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ORIGINAL ARTICLE

Demographic and clinical characteristics of COVID-19 patients in the least developed province Balochistan of Pakistan – an observational descriptive study

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ABSTRACT

This study was designed to determine the epidemiological and clinical attributes of COVID-19 patients in the least developed province of Balochistan, Pakistan. The information was obtained from the daily situation report by the Health Department, Government of Balochistan, Pakistan. We investigated the reports of 4177 patients confirmed by RT-PCR tests. Demographic, epidemiological and risk factors data along with comorbidities and clinical signs were recorded. Out of 4500 suspected cases, 4177 cases were directed for the confirmation of COVID-19. A sum of 2177 patients was confirmed to have COVID-19 and 2000 individuals tested negative for the illness. Out of 4177 patients, 2000 patients recovered but 177 patients died because of COVID-19. In current statistics, most males were affected by COVID-19 as 3243 (77.69%) were males and 934 (22.36%) were females. A total of 90.81% of individuals had fever, 88.97% had a cough, 81% had body throbs, and 89.66% had a sore throat. Shortness of breath was observed in 97.06% and 44.09 % had comorbidity. Multiple logistic regression analysis showed that the outcome of patients was associated with gender and symptoms. The district Quetta had the maximum number of COVID-19 cases and deaths. COVID-19 cases and case casualty proportion are low in Balochistan. Whether this is because of failure to do more tests is still to be discovered. Males and individuals of older age are more impacted, and fatalities were higher in cases with co-morbid conditions. Balochistan has a feeble medical care framework and many asymptomatic cases, and needs more rigid screening activities.

Key words:
Balochistan; pandemic; COVID-19; RT-PCR; epidemiology

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INTRODUCTION

Infectious diseases spread quickly around the world, and they may cause serious health problems.[1] In late 2019, a human coronavirus infectious disease (COVID) episode began in China which spread to other nations, turning into a worldwide pandemic. Wuhan is a major city in Hubei province of China, where serious pneumonia-like disease incidences surfaced due to unknown reasons.[2] Severe acute respiratory syndrome (SARS) by coronavirus 2 (CoV-2) is an original type of zoonotic infection that causes respiratory sickness.[3] COVID-19 disease showed signs and symptoms of migraine, headache, shortness of breath and fever.[4] It was suspected that the COVID-19 contamination spread to people from a bat consumed by an occupant of Wuhan.[5] The genome sequencing of COVID-19 had approximately 88% similarity with bat-SL-CoV-ZC45 and was 96.2% indistinguishable from bat CoV-RaTG13.[6] Globally, as of September 23, 2022, there have been 611,421,786 confirmed cases of COVID-19 including 6,512,438 deaths, reported to World Health Organization (WHO).[7]

COVID-19 can cause gentle influenza like signs and symptoms including fever, headache, shortness of breath, and severe body ache, however, the serious type of COVID-19 can cause acute respiratory distress syndrome (ARDS), extreme pneumonia, septic shock, organ failure and sudden death.[8,9] The WHO declared that COVID-19 should be described as a pandemic on March 11, 2020.[10,11] The total number of deaths related to COVID-19 in Italy, Spain, France, and the United States has surpassed the deaths in China.[10, 11] In Pakistan, from 3 January 2020 to 23 September 2022, there have been 1,571,894 confirmed cases of COVID-19 with 30,607 deaths, reported to WHO.[7] The primary incidence of COVID-19 in Pakistan was affirmed on 26 February 2020 by the Ministry of Health, Government of Pakistan, in a person returning from Iran.[12] The disease entered Pakistan from Iran, and it spread rapidly in Pakistan territory through travelers from Iran via the Balochistan region.

