of COVID-19 patients in this field can provide significant information about the novel Corona risk virus infection among different blood groups.

AUTHOR'S CONTRIBUTION:

AA: Conceived and presented data
SA: Collection of data
OF: Editing and presentation of data
MU: Data analysis
AW: Writing of manuscript
AM: Analytical calculation

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Original Article

PSYCHOLOGICAL IMPACT OF COVID-19 ON GENERAL POPULATION IN PAKISTAN

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ABSTRACT:

Background: Pakistan confirmed its first two cases of COVID-19 on 26th February 2020 with both having a common history of returning from Iran. Since then, an increase has been observed in cases. Social distancing, isolation, and complete lockdown have affected a large number of people physically and emotionally.

Material and Methods: The current study aims to evaluate the psychological impact of COVID-19 among the public of Pakistan. In order to conduct this study, internationally validated scales were used, naming Depression, Anxiety, and Stress Scales (DASS-21) and the Impact of Events Scale-Revised (IES-R**).** Four hundred and fifty-eight (458) responses were taken from the general population including students (both medical and non-medical field), teachers, business owners, employees and housewives. A brief bio-data about gender, age range and education status was taken. Complete confidentiality was maintained during this study.

Results: The study included 458 respondents from the general population. The analysis of psychological impact using the IES-R scale showed that 268(58.5%) recorded minimal psychological impact, 58(12.6%) recorded mild psychological impact, 132(28.8%) had moderate to the severe psychological impact. According to DASS-21, 33% reported to have moderately to the extremely severe depression, 34.9% reported to have moderately to extremely severe anxiety and 17.9% were reported to have moderately to the severely stress.

Conclusion: People are suffering from psychological pressure due to COVID-19. Depression, anxiety, stress, and PTSD are our concern for this study.

Key Words: COVID-19, Pakistan, Depression, Anxiety

INTRODUCTION:

The upsurge of COVID-19 has caused unprecedented psychological stress to the general population. This disaster emerged in Wuhan city, Hubei province, China. WHO declared coronavirus disease a pandemic in March 2020, which has till now affected 210 countries and territories around the globe. The predominant symptoms experienced are cough, fever, fatigability, and difficulty in breathing. Predominantly, its spread is via aerosols and thus persists on various surfaces. People suffering from cardiovascular complications, respiratory tract infirmity, immunosuppressed states (pregnant females, patients on steroids, and chemotherapy), diabetes are at a considerable risk.[1] UNESCO (2020), in one of the recent reports, has revealed that "over 420 million children and youth affected in 39 countries as they have to close schools, colleges and universities". Many of the festivals, religious and social ceremonies have been canceled. There are a lot of challenges, including financial and psychological problems which people are facing at present and will continue to face in the near future. In this pandemic, not only the patients were infected with COVID-19 but also the healthy individuals have experienced intense emotional and behavioral reactions like fear, anxiety, rage, isolation, and insomnia.[2] During this time, the treatment and preventive protocols have not laid

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enough emphasis on psychological problems being faced by the people. Psychological first aid is extremely important for the maintenance of emotionally unstable individuals.[3] The majority of old age people, immunocompromised individuals, and relatives of infected patients with COVID19 are at a high risk of facing social dismissal.[4] In context to the previous tragedies, probations depict that mental health challenges pose a more serious threat to individuals leading to tremendous psychosocial and non-profitable influences.[2,5] Another study has reported that extreme emotional instability can transform into clinical tumble like depression, panic, anxiety, psychotic, Post-Traumatic Stress Disorder (PTSD), and paranoia, which may ultimately result in suicidal attempts. In certain cases, lack of adequate knowledge about coronavirus and thus concerns infecting the loved ones can superimpose dejected mental states.[4,6]

MATERIAL AND METHODS:

This study included 458 respondents from the general population. Our subjects included a variety of categories; students, teachers, employees, business owners, and housewives. This allowed us to acquire and classify substantial data that brackets gender, age, educational status, and area of residency. We evaluated the psychological impact among them using the internationally validated scales naming DASS-21 and IES-R. Assessment of psychological effects has been a challenging role as it encloses a wide variety of emotions and reactions. Many different scales have been designed by professionals to serve the purpose. For our survey, we used Depression, Anxiety, and Stress Scales (DASS-21)[7] and the Impact of Events Scale-Revised (IES-R**)**.[8] Originally DASS comprises 42 questions. It is designed to clearly differentiate among the factors resulting in depression, anxiety and stress.[7] A brief but comprehensive interpretation (DASS-21), composed of 21 questions, was designed to reach globally with ease. The normal scale for DASS-21 is given in Table-1. Results have depicted DASS to hold acceptable psychometric attributes.[9] Likewise, a scale was devised to assess the severity of PTSD. IES-R is the system that is composed of 22 items, among which 5 items were included in the prior Horowitz (IES). This scale has been restated into a number of dialects, including German, Japanese, French, Spanish, and Chinese.

Results:

This method, not a diagnostic tool, is an applicable means to analyze the personalized response to psychological or emotional stress leading to PTSD. Values of 24 or higher on IES-R scale are considered significant. Whereas, the normal range will be less than 24 as shown in Table-3.

Table-1: The 21 item DASS scale (DASS-21)

	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-35
Extremely severe	28+	20+	34+

The results regarding DASS-21 in this study are as follows:

Table-2: Results of DASS-21

	Depression		Anxiety		Stress	
Normal	255		256		248	
Mild	49		42		117	
Moderate	75	33%	77	34.9%	57	17.9%
Severe	45		22		22	
Extremely severe	32		61		3	

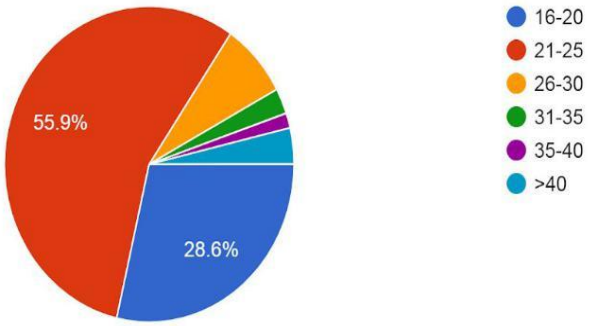

Figure-1: A graphical presentation of age ranges of 458 respondents evaluated for psychological impact of COVID-19.

Table-3: Impact of Events Scale-Revised (IES-R) scale.

Scale	Interpretation	Results n (%)	
Less than 24	Not significant	268 (58.5%)	
24-32	Subjects will have partial PTSD or a few symptoms	58 (12.6%)	
33-38	Best suggestive value for declaring PTSD	16	132 (28.8%)
39 and above	This value is significant in suppression of immune system	116	
Total		458	

268 responses were recorded to be under 24 scores**.** Above 24 scores, the values are considered to be significant to label as PTSD.

DISCUSSION:

The above numbers show that COVID-19 has struck the general population in a very impactful manner. As shown above, the number of people facing moderate to the extreme severity of depression, anxiety, and stress are noteworthy. Factors such as home isolation, social distancing, and a daily spike in the number of new cases have surely made it difficult for people to manage their behavioral changes. A study was conducted to ascertain the psychometric properties of the Malay interpretation of DASS-21 among paramedic staff (nurses).[10] Similar studies have been conducted in younger people showing that the crux evident reaction of Depression and Anxiety are similar in elderly people and nonage.[11] A number of studies are being conducted using this scale due to its veracity and reliability in both health care and non-healthcare subjects[9] and in territories such as England,[12] Canada,[13] Australia,[14] Bahasa-Malaysia,[15] Spain,[16] China[17] and Singapore.[18] The Pakistan administration has devised strategies amid this pandemic suggesting prompt diagnosis, tracing and locating holds, high-risk groups, social disparity, quarantine, and home solitude.[19] The government has launched helplines for the aid of the general population in 7 local languages.[20] These necessary restrictions have brought some serious psychological challenges as well. The analysts from the Pakistan Ministry have predicted 12.3 million to 18.5 million inhabitants going unemployed because of COVID-19.[21] Medical students were found worrisome regarding the probability of

getting infected during medical rotations.[22] Recreational activities have dropped by 70%, affecting cafés, diners, grills, eateries, malls, amusement parks, libraries, museums and monuments.[23]

CONCLUSION:

It is concluded that COVID-19 has caused moderate to extremely severe depression, anxiety and stress. It is recommended to look out for both bodily and psychological health side by side. Effective strategies can be promoted by social media during the COVID19 pandemic. Contact your friends and family, consume befitting meals, have sufficient sleep hours, and some exercise daily. Approaching online psychological helplines may bring ease of access to psychologists. This is a difficult time the world is facing. Only by prevention and helping one another, we can coup win this crisis.

AUTHOR'S CONTRIBUTION:

AA: Conception of idea and study design
JAF: Data collection and data analysis
FS: Drafting article

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Original Article

CLINICAL PRESENTATION OF COVID-19 DISEASE, ASSOCIATION BETWEEN SODIUM LEVELS AND PAO2/FIO2 RATIO, EFFECT OF STRESS ON MORTALITY RATE AND SMOKING PREVALENCE

Faisal Rafique[1], Rubab Andleeb[2]

ABSTRACT:

Objective: To describe clinical parameters, risk factors, lab parameters, and association of these parameters with the severity of disease in admitted COVID-19 patients at Corona Unit Farooq Hospital Iqbal Town Branch Lahore.

Material and Methods: This was a retrospective study conducted on 43 admitted patients from 10th June 2020 to 14th July 2020. All the patients were presented with Acute Respiratory Distress Syndrome and were PCR positive for Corona Virus.

Results: Of All 43 patients, 16% of patients were presented with pulmonary symptoms & Encephalitis (responded to Acyclovir) and 84% with solely pulmonary symptoms (ARDS). The mean age among these patients was 59. About 23% of patients were presented with Moderate Acute Respiratory Distress Syndrome (ARDS), 28% Mild, and 49% Severe ARDS. According to HRCT Chest there was 30% involvement of lung tissue was seen in 6.96% patients, 40% in 30.23%, 50% in 4.65%, 60% in 11.63%, 70% in 27.91% and 80% in 18.60%. Among the Risk Factors Diabetes Mellitus was seen in 74.42% patients, pulmonary diseases 23.26%, Hypertension 41.86%, IHD 30.23%, cerebral palsy 4.65%, chronic kidney disease 6.98% and the smoker was only 11.63%. Among Lab Parameters Ferritin Levels were raised in all patients, D-Dimer 60.47%, Liver Function Tests (LFTs) 79.07%, RFTs (Renal Function Tests) 27.91%, CRP 97.67%, LDH (lactate dehydrogenase) 95.53%, Hemoglobin below normal was only in 6.98% and TLC was raised in 23.26 % patients. Plasma therapy was effective in 41.67%. Among the stressed patients at our Corona unit, 67% of patients were expired. Tocilizumab was seen effective in 61.54% of patients. CPAP was effective in 76.47% of patients. Decreased Levels of Sodium was Directly proportional to PaO2/FiO2. Among these patients only 18.60% of patients were expired, 9.30% were Discharged on request (clinically improved),72.0% of patients were recovered.

Conclusion: We feel that the findings described here, might be of interest to extensive further evaluation by the scientific community.

As smoking prevalence was least in our admitted COVID-19 patients, a significant correlation was seen among sodium level and PaO_2/FiO_2 Ratio and higher mortality rate among the stressed patients.

Key Words: COVID-19, Hypertension, PCR

INTRODUCTION:

Human coronaviruses (HCoV), in the 1960s, were first described by the discovery of HCoV-229E and HCoV-OC43, from the nasal cavities of human patients who were having a common cold, which caused respiratory and gastrointestinal infections.[1] SARS-CoV (2003), HCoV-NL63 (2004), HKU1 (2005), MERS-CoV (2012), and the latest one SARS-CoV-2 (2019) are the other human coronaviruses that caused serious respiratory tract infections, resulting in Corona Virus Disease (COVID-19).[2]

The morphology of coronavirus is large pleomorphic spherical particles with the bulbous surface so it named Corona comes from the Latin word "corona," meaning "crown." Human Corona Viruses vary significantly, as it causes the common cold the very harmless and MERS CoV the very lethal with more than 30% mortality rate.[3]

Major symptoms in CoVs was fever and sore throat with the less common pneumonia

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and bronchitis, and it spread in cold seasons.[4]

Still, there are no vaccines or antiviral drugs for the prevention or treatment of H CoV infection. The first coronavirus related outbreak of severe acute respiratory syndrome was described in November 2002 in Guangdong (China), and spread to 29 territories, during the 9 months including Hong Kong, Taiwan, Canada, Singapore, Vietnam, and the United State. Infected was 8098 people and 774 was killed worldwide.[5]

In the Middle East (April 2012), a second coronavirus related outbreak was described named the Middle East respiratory syndrome (MERS). First described in Saudi Arabia, and then, MERS spread to many other countries, Saudi Arabia, South Korea, the UAE, Jordan, Qatar, and Oman. Overall, it spread to 24 countries, with more than 1000 cases and more than 400 deaths.[1]

Again in South Korea, from a traveler from the Middle East, MERS was reported, during May and July 2015 total infected 186 persons, with a death rate of 36.[6]

Again the next MERS outbreak happened in countries of the Arabian Peninsula in August 2018 after 3 years, resulted in approx 147 infected and the death rate was 47. It affected Saudi Arabia, South Korea, and the United Kingdom too.[6]

On 31st December 2019, a pneumonia outbreak was reported in Wuhan, China, named as 2019 nCoV by the World Health Organization (WHO) and renamed by the International Committee on Taxonomy of Viruses that are SARS-CoV2. This was a new strain of HCoV.[7] To date, worldwide 14057897 confirmed cases, 594990 deaths, and 8359368 recoveries.

According to the government of Pakistan (ministry of health), a total of 260k confirmed cases with 5475 deaths has been reported till 17 July 2020. The highest number of cases has been reported in Punjab 89,023 followed by Sindh 110k, Khyber Pakhtunkhwa 31486, Islamabad 14454 and Baluchistan 11385 respectively.[8]

COVID-19 presentation varies from asymptomatic, mild symptoms to severe illness and mortality. Common symptoms are fever, cough, and dyspnea. Malaise and respiratory distress have also been reported.[1] the objective of this study was to describe clinical parameters, risk factors, lab parameters, and association of these parameters with the severity of disease in admitted COVID-19 patients at Corona Unit Farooq Hospital Iqbal Town Branch Lahore.

MATERIAL AND METHODS:

This was a retrospective study based on history, clinical records, laboratory records, and chest radiological features of admitted patients at the corona unit at Farooq hospital Iqbal town Lahore. The medical (laboratory) records were retrieved after taking permission from the head of the department Farooq hospital laboratory and informed consent was also taken from patients. The primary diagnostic method is reverse transcriptase-polymerase chain reaction (RT-PCR) assay of the nasopharyngeal swab. Only PCR positive patients were included. Children, PCR negative, and Acute Kidney Disease patients were excluded. All the data were analyzed using IBM SPSS statistical version 26.0.

RESULTS:

Of All 43 patients,16% of patients were presented with pulmonary symptoms & Encephalitis (responded to Acyclovir) and 84% of patients were presented with solely pulmonary symptoms (ARDS). (Figure-1)

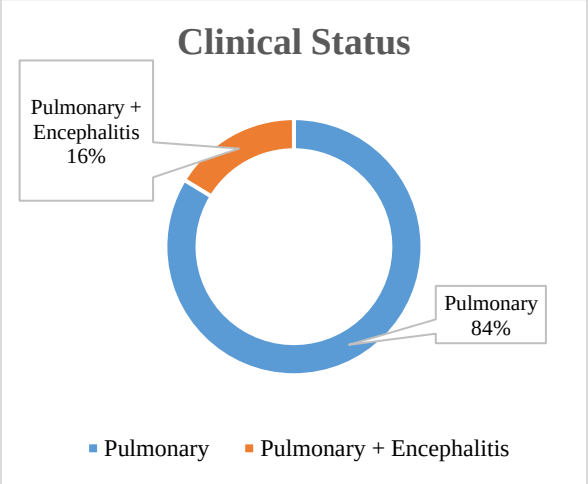

Figure-1 Clinical Status

Patients affected most at 40 years plus according to our study, the mean age was 59. Only 4 patients were below 40 years age. (Figure-2)

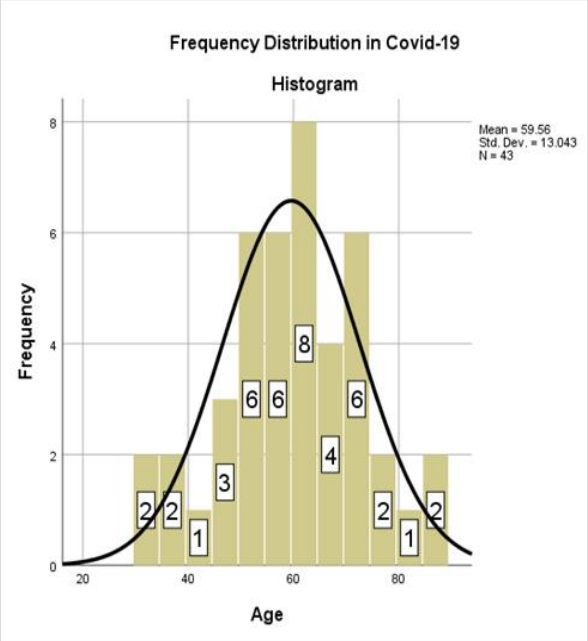

Figure-2 Age Frequency Distribution in SARS-CoV2

About 23% of patients were presented with Moderate ARDS (Acute Respiratory Distress Syndrome), 28% Mild and 49% patients were presented with Severe ARDS. (Figure-3)

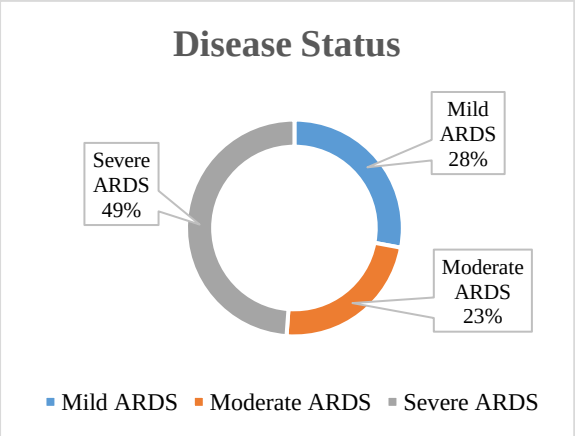

Figure-3 Disease Status

According to HRCT Chest there was 30% involvement of lung tissue was seen in 6.96% patients,40% in30.23% patients,50% in 4.65%, 60% in 11.63%, 70% in 27.91% and 80% in 18.60%. (Figure-4)

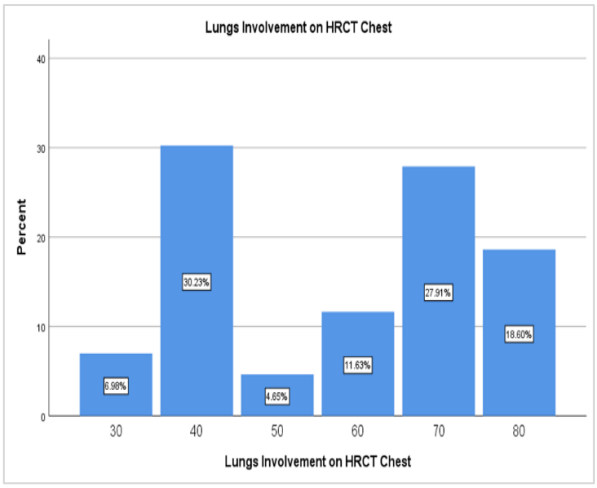

Figure-4 Lungs Involvement in HRCT Chest

Above 40% involvement of lung tissue was seen in 93.02% patients and below 40% involvement of lung tissue was seen only in 6.96% patients.

Overall critical patients were admitted to the Corona unit at Farooq Hospital Iqbal Town Lahore.

Among the Risk Factors Diabetes Mellitus was seen in 74.42% patients, pulmonary diseases like COPD, Asthma, Tuberculosis was seen in 23.26% patients, Hypertension was seen in 41.86% patients and IHD (Ischemic Heart Disease) was seen in 30.23% patients, Cerebral palsy was seen in 4.65% patients, Chronic kidney disease was seen in 6.98% patients and only 11.63% of patients were smokers. (Table-1)

Table-1: Risk Factors

Diabetes Mellitus	Yes	74.42%
	No	25.58%
Pulmonary Disease	Yes	23.26%
	No	76.74%
Hypertension	Yes	41.86%
	No	58.14%
Ischemic Heart Disease (IHD)	Yes	30.23%
	No	69.77%
Hepatitis	Yes	9.30%
	No	90.70%
Cerebral Palsy	Yes	4.65%
	No	95.35%
Smoker	Yes	11.63%
	No	88.37%
Chronic Kidney Disease (CKD)	Yes	6.98%
	No	93.02%
Typhoid	Yes	2.33%
	No	97.67%

Lab parameters played a very important role in diagnosis like Ferritin, D Dimer C-reactive protein, and LDH was raised in the maximum number of patients. According to our survey on admitted Covid-19 patients, Ferritin Levels were raised in all patients.
D-Dimer was raised in 60.47% patients, LFTs (Liver Function Tests) were raised in 79.07% patients, RFTs (Renal Function Tests) were raised in 27.91% patients, CRP was raised in 97.67% patients, LDH (lactate dehydrogenase) was raised in 95.53% patients, Hemoglobin below normal was only in 6.98% patients and TLC was raised in 23.26 % patients. (Table-2)

Table-2 Comparison of Lab Results

Ferritin Level	below 500	30.23%
	500-1000	32.56%
	1000-2000	27.91%
	2000-3000	4.65%
	above 3000	4.65%
D Dimer	Normal	39.53%
	Raised	60.47%
LFTs	Normal	20.93%
	Raised	79.07%
RFTs	Normal	72.09%
	Raised	27.91%
CRP	Normal	2.33%
	Raised	97.67%
LDH	Normal	4.65%
	Raised	95.35%
HB	Low	6.98%
	Normal	93.02%
TLC	Normal	76.74%
	Raised	23.26%

Plasma therapy was effective in 41.67% and was not effective in 58.33% of patients. (Figure-5)