Balochistan received 3000 pilgrims from Iran and placed them in an isolated community at Taftan in the principal seven-day stretch of March 2020; the numbers later surpassed 6000. The main incidence of COVID-19 in Balochistan was accounted on March 10, 2020.[13] As of the ongoing circumstance, the total number of confirmed cases in Balochistan were 2061 (May 12, 2020), however, the loss of lives was 27.[14] Pakistan is a developing country with a poor medical care framework. However, the Pakistani government's response to the pandemic was remarkable. In response to the situation, the government of Balochistan established an isolation centre at Taftan next to the Pakistan-Iran border. Later, to stop the further spread in the territory, government imposed a semi-strict lockdown. The major objective of this study was to report the clinical and demographical characteristics of COVID-19 patients in Balochistan. This study will help in driving accurate policies to combat future pandemic incidents.

METHODOLOGY

Balochistan is situated in the southwest region of Pakistan, its area borders Afghanistan and Iran in the west and the Arabian Sea in the south. It represents almost 50% of Pakistan's total land. As per 2017 registration information, the number of total residents in Balochistan is 12.34 million with 6,483,653 males and 5,860,646 females.[14] The study was designed as a situation report and was approved by Public Health Laboratory,

Balochistan Health Department, Pakistan (IRB: 1/COVID/727). The information was recovered from the authority day to day circumstance report by the health department of the government of Balochistan. This is an observational descriptive study that comprised 4177 subjects who were suspected of having COVID-19 based on their movements, contacts with other people having COVID-19, or with any signs and symptoms of COVID-19, i.e., fever, sore throat, body ache. The data was collected from almost all districts of Balochistan. Nasal or throat swab for COVID-19 PCR tests led to the affirmation of COVID-19. Data collection started on 23rd May 2020, and ended in November 2021. Overall, 4177 RT-PCR tests were performed to confirm suspected cases. Among cases, 2177 were positive and 2000 were found negative. Statistical analysis was performed using SPSS® software V22.0. The frequency was mentioned for each demographic and clinical characteristics and odds ratio was determined for each risk factor by multiple logistic regression analysis to determine the outcome. The level of significance was set at $P < 0.05$.

RESULTS

A sum of 2177 patients was confirmed to have COVID-19 and 2000 individuals tested negative for the disease. Out of 2177 patients, 2000 patients recovered and 177 died due to COVID-19 in Balochistan (Figure 1A). In current consensus, most of the males were affected by COVID-19. Among 4177 individuals: 3243 (77.69%) were males and 934 (22.36%) were females (Figure 1B). Based on age, total individuals were divided into 5 groups. The age ranged between 2 years to 75 years among the 5 groups. The mean age of the cases was 35 years however, individuals aged 16-30 years were the most affected by COVID-19 followed by 31-45 years, however, most deaths were reported in patients of age > 45 years (Figure 1C). As per clinical parameters, higher percentage was observed in deceased and positive patients in contrast to individuals who tested negative for COVID-19. In positive cases, approximately, 90.81% had experienced fever, 88.97% had a cough, 86.81% body aches, and 89.66% had a sore throat. Shortness of breath was accounted for 97.06% and 44.09 % had comorbidity (Table 1). The individuals who died from COVID-19 were 177, generally as a result of comorbid conditions related to COVID-19.

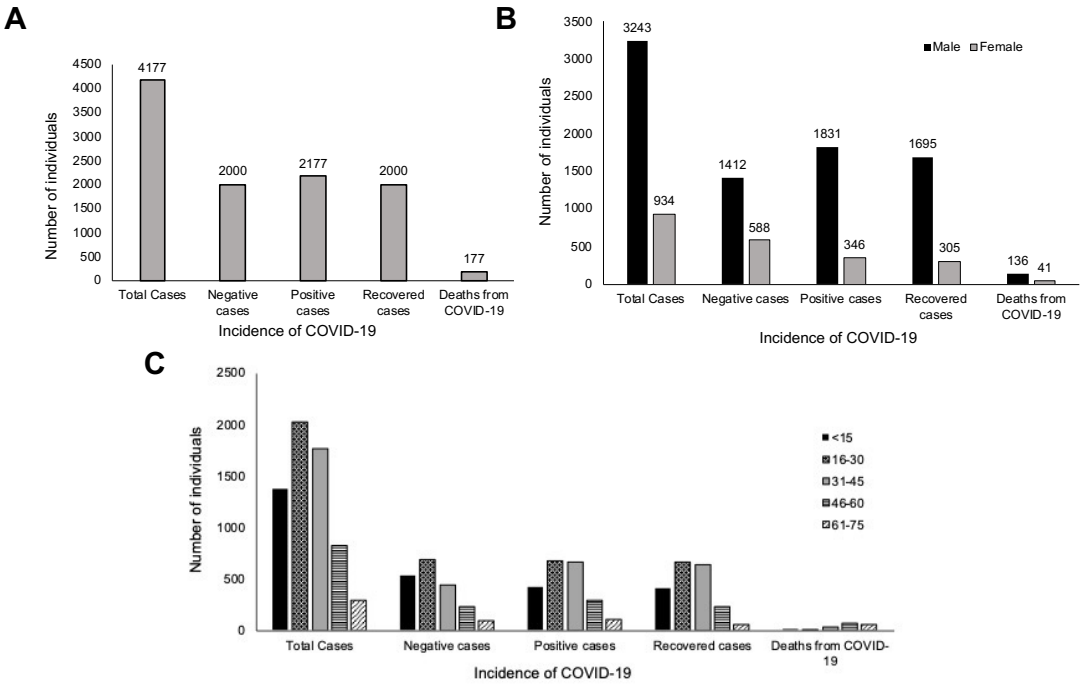

Figure 1. COVID-19 cases in Balochistan, Pakistan (A) Total number of COVID-19 cases included in the data. (B) Total number of COVID-19 cases based on gender included in the data. (C) Total number of COVID-19 cases based on age included in the data.

Table 1. Clinical picture of COVID-19 in Balochistan

Clinical Picture	**Total Cases % (N=4177)**			**Negative Cases % (N=2000)**			**Positive Cases % (N=2177)**			**Recovered Cases % (N=2000)**			**Death by COVID-19 % (N=177)**		
	T	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**
Fever	94.8	73.1	21.6	99.1	69.6	29.4	90.8	76.2	14.6	90	76.2	13.9	100	76.8	23.2
Cough	81.8	64.7	17.1	74.0	54.5	19.5	88.9	74.1	14.8	88	73.9	14.1	100	76.8	23.2
Sore Throat	85.8	66.1	19.7	81.7	56.4	25.3	89.6	75.1	14.5	90.5	76	14.5	80.8	65.5	15.3
Body Ache	66.5	53.5	12.9	44.4	31.9	12.5	86.8	73.5	13.2	85.7	73.2	12.5	100	76.8	23.2
Difficulty in Breathing	52.9	44.2	8.6	4.8	3.7	1.1	97.1	81.5	15.5	96.8	81.9	14.9	100	76.8	23.2
Comorbidity	22.9	19.1	3.8	0	0	0	44.1	36.7	7.4	39.2	33.1	6.1	100	76.8	23.2

N= number of cases, T= total, M = male, F=female

Regarding clinical characteristics of patients, the odds ratio was determined by logistic regression analysis to check the probable relation between recovered and negative individuals. A high significant relation was observed among all parameters as depicted in Table 2.

Table 2. Odds ratio for gender and symptoms in COVID-19

Variable		Recovered (N=2000)	Negative (N=2000)	Odds ratio (95% CI)	*P* value
Gender	Male	1695	1412	2.31 (1.98-2.70)	<0.001*
	Female	305	588		
Fever	Absent	201	18	12.3 (7.56-20.01)	<0.001*
	Present	1799	1982		
Cough	Absent	240	519	0.38 (0.32-0.46)	<0.001*
	Present	1760	1481		
Sore Throat	Absent	191	367	0.47 (0.39-0.56)	<0.001*
	Present	1809	1633		
Body Aches	Absent	287	887	0.21 (0.18-0.24)	<0.001*
	Present	1713	1113		
Breathing Difficulty	Absent	64	1905	0.002 (0.001-0.002)	<0.001*
	Present	1936	95		
Comorbidity	Absent	1217	2000	0.609(0.58-0.63)	<0.001*
	Present	783	0		