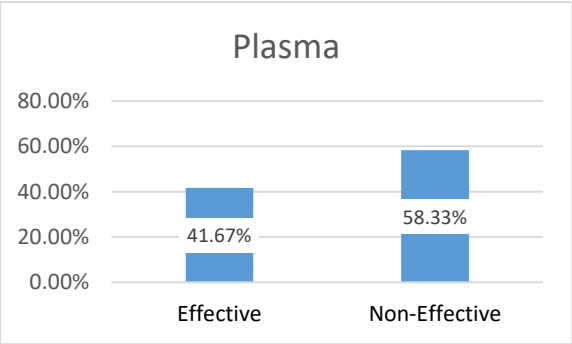

Figure-5 Plasma Effectiveness

Among the stressed patients at our Corona unit, 67% of patients expired, 22% of patients were discharged on request and only 11% of patients recovered. (Figure-6)

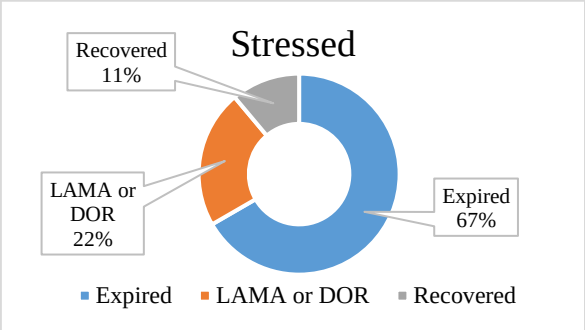

Figure-6 Relation between Stress and Outcome

Tocilizumab was seen effective in 61.54% of patients, showed an adverse reaction in 7.69% patients, and 30.77% this Drug was not effective. (Figure-7)

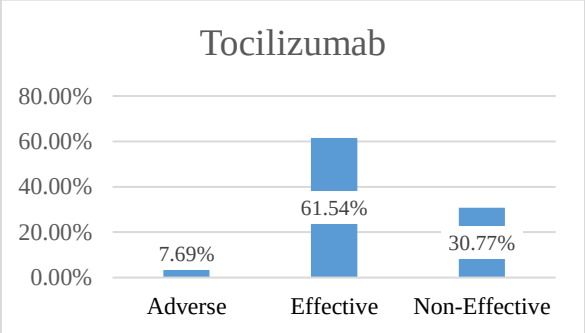

Figure-7 Effects of Tocilizumab

Invasive Ventilation was given only to 2 patients and it does not show any positive response in patients as lung compliance was severely affected but noninvasive ventilation especially Continuous Positive Airway Pressure (CPAP) was effective in 76.47% patients. (Figure-8)

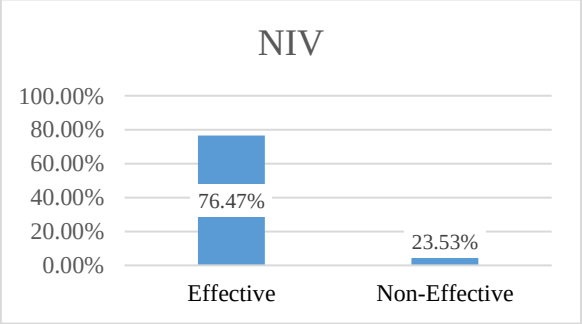

Figure-8 Effectiveness of Non-Invasive Ventilation

According to our survey on admitted Covid-19 patients, Levels of Sodium was Directly proportional to the PaO2/FiO2 Ratio, as Pearson Correlation between these two variables was significant at 0.01 level. (Figure-9)

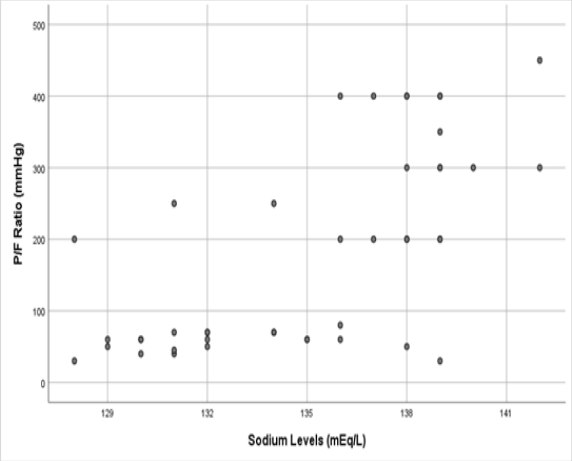

Figure-9 Sodium Levels v/s PIF Ratio

As the Sodium level goes down in blood thus the P/F ratio goes down. (Table-3)

Table-3 Correlation of P/F Ratio and Sodium Levels

Correlations		P/F Ratio (mmHg)	Sodium Levels (mEq/L)
P/F Ratio (mmHg)	Pearson Correlation	1	.664**
	Sig. (2-tailed)		.000
	N	43	43
Sodium Levels (mEq/L)	Pearson Correlation	.664**	1
	Sig. (2-tailed)	.000	
	N	43	43

Among these patients only 18.60% of patients expired, 9.30% were Discharged on request (clinically improved), percentage advised to stay in isolation until PCR for Covid-19 turns out negative, 72.0% patients were recovered. (Figure-10)

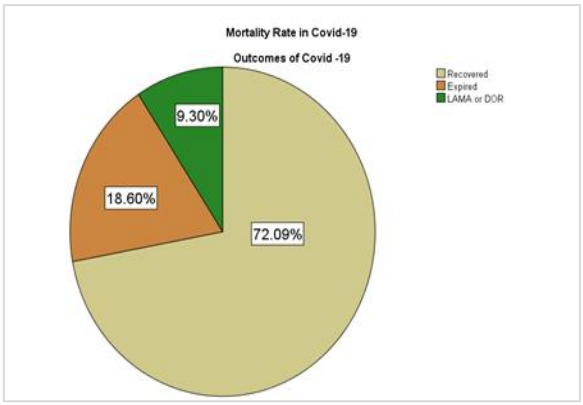

Figure-10 Mortality Rate in SARS-CoV2

DISCUSSION:

According to our knowledge, this study is the first one in Pakistan in which the association between hyponatremia and PaO2/FiO2 Ratio has been showing as well as the effect of Stress on Mortality Rate. The mean age showed in this study is 59 years, while Bhatraju et al showed that the mean age was around 64 years.[9]

Stress causes an increase in cortisol levels, activating adaptive changes in metabolism, cardiovascular functions, and immune system. This study showed that in COVID-19 admitted patient's mortality rate was 67% among the stressed patients. Dhillo et al reported mortality rate was increased by 42% due to stress-induced higher cortisol concentration.[10]

This study showed that hyponatremia is associated with advanced COVID-19 disease as this is correlated with decreased PaO_2/FiO_2 Ratio.

In COVID-19 infections, Respiratory failure from acute respiratory distress syndrome (ARDS) is the common cause of mortality, but a secondary hyper inflammation syndrome that is the release of cytokines may coming up with fatal outcome, causing multiple organ failure. In COVI-19 induced pathology, IL-6 is the important cytokines. So Tocilizumab, a humanized monoclonal antibody against the IL-6 receptor, has proved clinical efficacy in the treatment of seriously ill patients. Interleukin-6 plays a pathogenic role in these severe inflammatory conditions released by macrophages and monocytes causing

electrolyte imbalance by inducing the non-osmotic release of vasopressin so the SAID (syndrome of inappropriate antidiuresis) and thus ending up in Hyponatremia. So in our study in severe ARDS with Hyponatremia Tocilizumab was effective in 61.54% patients.[10]

Diuretics like furosemide was used to maintain fluid balance, to get rid of free water thus correct Hyponatremia and it played an important role in recovery.

In this study female patients (25.58%) were less affected than males (74.42%) and this is in accordance to another study carried by Wang et al., 2020.[11]

In this study, not a single patient was having mild or moderate symptoms as all admitted patients were having ARDS (Acute Respiratory Distress Syndrome). The case fatality rate was 18.60% and it's in accordance with Huang et al.[12]

Among these patients, 74.42% patients were having Diabetes Mellitus (uncontrolled) and so were critical as in another study showed that the Diabetes Mellitus is associated with mortality, severe COVID-19 disease, ARDS, and disease progression.[13]

In this study, 30.23% of the patients had IHD, Pulmonary Diseases, and Hypertension were seen in 23.26% and 41.86% respectively. So Diabetes Mellitus, Hypertension, Pulmonary Diseases, and Ischemic Heart Disease were among the most prevalent underlying diseases in COVID-19 admitted patients.[14]

An unexpectedly low prevalence of Smoking (11.63%)was seen in COVID-19 admitted patients at Farooq Hospital Iqbal Town Branch Lahore, as also seen in this study.[15] In another study, the meta-analysis based on Chinese patients suggest that active smoking does not apparently seem to be significantly associated with enhanced risk of progressing towards severe disease in COVID-19.[16]

CONFLICT OF INTEREST:

We declared that there is no conflict of interest.

CONCLUSION:

According to these findings, it is concluded that there is a significant correlation between sodium level and PaO_2/FiO_2 Ratio and higher mortality rate among the stressed patients.

AUTHOR'S CONTRIBUTION:

FR: Planing and collection of data

RA: Statistical analysis and drafting of article

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Review Article

COVID -19 PANDEMIC: EMERGENCE AND EPIDEMIOLOGY

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ABSTRACT:
Novel corona virus emerged as 6th public health emergency of International concern. Since mid-Dec. 2019 several cases of pneumonia like illness were reported in central Chinese city of Wuhan but later the virus started spreading to other countries. On 11th Mar. 2020, World Health Organization (WHO) declared it as global "pandemic". On 26th feb. 2020, first two cases of COVID-19 were reported in Pakistan. COVID-19 causes common cold in humans and is transmitted in a similar fashion form person to person via respiratory droplets. Its clinical presentation is milder in children as compared to adults population, while gender distribution showed that men accounted for 60% of all COVID-19 patients. till date no specific vaccine is available for immunization of public mass. No specific antiviral treatment has yet recommended by WHO for COVID-19. However, health authorities have suggested isolation and symptomatic treatment for infected individuals. Due to non-availability of specific medication and vaccination for COVID-19, WHO has suggested that the best preventive strategy to combat this virus is to avoid its exposure. Uses of face masks, gloves, hand sanitizers, covering mouth and nose while coughing or sneezing and social distancing can reduce the risk of exposure to the virus. keeping in view the guidelines for prevention and control of COVID-19, government of Pakistan took many measures to stop the spread of virus i.e establishment of quarantine centers, testing facilities, designated hospitals, public awareness campaigns and implementation of lockdown. But besides all these efforts there are many challenges faced by government e.g misinformation, lack of public awareness, false interpretations and rumors has made it difficult to combat this pandemic in Pakistan.

Key Words: COVID-19, Pneumonia, Pandemic, Immunization

History of pandemics:

A disease outbreak/epidemic occurring worldwide or over a very wide area, crossing International boundaries and usually affecting a large number of people is termed as a pandemic.[1] The first-ever recorded pandemic was "the plague of Athens", more than 2000 years ago, which lasted from 430 to 426 BC.[2] The plague remains the most devastating pandemic in history, that affected social and economic conditions of the society.[3] Smallpox pandemic was a second with an estimate of 56 million casualties.[4] Other notable pandemics in human history include cholera, typhoid, and influenza outbreaks affecting millions of people across the globe.[5]

Emergence of Wuhan Epidemic: COVID-19:

First manifested as a suspicious case of pneumonia in Wuhan, Hubei province of China, the novel Corona Virus emerged as the 6th Public Health Emergency of International concerns[6] resulting in more than 43000 deaths across a stretch of 28 countries by 11th Feb 2020.[7] Therefore, by March 2020, this ambiguous global crisis was declared a pandemic.[8]

Since December 2019, an alarming acceleration was noticed in the cases of corona virus-infected pneumonia in Wuhan.[9] Initial, 41 cases reported with respiratory symptoms, had a history of exposure in the Huanan seafood market where in addition to seafood and chicken, other wild animals were also sold. The Huanan Seafood market of Southern China was allegedly held responsible for coronavirus outbreak. Based on the clustering of cases in Huanan seafood

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market among old men brought an assumption that coronaviruses have 96% of the genetic makeup similar to bats.[10]

The government sealed the Wuhan market in an attempt to contain the disease but failed to put the rising number of cases to a halt. Evidence of the human to human spread was spotted when the hospital staff contracted COVID-19, setting up the globe on high alert. The Chinese Government continued intensive surveillance and epidemiological analysis in an attempt to follow up on the emerging cases of coronavirus by placing Wuhan and neighboring cities under quarantine to limit the spread of infection. All schools, colleges, factories, and airports were sealed. All social gatherings and International travel were banned.[11] During the outbreak, an additional lookout for the Chinese officials and researchers was the New Year Holiday that expected a massive flow of population across the country. [12] China felt the initial blow of the COVID-19 epidemic with its peak in mid-February, the country's daily report exceeded 5,000 cases per day. As of June 15, 2020. Chinese health authorities had acknowledged over 83,181 cases and 4,634 deaths – most of them being bagged by the province of Hubei.[13]

COVID 19: Public health emergency of International concern to Pandemic:

By the end of December 2019, WHO was informed about 27 cases of " atypical pneumonia" in Wuhan city by higher authorities of China.[14] By the 20th of January 2020, Wuhan confirmed 258 individuals had tested positive for COVID-19 along with six deaths.[15] As COVID-19 has deemed an emergency epidemic by 22nd of January, rapid response by the Wuhan local government was shown and the lockdown was imposed throughout the municipality by 23rd of January, 2020.[16,17] Lockdown measures including public transport within and out the city halted, businesses shuttered, jobs suspended, schools closed and strict stay at home ordered. Aiming to localize, isolate, and monitor the epidemic, a key measure that was taken to report and streamline the epidemic data was to electronically notify the National infectious disease system (NIDS).[18] Doctors would notify every suspected and confirmed case to construct a daily statistical report of COVID-19 in each area.[17] After the celebrations of the new year and movement of a large population, the virus then started spreading to other countries too. The first case reported outside China was in Thailand on 13th January 2020.[19] With the emergence of a large number of cases Internationally, WHO declared this outbreak as a "Public health emergency of International concern" by the end of January 2020. On 11th February 2020, a new name "**COVID-19**" was announced by WHO.[20] The panic started to kick in as the disease started spreading to various parts of the world, confirmed cases were reported in a large number of countries covering gulf area and Asian region by the end of February-2020.[21] Soon, on 11th March-2020, WHO declared it as a **global pandemic**.[22] After China, the virus hit European countries causing a huge number of fatalities, more than 50,000 cases were reported in Italy by 21st Mar-20.[23] It then spread across France, Spain, and the UK. After Europe, the wave hit the United States of America resulting in a great number of mortalities, New York City was worst hit by the outbreak with 30,856 deaths up to date.[24]

Globally, 8,175,482 cases were confirmed with 443,730 deaths and 3,956,263 recovered till 17th June-2020. Highest number of cases reported in US (2,137,731) followed by Brazil, Russia and India.[25] The Americas region is most affected in the world with 3,841,609 cases and 203,574 deaths, followed by Europe (2,434,184 cases/ 188,779 deaths), Eastern Mediterranean (796,759 cases/ 17,558 deaths), South-East Asia (486,673 cases/ 13,409 deaths), Western Pacific (199,922 cases/ 7,228 deaths) and Africa (181,903 cases/ 4,235 deaths) respectively.[26]

COVID -19 in Pakistan:

By February 24, WHO had reported cases in many other countries such as Japan, United

States, Thailand, Denmark, Ireland and subsequently declared that this virus has affected 196 countries around the globe.[27] WHO attributed the main reason of spread as trade with China and International traveling across the globe.[28] At that time of crisis, Pakistan was surrounded by two neighboring countries infected with COVID-19, including China, from where this disease arose and had the highest number of deaths and Iran.[29] On 26th February 2020, the first two cases of COVID-19 were reported in Karachi and Islamabad. The number of cases reached 20 within the first 15 days. All the cases had a history of International traveling.[30] By March 26th, 2020, 1179 cases were confirmed in Pakistan with 9 deaths.[31] On Monday, April 6th, 2020, there were a total of 3277 confirmed positive cases among which 18 were critical and 50 mortalities happened. The highest number of cases appeared in the Punjab province (1493) followed by Sindh.[32] On 15th May 2020. WHO declared total 4,628,785 COVID positive cases and on the same day, situation of Pakistan reflected 38,799 confirmed cases with 834 deaths with 28.05% (n = 10,880) recoveries.[33]

Epidemiology of coronavirus:

Agent: International Committee on Taxonomy of Viruses has named this virus as novel coronavirus,2019 as it was a new addition in coronaviruses family. The disease was termed as COVID-19. World Health Organization announced this name on 11th February, 2020.[34] This is a single-stranded RNA virus with a crown-like structure. The majority of the viruses in this family infect animals. Till today, there are only seven identified species that can infect humans. This noval coronavirus has been found with genetic material similar to bats.[35]

Source of Infection:

It is estimated that 2% of the infected population with COVID-19 presents as asymptomatic carriers and 5-10% of the infected population presents with respiratory signs & symptoms.[35] Respiratory droplets, nasal secretions, salivary secretions are a potential source of infection. Respiratory droplets less than 5-8 microns generated by coughing, sneezing, and talking of infective cases play a significant role in maintaining the chain of transmission of infection.[36] According to the World health organization, asymptomatic cases play a significant role in the generation of a propagated epidemic caused by this virus.[37] Contamination of fomites and surfaces with infected droplets can also be a source of infecting susceptible individuals. A close distance of 6 feet and 1.8 meters with an infected individual is a risk factor for contracting the disease.[38]

Route of transmission:

COVID-19 is a highly contagious disease and has multiple characteristics different from other infectious diseases.[39] Human-to-human transmission has been evidenced by respiratory droplets, close contact, and fomites. Evidence for vertical transmission is still lacking.[40]

Incubation period:

The range of incubation periods varies from day one to 24 days with a mean of 3 days. and the meantime from symptom onset to fatality is 14 days and the median latency is 4 days.[41] The period from the onset of COVID-19 symptoms to death ranged to an average of 14 days.[42]

Period of communicability:

COVID-19 is highly infectious. Studies have shown that infective case can communicate this virus to others even in their incubatory phase. It has been estimated that transmission to susceptible hosts can occur even five days before the development of symptoms in the infective case.[43] On average, each patient of COVID-19 transmits the infection to an additional 2.2 individuals.[44]

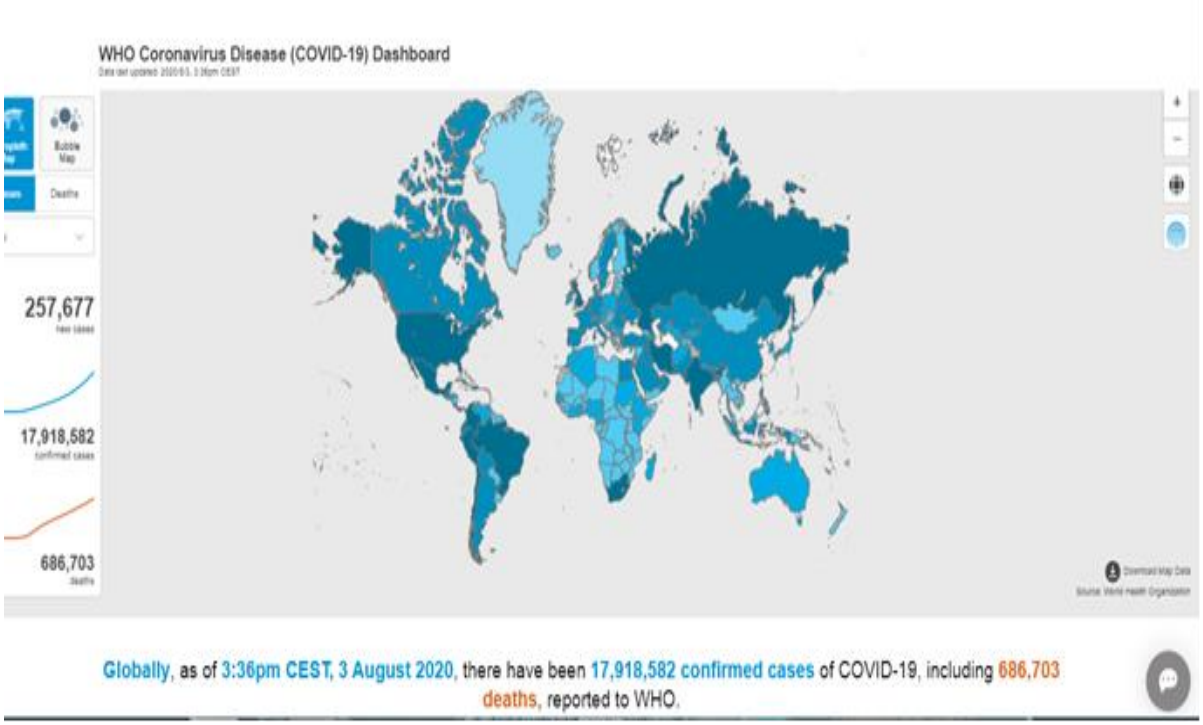
Secondary attack rate:

The risk of transmitting the infection to household contacts was reported between 12.4% [45] to 16.3%[46] in studies conducted in