According to sociodemographic distribution, most of these patients belong to Quetta, the capital city of Balochistan territory. Locale-wise, the incidence rate was higher in Quetta (59.28%) followed by Panjgur (9.27%), Lasbella (6.46%) and Khuzdar (5.15%). In Quetta city, the most noteworthy high rate was observed in the Hazara Town and Marriabad where most people who returned from Iran live. Similarly, most of the deceased individuals belong to Quetta city. The Geo-temporal findings of COVID-19 in Balochistan province are shown in Table 3, as the incidence rate was Quetta > Panjgur > Lasbella> Khuzdar> Kech> Gwadar> Dera Bugti> Chaghi.

Table 3. COVID-19 cases in districts of Balochistan

Sr. No.	District Name	Total cases n (%) (N=4177)	Negative cases n (%) (N=2000)	Positive cases n (%) (N=2177)	Recovered cases n (%) (N=2000)	Deaths n (%) (N=177)
1	Awaran	3 (0.07)	1 (0.05)	2 (0.09)	2 (0.09)	0 (0.00)
2	Barkhan	4 (0.10)	0 (0.00)	4 (0.18)	4 (0.18)	0 (0.00)
3	Chagai	66 (1.58)	6 (0.30)	60 (2.76)	60 (2.76)	0 (0.00)
4	Chaman	1 (0.02)	0 (0.00)	1 (0.05)	1 (0.05)	0 (0.00)
5	Dera Bugti	86 (2.06)	0 (0.00)	86 (3.95)	86 (3.95)	0 (0.00)
6	Gwadar	129 (3.09)	72 (3.60)	57 (2.62)	57 (2.62)	0 (0.00)
7	Harnai	2 (0.05)	0 (0.00)	2 (0.09)	1 (0.05)	1 (0.05)
8	Jafarabad	9 (0.22)	0 (0.00)	9 (0.41)	9 (0.41)	0 (0.00)
9	Jhal Magsi	4 (0.10)	0 (0.00)	4 (0.18)	3 (0.14)	1 (0.05)
10	Kalat	25 (0.60)	1 (0.05)	24 (1.10)	22 (1.01)	2 (0.09)
11	Kech (Turbat)	215 (5.15)	67 (3.35)	148 (6.80)	148 (6.80)	0 (0.00)
12	Kechhi (Bolan)	6 (0.14)	2 (0.10)	4 (0.18)	4 (0.18)	0 (0.00)
13	Kharan	20 (0.48)	0 (0.00)	20 (0.92)	20 (0.92)	0 (0.00)
14	Khuzdar	215 (5.15)	93 (4.65)	122 (5.60)	120 (5.51)	2 (0.09)
15	Killa Abdullah	2 (0.05)	0 (0.00)	2 (0.09)	1 (0.05)	1 (0.05)
16	Killa Saifullah	41 (0.98)	0 (0.00)	35 (1.88)	35 (1.61)	6 (0.28)