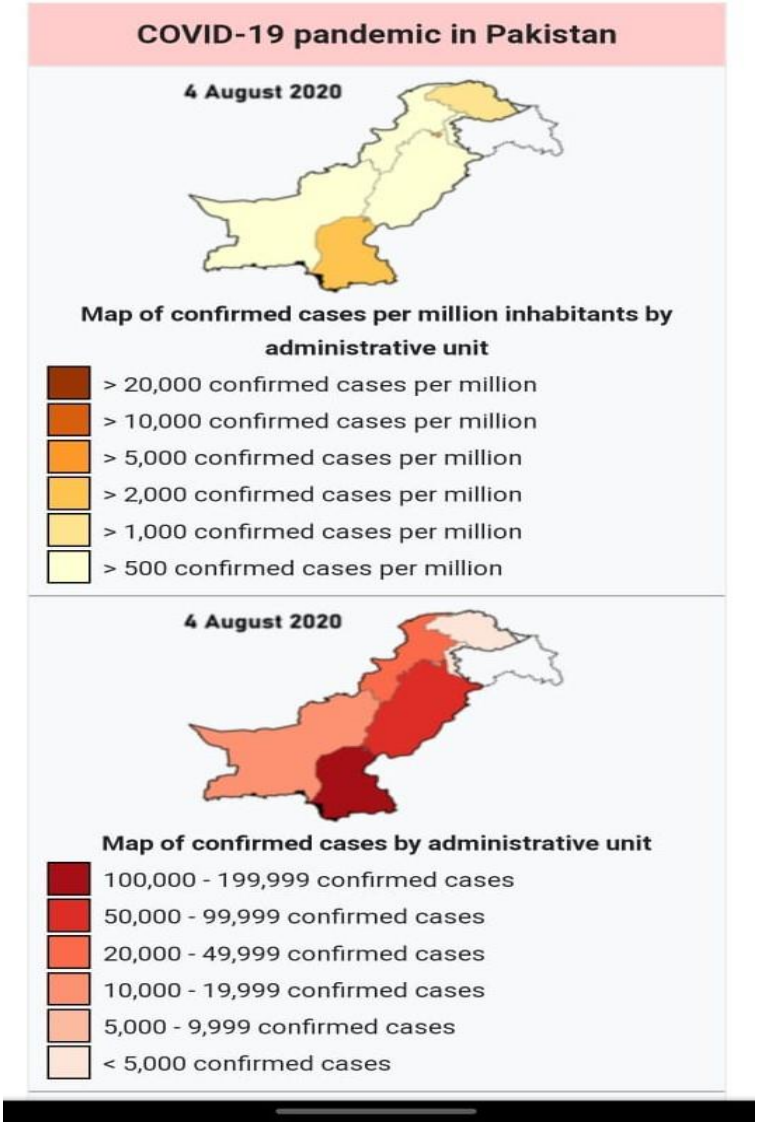
China. Secondary attack rate was highest in spouses with 27.4% and lowest in children 4%.[47]

Geographical distribution worldwide:
According to sources of WHO, accessed on 3rd August 2020, 17,918,582 confirmed cases have been reported globally. The maximum number of cases has been reported from the United States of America which is 4,582,276 whereas the minimum number of cases (only 3) has been reported in Anguilla. Till date, Brazil has 2,707,877, India 1803,695, Iran 309,437, Spain 288,522 cases are among the countries who have reported maximum cases.[48]

Geographical distribution in Pakistan:
Worldwide COVID 19 trackers showed on 6th August that Number of cases in Pakistan were 281,836. Maximum cases till that date were reported in Sindh (122,373), followed by Punjab (93,847). The number of cases in KPK were 34,359 and only 11, 793 cases were reported in Baluchistan.[49]



Figure–1: Worldwide cases of COVID 19 and their distribution



Figure–2: Pakistan cases of COVID 19 and their distribution

Age distribution:

COVID-19 is milder in children as compared to the adult population.[50] Among hospitalized patients, the average age has been reported between 49-56 years.[51] The majority of deaths are in the elderly population who are 60 years and above.[52] In Pakistan, it has also been observed that the elderly are more prone to infection than younger people, and also accompanied by the increased mortality rate due to a decrease in immunity.[41] Elderly people are most prone to SARS-CoV-2 and the maximum number of deaths are reported in the elderly population of more than 75 years[19] and most of the patients who died had comorbidities usually cardiac diseases or a history of prior surgery.[53]

Gender distribution:

Gender distribution shows men accounted for 60% of COVID-19 patients.[54] Even in data of hospitalized cases, the predisposition of male gender was observed ranging from 54 to 73% of cases.[51] The older men are more prone to infectious diseases with low immunity and poor resistance to infections. The COVID-19 associated mortality has shown a pattern of higher mortalities in males than females in China and Italy.[41] Another study shows that women are less susceptible to viral infection than men because of the protection of X chromosome.[55]

Risk factors:
Male gender and old age are risk factors for COVID-19 infection.[41] Associated comorbidities such as hypertension, diabetes, cardiovascular disease, and respiratory disease are now known factors to show more susceptibility towards COVID-19 infection and even high mortality associated with this infection.[55] Low immune status, high LDH, and d-dimers were found with increased susceptibility for COVID-19 too. Body in a state of stress and poor nutritional status favored coronavirus infection.[56]

Vaccine:
Till date, no vaccine is available for immunization of the mass public. Field trials have been conducted. WHO and many International agencies are trying to formulate vaccines against COVID-19 and these are awaited in the market.

Herd Immunity:
Centre for disease control (CDC) defines herd immunity as the immunity developed by a fraction of the population to indirectly offer immunity to those individuals who cannot get vaccinated and are immune-compromised.[57] Herd immunity depends upon the number of active cases, subclinical cases, vaccination of population, structure, and movement of population. In the absence of vaccine and restriction of movement in population, the most important factor to produce herd immunity is the number of individuals infected with this disease. WHO recommends that for a population to develop herd immunity, a minimum of 60% of the population should be immune to stop transmission to a susceptible population. This is supported by a recent study conducted in the United States concluded that almost 50% to 60% of the population is supposed to be immune for herd immunity to work for those susceptible to coronavirus.[58] A recent study conducted in Japan hypotheses that the S type of the virus is capable of inducing herd immunity whereas the L type of the virus replicated increasingly having a high morbidity and mortality rate so does not produce the desired number of immune individuals to stop the chain of transmission. A study conducted in India (May-2020) concluded that the virus needed to stay for a long period in a particular geographical area to reach the desired herd immunity threshold value and that subsequently decrease the mortality rate.[59] Another recent study in China concluded that South Korea had 1% of their population infected with the virus and this was less than what they needed for the herd immunity to work in their population.[60] The role of herd immunity and its level is still debatable at the level of the World Health Organization.

Sign and symptoms:
Transmission of the novel coronavirus occurs through respiratory droplets and aerosols from coughing and sneezing.[61] The virus uses the ACE-2 receptor to enter the bronchial cells and thus it is postulated that the virus can infect extrapulmonary tissues that express the angiotensin-converting enzyme (ACE-2) receptor.[62]
Symptoms appear 2-14 days after exposure to the virus.[63] The clinical features of the disease vary from individual to individual. Signs and symptoms range from being asymptomatic or mild to causing acute respiratory distress syndrome (ARDS) and multiorgan failure and ultimately death.[19,64] Symptoms most commonly seen in patients with mild disease are fever which is variable in degree and unresponsive to antipyretics, cough which in most cases is dry cough but may also be productive in a subset of patients and shortness of breath. Relatively uncommon symptoms include headache, nasal congestion, sore throat, and myalgia.[63,64] A small proportion of patients also have ocular findings consistent with viral conjunctivitis.[65] A fraction of patients also report with loss of smell and taste, often being very first apparent symptom.[66-68] As the disease progresses, those patients with co-morbidities develop pneumonia and/or acute respiratory distress syndrome (ARDS).

Pneumonia presents with fever, hypoxia, oxygen saturation levels below 90%, respiratory distress and tachypnoea.[64] Bilateral ground-glass opacities or consolidation were found in X rays of infected patients.[69]

In addition to respiratory symptoms, patients testing positive for the coronavirus also have gastrointestinal symptoms such as anorexia, nausea, vomiting, and diarrhea being the most common. GI symptoms in these patients are relatively uncommon as compared to respiratory symptoms but are present. Even though, these manifestations can be extremely uncomfortable and inconvenient for the patient they do not cause any change in the clinical outcome of the patient.[70] Fecal samples in a subset of patients with GI symptoms show the presence of viral RNA which may also indicate fecal-oral transmission (need more evidence) and causation of GI symptoms.[71] Some degree of liver damage in a minute percentage of patients is also evident by the presence of abnormal liver function tests (LFTs). Clinically significant liver dysfunction is a rare occurrence.[72]

Causes of death in critically ill patients in addition to respiratory failure also include multi-organ damage and failure, to name a few, the heart, kidney, and the haematolymphoid systems.[73] Patients with renal damage or renal failure are found to have oliguria, proteinuria, haematuria, hypoalbuminemia, elevated serum creatinine, and elevated blood urea nitrogen.[74,75] Due to the high grade systemic inflammatory response of the body, the incidence of cardiovascular injury is high. Patients developing complications of cardiovascular diseases such as acute myopericarditis left ventricular (LV) dysfunction and pericardial effusion have a poor prognosis.[76,77] Critically ill patients are also at the risk of developing coagulopathies. The pro-inflammatory state of the body results in abnormal coagulation parameters. Disseminated intravascular coagulation (DIC) and venous thromboembolic events are common coagulopathies seen in these patients.[78,79] The pro-inflammatory state results in fulminant and fatal hypercytokinemia with multiorgan failure and eventually death.[64]

Treatment:

Coronavirus disease 2019 (COVID-19) can range from mild disease to severe respiratory failure and may require Intensive Care Unit admissions. There is no specific treatment for the COVID-19 available as of yet so WHO emphasizes treatment as supportive and symptomatic. The treatment is mainly symptomatic and oxygen therapy, the latter being mainly required in severe cases.[80] Because there is no prior experience of therapy, the current treatment of novel-n COV is based on a limited number of therapeutics and pharmacological preparations. WHO and CDC are working hard to support randomized and non-randomized control trials to find out options for treatment.[81]

Patients having fever must be treated with antipyretic drugs. The most commonly used drugs for this purpose include Ibuprofen (orally 5-10mg/kg every time) and Acetaminophen (orally 10-15mg/kg every time). WHO encourages the intake of fluids, multivitamins as immunity boosters. Patients require increased protein and nutritional support while isolated in hospital wards or at home. So, to boost the immunity of the patients, a protein-rich diet and multi-vitamins particularly vitamin C should be an essential part of the daily diet. However, those who are unable to take it orally should be supported with high protein/low glucose formulas parenterally.[82]

Remdesivir has been found effective in patients of coronavirus. Remdesivir exhibits broad-spectrum antiviral activity against RNA viruses. The dose under investigation for the treatment of COVID-19 is 200mg intravenously (IV) on day 1 and then followed by 100mg IV daily for up to 10 days, infused over 30-60 minutes.[83] Immediate oxygen therapy must be provided in severe cases either by oxygen mask or nasal catheter.[84]

In COVID-19 patients with decreased arterial oxygen partial pressure leading to severe hypoxia and tachypnoea, acetazolamide has been found effective in the regard that it improves minute ventilation and also decreases elevated lactate dehydrogenase levels caused by hypoxia. Other drugs such as nifedipine and phosphodiesterase inhibitors can also be used for the same purpose.[85] Patients with severe pneumonia (also seen in patients infected with novel coronavirus) have activated platelets and clotting factors which can further complicate the condition. So, aims are at assessing the efficacy of anti-thrombotic treatment including aspirin and low-molecular-weight heparin (LMWH). However, aspirin has been found effective in patients with severe pneumonia.[86]

Chloroquine and hydroxychloroquine have also been found effective in the treatment of infected patients at early stages. WHO has banned its trial due to complications faced in patients but recently has permitted its reuse in clinical trials.

WHO RECOMMENDATIONS FOR PREVENTION:

As there is no vaccine currently available for COVID-19, the best prevention is to avoid exposure to the virus. Use of face masks and gloves, hand sanitizers, covering mouth and nose with a flexed elbow while coughing and sneezing and avoiding contact with the infected person while maintaining proper distance as well as refraining from touching nose, eyes, the mouth can reduce the risk of exposure. [87] According to WHO, personal protection equipment (PPE) should be used where there is a high risk of infection.[88]

Temporary isolation areas should be formed for suspected cases and the surfaces that are frequently in contact with the patient must be disinfected regularly.[89] Active corona patients should be kept in strict isolation for two weeks until the lab tests return to be negative.[90] Travelers from other countries who develop symptoms either during travel or within 14 days of their return should seek medical attention. Complete isolation for 14 days should be practiced after traveling.[91,92] Screening tests should be done at the point of entry and free testing for maximum health coverage to avoid an outbreak in migrants and refugees.[93] Neonates born to COVID positive mothers should be quarantined as they can be the carrier since vertical transmission is not yet ruled out.[94] Media Tools should be used for health education empowerment to practice preventive measures at the global level.[95] Telemedicine to be used for decreasing patient overload in the hospitals for avoiding transmission.[96] Cancellation of mass gatherings, closing public transports, dismissal of educational institutes, and workplaces shall be conducted. [32]

Efforts of Government of Pakistan:

The government of Pakistan took many measures to stop the spread of viruses e.g establishment of quarantine centers, testing facilities, designated hospitals, public awareness campaigns, implementing lockdown, and social distancing.[97] Moreover, the government of Pakistan has established a COVID-19 relief fund for the public.[98] Isolation wards were established all over Pakistan and there are designated hospitals for the treatment of Corona patients.[99] All schools, colleges, and universities were closed on 13th March 2020 to avoid the further spread of the virus. Daily wage labor is the most vulnerable part of Pakistan's population. Pakistan's labor force comprises of 72.5 million people. As a developing country, it was not possible for the government to support the daily basic needs of all wagers. Thus, a partial lockdown was implemented by the government.[100,101] The government of Pakistan laid stress on the community for social distancing and self-isolation to stop the spread of the virus.[102] After the declaration of the corona outbreak as a Public Health Emergency of International Concern (PHEIC) by the WHO, the Government of Pakistan issued a National Preparedness and Response Plan for COVID-19. This included Guidelines/SOPs

for different sectors to comply strictly to reduce the spread of this disease.[103] Besides all these efforts, there were many challenges faced by the Government of Pakistan. Misinformation, lack of public awareness, false interpretations, and rumors made it difficult to combat this pandemic.[104] A critical time for all the stakeholders of the government to establish an efficient control system to combat COVID-19 with community participation and multisectoral coordination is required.[30] Large masses of Pakistan are not well aware of the gravity of the situation because of illiteracy. Moreover, many doctors and patients are losing their lives to face the challenge.[105,106] Being a propagated epidemic and human to human transmission, social distancing, home quarantine, isolation of cases are the most effective measures to combat this pandemic.

AUTHOR'S CONTRIBUTION:

KN: Literature search and write up of WHO recommendations for prevention

LJ: Literature search and write up of treatment

MUZ: Literature search and write up of sign and symptoms

IM: Finalization of write up, supervision and critical analysis

KN: Literature search and write up of epidemiology of coronavirus

MS: Literature search and write up of public health emergency of international concern to pandemic

NF: Literature search and write up of herd immunity

RS: Literature search and write up of emergence of Wuhan epidemic

MM: Literature search and write up of COVID-19 in Pakistan

DA: Literature search and write up of history of pandemics

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Review Article

COVID -19 PANDEMIC- CHALLENGES IN PAKISTAN

Rahat Sarfraz[1], Rehma Dar[2]

Pakistan has witnessed a huge increase in Corona cases, with the total tallying to two hundred thirty thousand since the onset of the pandemic with the initial two confirmed cases on February 26, 2020. The fatalities related to it has reached to 4304 (3.3%) in Pakistan.[1]

The pandemic has caused a strain on the public health systems and economies worldwide. Pakistan being a developing country, also has to face a lot of challenges during this Covid-19 pandemic.

Lack of Health care facilities:

In Pakistan, for every 10,000 people, there are only 9.8 physicians, five nurses, and only six hospital beds. The country spends only 2.8 percent of its GDP on health. On the contrary, the developed countries have, on average, 55 hospital beds, over 30 physicians, and 81 nurses per 10,000 people. In the context of Covid-19, Pakistan possesses only 0.32 ICU beds per 100,000 people and 1 ventilator per 100,000 people. This data reflects on the level of the threat these pandemic poses to deal with the needs of 200 million people in Pakistan.[2, 3]

The Economic downturn

With no obvious way to increase the capacity of the health care system, the only alternative to prevent the spread of viruses is preventive measures such as social distancing, mass testing, lockdown, and quarantining. The lockdown and consequent interruptions in supply chains have a negative impact on the economy and society, particularly the poor. The shutdown measures have affected small and medium enterprises and daily wagers.

The GDP of the country has shrunk to 0.38%. According to a report, this pandemic can result in an estimated 3 million being unemployed, and the poverty rate can surge to 33.5%.[3-7]

Urbanized cities and Rural Areas - Averting a spillover

In Pakistan, 65 % population is rural-based, whereas 35 % population dwells in urban areas. The main cities, like Karachi and Lahore, have seen the main thrust of the coronavirus. These cities are heavily urbanized with the huge population residing in small residential units makes it impossible to have potent social distancing to prevent viral spread. Consequently, the health care system has been pushed to the brink as almost all hospitals and facilities have been filled to their capacities. In such a situation, if the rural population also gets infected in the same manner, the consequences could be disastrous. Another challenge regarding the containment of viruses is the level of awareness, especially in rural areas. Since most of the people are not literate and don't have access to high-speed Internet or media, it is difficult to enforce safety SOPs in rural areas.[8, 9]

Social & Cultural factors

The social, cultural, religious beliefs, and lack of confidence in government and institutions are also major hurdles to deal with the pandemic. Shaking hands and hugging are deeply entrenched in our culture. The folks consider Covid-19 a conspiracy being made against their way of life.[10, 11]

COVID 19 & Social stigma

Another challenge, Pakistan is facing in dealing with COVID 19, is the social stigma associated with it and its impacts. The reason for the stigma associated that not

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much is known about it as it is a new disease is causing fear and confusion among the public. The stigma has driven people to hide illness, preventing them from getting tested, quarantined and seek medical care.[11]

Illiteracy, Inequality, and poverty

Illiteracy, Inequality, and poverty are also major challenges to combat COVID 19 pandemic in developing countries like Pakistan. Providing and enforcing the use of personal protective equipment (PPE) to a large population is challenging. The poor are at high risk of getting affected due to a compromised immune system and unequal access to health care facilities. Moreover, lockdown implemented in other countries was not readily acceptable to daily wagers as well as to the business community due to poor economy.[10]

Lack of Coordination between different levels of government

The lack of coordination between federal and provincial governments has been detrimental to the country in its fight against corona. This gives a negative image to the common man that policymakers themselves are ambiguous in their goals in combating pandemic.[10]

The Infodemic

The COVID-19 has created a situation of high uncertainty creating a propaganda spectrum on electronic, print, and social media. This misinformation and disinformation both collectively form an infodemic part of the pandemic. The competitive environment has created compromises in the verification of factual information resulting in more anxiety and depression among the public in general.[10, 11]

Technology Tracking Testing

Pakistan does not possess the technology which could effectively counter the spread of the virus as it has been deployed by developed countries. China effectively used Artificial Intelligence (A.I.) for tracking potential coronavirus carriers. Moreover, cloud-based Coronavirus diagnostic tool has been used by some countries to detect a virus in less than 20 seconds.[12]

Although Pakistan is a nuclear state but lacks expertise, facilities for mass testing and infrastructure like high speed broadband network for gathering real time information to effectively control disease.

AUTHOR'S CONTRIBUTION:

RS: Conception of Idea and study design
RD: Data collection and drafting article

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Review Article

ROLE OF PHYTOCHEMICALS IN THE TREATMENT OF COVID 19: AN UPDATE

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ABSTRACT:
WHO declared the Outbreak of novel coronavirus disease as a global health emergency on 30th January, 2020. COVID-19, previously known as 2019-nCoV originated from Wuhan, China, at the end of 2019 with symptoms ranging from the common cold to fatal diseases in population worldwide. Due to the lack of specific treatment and vaccine, main strategy for COVID-19 management is supportive therapy complemented by antibiotics, antimalarials, anti-virals, corticosteroids, and convalescent plasma. There is a dire need for the development of an anti-COVID-19 treatment that is effective against antigenically diverse viruses. At present, there is nor specific neither effective treatment that targets coronavirus; in fact, the development of such treatment may take months or even years, so we must focus on treatments related to natural origin. Therefore, the use of traditional medicinal plants with the potential of targeting SARS-CoV-2 and its pathways can be suggested as a possible therapeutic approach.

Key Words: Phytochemicals, Herbal, COVID-19

COVID-19: INTRODUCTION

The family of Coronaviridae consists of single-stranded RNA viruses, which were considered as the source of respiratory tract infections and common cold in the elderly and people having weak immunity. In 2003, Severe Acute Respiratory Syndrome (SARS) caused by agents belonging to the beta coronavirus subfamily emerged in China and presented a need for research on SARS related coronavirus. After 9 years, Middle East Respiratory Syndrome (MERS) appeared in Saudi Arabia, having 2492 confirmed cases.[1] At the end of 2019, a disease resembling pneumonia emerged in Wuhan, China, which was later named SARS-CoV-2. It was thought to spread from animals to humans.

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COVID-19 became the pandemic hazard to the health of the community. Most of the patients suffered from respiratory difficulty, body aches, fatigue, dry cough, fever, shortness of breath, and in some cases, pneumonia. There was an enormously accelerated transmission of this disease in humans.[2] The exact source or origin of that virus was not known; however, some investigations showed its origin from the Wholesale market of Wuhan Seafood. This association indicated the transmission of the virus from animals to humans and then from humans to humans which in turn lend a hand in spreading the disease world wide.[3]

Coronavirus was considered as a pandemic by the officials of the World Health Organization (WHO) on 11th March 2020. Almost 14, 36198 cases of COVID-19 were recorded on 9thApril 2020, including 85,522 deaths resulting in a 5.95% fatality rate.[4] Outbreak of coronavirus affected almost 209 countries out of which Pakistan was ranked as one of the most affected countries. The highest number of coronavirus cases were recorded in the

USA to date. After USA, the maximum number of cases was recorded in Italy, followed by Spain. China, the neighboring country of Pakistan, was highly affected by COVID-19. From the west, Italy, and from the north, Iran had the highest number of COVID-19 related mortalities.[5] WHO warned about its rapid spread because this pandemic took only 67 days to reach 100,000 cases from the first reported case, 11 days for 2nd 100,000, 4 days to reach 3rd 100,000, and in just another 2 days' positive cases reached up to 4th 100,000. Asymptomatic patients also became one of the sources of spreading the infection. The first case of coronavirus was reported in Pakistan on 26th February 2020 in Karachi. Later on, coronavirus positive cases were reported in Pakistan due to travel history from Iran, Saudi Arabia, and Italy.[6] On 10th April 2020, 54706 suspected cases were reported in Pakistan. The attack rate of coronavirus was estimated almost to 2.3 per 100,000 population of Pakistan. According to the update on 10th April 2020, almost 49% of cases were reported from Punjab. Sindh reported the second-highest number of cases of coronavirus (26%) followed by KPK (13.2%).[4]

The management and prevention of COVID-19 is an essential issue. Collective efforts should be made by the government and the public to control this disease, such as cleaning of our surroundings and to avoid coughing and sneezing in public places.[7]

Given the current situation, the availability of thorough information for everyone is of utmost importance as this disease presents with a different pattern in each individual.

Pathophysiology:

The coronaviruses are enveloped RNA viruses and utilize host cell's machinery for replication of their genome. SARS-CoV-2 contains four major structural proteins: spike (S), envelope (E), membrane (M), and nucleocapsid (N); 16 non-structural proteins and eight accessory proteins.[8] The infection process begins when a virus enters the human lung cells by endocytosis then binds to the alveolar angiotensin-converting enzyme (ACE) 2 using S proteins, which are activated by Transmembrane Protease Serine 2 (TMPRSS2). The viral E proteins then fuse with the endosomal membrane and release the viral genome into the host cell cytoplasm.[9]

Later, viral RNA-dependent RNA polymerase (RdRp) mediates the genome replication and transcription of subgenomic RNA. This leads to the synthesis of viral proteins. These proteins get inserted in the endoplasmic reticulum (ER) and later moved into the endoplasmic reticulum-Golgi intermediate compartment (ERGIC), where the viral genomic RNA is packed and encapsulated by N proteins to form mature virions.[10] The viral proteases: 3-chymotrypsin-like protease (3CLpro) and Papain-like protease (PLpro) cleave peptides of virus and convert them into basic units that are involved in the replication.[11] Then virions are expelled out by exocytosis.[9] Consequently, the host's immune system gets activated, and inflammatory cytokines like interleukins and TNF-α are produced. Eventually, the uncontrolled inflammatory response may lead to lethal conditions like respiratory depression or shock, resulting in patient's death.[12]

The detailed insight into the pathogenesis reveals that S protein, TMPRSS2, RdRp, 3CLpro, and PLpro can be targeted for the development of COVID-19 therapy.

Prophylaxis and Allopathic Treatment:

Scientists are working all around the world to develop a vaccine for coronavirus including whole virus (inactivated and live attenuated) vaccines, genetic (DNA or RNA) vaccines, viral vector vaccines (vaccines using adenoviruses or other viruses) and protein-based (virus-like particle recombinant) vaccines. For prophylaxis, supplements are being advised, including zinc, vitamin C, D, and E, to boost immunity in an individual for natural combat against the virus until a

vaccine is developed. Based on observations and researches, different drug groups are being used for the treatment, such as anti-viral drugs that inhibit viral replication, ion channels as well as serine proteases. Anti-viral drugs that are available for herpes, hepatitis, acquired immunodeficiency syndrome, and influenza had been used effectively in earlier outbreaks of viral infections such as SARS-CoV, Ebola hemorrhagic fever and MERS-CoV, so these are also being given for treating COVID- 19.[13] Antimalarial drugs with compounds like antifolate, aryl amino-alcohol, and artemisinin are also being given as these inhibit viral growth, but their disadvantage is the development of antimalarial drug resistance.[14] Researchers suggest that hydroxychloroquine (HCQ) or it's combination with azithromycin (AZ), which is an antibiotic drug decreases viral load in COVID-19.[15] Teicoplanin, another antibiotic previously showed efficacy in inhibiting the first stage of the viral cycle of MERS coronavirus in cells of human. Therefore, it has potential in the treatment of patients with Coronavirus.[14] Whereas, doxycycline inhibits the virus's serine protease as well as post-infection replication, thus reducing viral load.[16] ln addition, tetracyclines can also exert its anti-inflammatory capabilities along with other anti-inflammatory drugs such as inhibitors of JAK-STAT, which are used against rheumatoid arthritis. Some of the recent studies showed that Baricitinib, along with Remidesivir, decreases viral load.[17] Drugs such as aspirin, acetaminophen, and colchicine have also been studied and observed to have a role in COVID-19.[15]

Various studies identified positive outcomes of treatment with corticosteroids, especially in the SARS-CoV outbreak, as these were used because of their ability to modulate the inflammatory response but for a short period of time. Laboratory studies suggest that corticosteroid such as dexamethasone's one or two doses administered in infection's acute phase may be helpful in alleviating the early pro-inflammatory response, but their prolonged use may enhance viral replication.[18] The high fatality rate is linked to coagulopathy occurring in coronavirus infection, and increased levels of D-dimers (important coagulopathy marker) are also seen. Pro-inflammatory cytokines lead to severe lung inflammation and impairment of pulmonary functions in COVID-19 patients. Marked elevation in D-dimers is because of severe inflammation, which stimulates fibrinolysis. Therefore, blocking thrombin by anti-coagulants such as heparin can alleviate the inflammatory reaction, as well as the anti-inflammatory function of heparin, can also play a role in this case.[19]

The entry of the virus will be blocked if neutralizing monoclonal antibodies are developed against ACE2 receptors; this will lead to a marked reduction in the severity of disease.[20] Similar to other viral infections, convalescent plasma therapy can also be effective in COVID 19. A study showed a good survival rate after using convalescent plasma in combination with a systemic corticosteroid. After infusion of convalescent plasma, the patients have shown improvement in oxygenation as well as a decrease in inflammatory markers in their Chest X-ray findings.[21]

Herbal Therapy:

Drug development against COVlD- 19 appears to be a "need" in the current situation as it is a rapidly evolving epidemic, but developing new drugs still needs some time as the safety profile cannot be known over a short period of time.[8] For this lethal viral disease, where no definite pharmacological drugs are currently available for prevention or treatment, many researchers are focusing on phytochemicals and herbal therapy.[22]

Since ancient times, many cultures have been using herbs and plants for the treatment of

various diseases, including infections due to their medicinal properties. Greeks used to treat infections with herbs like ood (Paeonia emodi Royle.), za'fran (Crocus sativus L.), mushk (Moschus moschiferus L.), olive gum,zanjabeel (Zingiber officinale Roscoe), amber (Liquidambar acalycina) and sibr (Aloe vera L.) due to their antioxidant and anti-inflammatory actions.[23] Anti-viral activity of many natural substances from different habitats and geographical locations has been established.[24]

A glance in the past reveals that plants and herbs possess medicinal properties for preventing viral spread like SARS (Severe Acute Respiratory Syndrome). Compounds, including quercetin, which is a flavonoid and found in fruits and vegetables, show increased binding affinity to the key targets of SARS-CoV-2.[8,9,24] This inhibits viral replication, as well as its transmission.[25] In Chinese medicine, berberine, an isoquinoline derivative alkaloid isolated from many medicinal plants, also has importance in the treatment of influenza virus infections.[26] Many medicinal plants from India also exhibit anti-viral, anti-inflammatory and antioxidant properties which make them highly recommendable for the clinical therapy of COVID-19.[27]

In this regard, Nigella sativa (N.sativa), also called black seed or kalonji, could be considered as a natural substitute to chloroquine. N.sativa contains numerous phytochemicals out of which, nigellimine resembles chloroquine, which inhibits replication of SARS-CoV-2 in the same fashion. This anti-viral effect can be augmented by Zinc supplements, as the major components of N. Sativa helps Zn^{+2} entry into lung cells, which are the target of SARS CoV-2. In previous studies, the anti-viral activity of thymoquinone and black seed oil against influenza virus (H9N2) has also been reported.[28,29]

Several other food components could also help in the development of specific bioactive component which can cause damage to the DNA gyrase of coronavirus.[30] Honey has a virucidal effect on several enveloped viruses such as HIV, influenza virus, HSV, and VZV.[26] Flavonoids derived from Sena or Salvia officinalis and other natural compounds lead to immune induction. Such compounds are present abundantly in pomegranate, garlic, ginger, turmeric, black pepper, and tea.[26]

Other plants have been reported to boost immunity.[31] Ursolic acid and oleanolic acid act by inhibiting the main protease of coronavirus.[32] Asparagus racemosus has shown anti-viral activity[13]. Eucalyptol from eucalyptus oil is also showing anti-viral potency.[33]

CONCLUSION:

Researchers and clinicians are trying their best to find propose effective drugs to deal with this pandemic. This review warrants more in vitro and in vivo studies on naturally occurring plants as these appear to be potential phytochemicals for treating viral infections and can help in the development of new drugs for Covid-19.

AUTHOR'S CONTRIBUTION:

MR: Conception of idea and study design
MNZ: Drafting article
NY: Drafting article and study design
MIP: Data analysis
FAK: Data collection

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Case Report:

COVID-19 WITH NEUROLOGICAL MANIFESTATIONS

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ABSTRACT:
COVID-19 has been presenting with a wide spectrum of manifestations including neurological ones. We encountered three patients who presented with neurological symptoms at our set up (COVID WING Farooq Hospital, West Wood branch, Lahore). One patient presented with altered behavior and was found to have infarcts in basal ganglia with no risk factors already present. The second patient presented initially with respiratory symptoms and developed post-COVID-19 cranial nerve palsies and right hemiparesis. The third patient developed generalized tonic-clonic seizures. All these patients tested positive for COVID-19 on PCR. The first two patients refused treatment but the third one recovered fully and was discharged.

Key Words: COVID-19, Seizures, PCR

CASE PRESENTATION:

CASE 1:

Our first case was a 47 years old man who presented with recent onset of irrelevant talk, behavioral changes, emotional disturbances, and abulia. On neurological examination, he had sensory disturbances albeit no motor weakness was observed and there were no cranial nerve palsy. His right plantar was reflex upgoing and upper limb reflexes were exaggerated. Further workup revealed that he was IgM positive for COVID-19. His X-ray chest, high-resolution CT scan of the chest, fasting lipid profile, 4 vessels carotid doppler, echocardiography, and ECG were unremarkable and all other biochemical parameters were within normal limits apart from D dimers which were raised significantly. On plain CT scan brain, he was found to have multiple basal ganglia infarcts of new-onset and a right thalamic infarct as well. There were no significant vascular risk factors for stroke (no history of diabetes mellitus, hypertension, ischemic heart disease, smoking), and his coagulation profile except D-dimers was normal as well.

The patient was counseled regarding further workup of causes of secondary stroke and MRI scan of the brain but he refused further workup and treatment citing social issues and was discharged against medical advice on high dose aspirin (300MG), rosuvastatin (20MG), and rivaroxaban (15MG). A diagnosis of COVID-19 hypercoagulability leading to stroke was made.

CASE 2:

Our second case was a young 32 years old gentleman who tested positive for COVID-19 and had respiratory symptoms and recovered well with the use of steroids and supplemental oxygen. Two weeks later, he presented with left-sided facial and orbital swelling, ophthalmoplegia, left third, fourth, and sixth nerve palsies, and right-sided hemiparesis. Further workup revealed pansinusitis involving maxillary, ethmoidal, and sphenoid sinuses. CT scan and MRI brain plain reported similar findings along with left temporal lobe infarct. The patient tested strongly positive for IgM and IgG antibodies even three weeks after being PCR positive. The lumbar puncture examination was unremarkable. A diagnosis of left orbital cellulitis due to pansinusitis complicated by cavernous sinus thrombosis and intracranial infection was made and the

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patient was started on broad-spectrum antibiotics meropenem, (2G BD vancomycin1G BD), steroids (dexamethasone 2cc 8 hourly) and clexane (40mg s/c BD) and started showing improvement in neurological status. This patient is currently under treatment. The sequelae represent bacterial co-infection with COVID-19 with intracranial extension and neurological deterioration. The patient's family was counseled regarding sphenoid sinus exploration with FESS (functional endoscopic sinus surgery) but they refused.

CASE 3:

Our third case was a 55 years old gentleman who presented with full-blown acute respiratory distress syndrome complicated by COVID-19. Oxygen demand at the time of admission was 15 liters which gradually increased to 25 liters on the face mask. In addition, the patient showed neurological deterioration and developed generalized tonic-clonic seizures and all signs of meningeal irritation were positive on examination. CT scan brain and lumbar puncture couldn't be performed as the patient were on very high oxygen demand and so was empirically treated with broad-spectrum antibiotics and COVID.19 ARDS was managed with high dose methylprednisolone (60mg BD), tocilizumab (400 mg 2 doses 12 hours apart, low molecular weight heparin (Clexane) (60 mg s/c BD) and non-invasive ventilation (CPAP). For seizures, he was given phenytoin and midazolam later changed to levetiracetam, patient was discharged after 3 weeks in a healthy condition fully recovered from COVID-19 pneumonia and meningitis.

In addition to these three patients, many of our patients during the COVID-19 infection developed behavioral disturbances suggestive of COVID-19 encephalopathy which gradually resolved as treatment progressed.

The purpose of these 3 cases is to highlight the various neurological manifestations that developed either as a result of COVID-19 or were encountered during its treatment at our center and calls for attention for treating physicians. Whilst steroids and tocilizumab have an important role in the treatment of COVID-19 pneumonia and ARDS, these cause significant immunosuppression and increase the risk of not only bacterial and fungal infections of the lungs but Central Nervous System (CNS) as well. Treatment should be patient-centered and one should weigh the risks versus benefits while treating each case.

DISCUSSION:

COVID-19 belongs to the family of coronavirus. It primarily affects the respiratory system causing pneumonia and acute respiratory distress syndrome (ARDS). However, the number of cases showing CNS involvement is increasing.[1] As seen in previous studies that CNS infections do occur with severe acute respiratory syndrome (SARS-CoV) outbreak in 2003.[2] Since COVID-19 also belongs to the same family of coronavirus, some of its features can be attributed to the SARS-CoV. Various mechanisms have been proposed regarding the access of viruses to CNS. It is believed that the virus can reach the CNS through the hematogenous spread, directly through the cribriform plate or via the olfactory nerve.[3,4] Mao et al carried out a case series study and found that 24.8% of patients in their study presented with CNS symptoms, among which one died.[5] Another case report by Guan et al showed 13.6% of patients presented with headaches.[6] Similarly, case series by Thomas et al revealed ischemic stroke in 5 patients.[7] This incidence of ischemic stroke was reported to be 23% in the case series by Helms et al.[8] They further reported confusion and agitation their his case series.

Elderly patients or patients with comorbidities are more prone to develop CNS infections.[9] The CNS features vary from non-specific symptoms such as headache and dizziness to more specific symptoms e.g. altered behavior and consciousness, delirium, and seizures. The patients we treated at our hospital showed

infarct, cranial nerve palsy, and encephalitis. The treatment we offered had to be tailored according to every patient's requirements.

Although there are numerous studies regarding the CNS and COVID-19 relation, this field is mostly unexplored. We need more data and evidence to be conclusive about it.

AUTHOR'S CONTRIBUTION:

OF: Conceived and planned
AS: Collection of data
MK: Data analysis
AA: Writing of manuscript
AM: Editing

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View Point

REMDESIVIR: A DRUG WITH PROMISING EFFECTS AGAINST COVID-19

Maryam Rashid[1], Mariyam Iftikhar Piracha[2]

ABSTRACT

COVID-19, the illness caused by the new coronavirus, has affected thousands of people worldwide, and this pandemic has hampered our world and our daily life badly. Therapeutically useful and effective antiviral drug against Covid-19 is thus the need of the hour in the medical field globally. Till now, no specific antiviral drug has proven effective for curing patients with COVID-19. However, some antiviral drugs like darunavir, nelfinavir, and saquinavir, as well as other drugs like ACE inhibitor (angiotensin-converting enzyme inhibitor), daunorubicin, metamizole, bepotastine; and the antimalarial drug atovaquone have shown potential effects against this viral disease. And the race continues to find a drug that might benefit critically ill patients. Remdesivir, an adenosine analog with an extensive antiviral spectrum works by causing pre-mature viral termination, has shown promising results against coronaviruses (CoVs) both in vitro and in vivo using nonhuman primate animal models.

Key Words: Pandemic, Remdesivir, COVID-19

The rapidly growing pandemic of Coronavirus disease-2019 (COVID-19) originated in Wuhan, China. This virus was found in bats but got transmitted to humans by unknown means. To date, the confirmed number of COVID-19 cases is 10,533,779 globally, as reported by the WHO (World Health Organization). The situation in Pakistan is also alarming as the confirmed COVID-19 cases have surpassed 217,809 until today. Sindh is the most affected province with 86,795 cases followed by Punjab (77,740) cases in Pakistan.[1]

The RNA enveloped virus ranges in size from 60 nm to 140 nm in diameter.[2] It stays alive on the worktop for a longer duration ranging from 24 hours to a couple of days in a favorable environment but is killed by disinfectants like sodium hypochlorite, hydrogen peroxide within minutes.[3] Its transmission is either by inhalational route or touching contaminated surfaces and later touching one's own body parts like nose, mouth, and eyes.[4] Its incubation period varies, ranging from 2 to 14 days. This disease presents with fever, cough, breathlessness, and severe malaise among its victims. In the majority of cases, the disease is of mild nature or totally asymptomatic. Patients may later develop pneumonia, acute respiratory distress syndrome (ARDS), and multi-organ dysfunction as its complication.[5] The mortality rate due to this pandemic has turned out to be 2 to 3%.[6] Lower counts of white blood cells and raised levels of C-reactive protein (CRP) usually aid in diagnosing COVID-19 cases. Computerized tomographic chest scan depicts chest abnormalities if present even in asymptomatic or mildly diseased patients.[7]

Since Pakistan is a poverty-stricken country and affordability for patients in this setup matters the most. Despite minimum funds, the government has taken thorough steps like designed special hospitals, laboratories for testing, quarantine facilities, awareness campaign, guidelines for the public, including smart lockdown to control the proliferation of viruses. People were made aware of proper handwashing, avoidance of handshake, and the use of disinfectants.[8]

Till now, no specific drug has proved to be effective and satisfactory in curing COVID-19 positive symptomatic patients. Although

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several drugs are under pre-clinical and clinical trials that include favipiravir, ivermectin, lopinavir/ritonavir, chloroquine, and hydroxychloroquine.[9] Unfortunately, none of the above came out as its true treatment option. This has created an opportunity for researchers to look for newer drugs.

There are only a few drugs that can truly lay claim to the title of 'Wonder drug,' and Remdesivir is amongst them as a strong contender because of its versatility, safety, and the health beneficiary effects. Remdesivir was initially developed for Hepatitis C treatment but did not show promising results. However, it is now under consideration for the treatment of Ebola virus infection. Its antiviral activity against RNA viruses (including SARS/MERS-CoV) infection in cultured cells, mice and nonhuman primate (NHP) models has been proven.[10]

Fortunately, the Drug Regulating Authority of Pakistan (DRAP) has announced that two pharmaceutical companies in Pakistan that are; Ferozsons and Searle will offer treatment against COVID-19 in the form of Remsidivir in injection form. It has been approved for emergency use in USA[11] and Japan though further investigations in vivo are required.

AUTHOR'S CONTRIBUTION:

MR: Conception, design of study and acquisition published data

MIP: Drafting Article

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News Update

COVID-19 PATIENTS IN FAROOQ HOSPITAL, LAHORE.

Omair Farooq[1]

The first case of COVID-19 was diagnosed in Pakistan on 26th February 2020. In March foreseeing the increasing need for oxygen-dependent beds in the future, our administration, under the leadership of our CEO Dr. Sabir Ayyaz Malik and Chairman Dr. Farooq Saeed Khan, started developing our Corona Hospital. In a short span of just 2 weeks, we were successful in establishing the first dedicated Corona hospital in Pakistan.

Farooq hospital admitted its first COVID-19 patient on 5th April 2020 and is now the largest dedicated private Corona hospital in Pakistan with around 80 beds, including 3 high dependency units with 34 beds and 2 Intensive care units of 7 beds each. Our Corona hospital is equipped with all the latest gadgets, including non-invasive ventilation like BIPAP/CPAP, Ventilators, and High flow Nasal Cannula Devices. We are successfully offering all modalities of treatment since the very first day, and we are following all international guidelines for the effective treatment of the patients. Taking one step further, in June 2020 due to the increased load of patients coming in emergencies, we started offering Corona Inpatient services in Farooq Hospital Allama Iqbal Town and Akhtar Saeed Trust Hospital Lahore as well, and this took our overall cumulative strength for Coronavirus patients to around 150. We are proud to claim that we are the first hospital in which injection Actemra (tocilizumab) was administered successfully, which reflects our professionalism and high standards. Over the course of the last 3 months, we have collectively treated around 400 patients, around 80 percent of whom required oxygen at the time of admission.

During the last 3 months, we saw some unique presentations of COVID-19, including corona meningitis, corona with ischemic CVA involving the basal ganglia, corona with tension pneumothorax as a complication, corona induced acute kidney injury and hepatitis.

It is pertinent to mention here that in all our 3 units, we have the unique distinction from other hospitals with reference to the fact that our Doctors, Nurses, Intensivist, Pulmonologist, Medical specialist, Respiratory therapist, Physiotherapist and paramedical staff visit all patients in person and treat them directly without fear. All our health care professionals are provided with proper Personal Protective Equipment in accordance with WHO guidelines. We are thankful to Allah Almighty that almost all of our patients have recovered very well, and we have Alhamdullilah discharged patients who came with oxygen requirements of more than 30 liters at the time of admission. Our recovery rate is comparable with any Corona center not only in Pakistan but also internationally. A lot of valuable data has been gathered with the consent of patients, and in the next few weeks, several original high-quality research papers will also be published, which will help medical professionals in treating COVID-19 patients effectively.The number of corona patients in Pakistan is gradually decreasing which is a good sign, but there has been an increase in the percentage of critically ill and sick patients coming to the hospitals because of the policy of self-isolation by the government and lack of awareness regarding treatment of severe COVID-19 pneumonia amongst the general public.As a Medical specialist, I consider it my responsibility to tell the general public that COVID-19 pneumonia cannot be managed at home. If a patient starts developing severe shortness of breath

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and oxygen saturation remains persistently below 92 %, the patient should immediately go to the hospital emergency because the treatment modalities for sick patients are entirely different as compared to patients who have simple COVID-19 infection. Such critical patients require daily monitoring with blood tests and chest X-rays and require specialist advice and intensive monitoring, which is not possible at home. In the end, we should all play our part in limiting the spread of this disease by taking adequate safety precautions and following guidelines laid down by the Health Department. As medical professionals, it is our duty to serve our people during this pandemic, and I request all the Health care professionals to come forward and fulfill our Hippocratic Oath taken at the time of our graduation. May Allah (SWT) keep all of us safe and give us the strength to serve the people with more vigor in the future. (Ameen)

COVID – 19 Treatment at Farooq Hospital, Westwood Colony, Lahore.