Sr. No.	District Name	Total cases n (%) (N=4177)	Negative cases n (%) (N=2000)	Positive cases n (%) (N=2177)	Recovered cases n (%) (N=2000)	Deaths n (%) (N=177)
17	Kohlu	20 (0.48)	0 (0.00)	20 (0.92)	20 (0.92)	0 (0.00)
18	Lasbela	270 (6.46)	94 (4.70)	176 (8.08)	173 (7.95)	3 (0.14)
19	Loralai	28 (0.67)	4 (0.20)	24 (1.10)	21 (0.96)	3 (0.14)
20	Mastung	30 (0.72)	14 (0.70)	16 (0.73)	15 (0.69)	1 (0.05)
21	Musakhel	4 (0.10)	0 (0.00)	4 (0.18)	3 (0.14)	1 (0.05)
22	Nasirabad	25 (0.60)	6 (0.30)	19 (0.87)	19 (0.87)	0 (0.00)
23	Nushki	24 (0.57)	17 (0.85)	7 (0.32)	6 (0.28)	1 (0.05)
24	Panjgur	387 (9.27)	382 (19.10)	5 (0.23)	3 (0.14)	2 (0.09)
25	Pishin	28 (0.67)	3 (0.15)	25 (1.15)	15 (0.69)	10 (0.46)
26	Quetta	2476 (59.28)	1227 (61.35)	1249 (57.37)	1109 (50.94)	140 (6.43)
27	Sibi	16 (0.38)	0 (0.00)	16 (0.73)	14 (0.64)	2 (0.09)
28	Sohbatpur	2 (0.05)	0 (0.00)	2 (0.09)	2 (0.09)	0 (0.00)
29	Surab	1 (0.02)	1 (0.05)	0 (0.00)	0 (0.00)	0 (0.00)
30	Zhob	13 (0.31)	1 (0.05)	12 (0.55)	11 (0.51)	1 (0.05)
31	Ziarat	8 (0.19)	0 (0.00)	8 (0.37)	8 (0.37)	0 (0.00)

DISCUSSION

COVID-19 quickly spread across Pakistan, however, Balochistan region had fewer cases as compared to other densely populated areas. The reason for lesser cases in Balochistan could be the lower testing limit compared to other provinces of Pakistan. It is believed that COVID-19 cases were less not just because of the lower testing capacity, but also because of insufficient testing laboratories, lack of proper awareness among residents of peripheral regions and social stigma. People were afraid to discuss symptoms they felt, especially females, who were reluctant to talk about the disease. The present study primarily highlighted the scenario of COVID-19 cases in Quetta, Balochistan. Based on the demographic profile of patients, males were affected at least three times more (77.69%) compared to females (22.36%). This is significantly higher than research conducted in Wuhan, which depicted that 56% of patients with COVID-19 were males.[15] Likewise, another study on 140 patients from Wuhan reported that 50.7% of males were affected by COVID-19.[16] In individuals with COVID-19, gender is a significant risk factor for disease severity and mortality.[17] According to a retrospective study, males and females were equally susceptible, but males were more likely to die and made up around 2.4 times more compared to females among deceased patients.[18] In contrast to global examinations, females were less impacted by COVID-19 in Pakistan.[19] In Pakistan, especially Balochistan, males are the sole earner and spend more time outside in public than females. The research documented earlier in China and Italy demonstrated that females and kids are underrepresented, particularly in serious and deadly cases. [20] It is not yet known whether this is the direct result of less exposure, or they are asymptomatic or less prone to infection. However, females are less likely to develop infectious diseases than males due to their innate strength and adaptive immune responses.[21] Previous studies have suggested that females are more likely than males to follow hand-hygiene practices and seek preventive care.[16]

COVID-19 has affected people of all ages, and caused hospitalization of patients and even deaths. Adults over the age of 60 years had experienced severe health concerns and deaths, which were

more common after the age of 80 years. Comorbidities e.g., diabetes, hypertension, heart conditions and other chronic disorders caused intense manifestations and complications in COVID-19 patients.[19] In addition, older people have a weaker immune system, making them more vulnerable to infection. In Italy, approximately 23.3% of the population is over the age of 65 years, hence, a larger than average number of COVID-19 cases and fatalities have been documented. Total case fatality rate (CFR) of 0.7% was observed in people aged 40 to 49 years, 27.7% in people aged >80 years and 96.9% of deaths occurred in people 60 years and above.[22] In contrast, nearly 38.04% population of Pakistan falls in the 25-54 years age group. The current data reported a higher incidence of infection in 30-45 years, but deaths in people > 45 years portrayed that age is a significant risk factor for incidence and mortality rate of COVID-19.

COVID-19 clinical manifestations range from asymptomatic to severe illness and/or death. Fever, cough, shortness of breath, and respiratory distress are all common symptoms of COVID-19. According to the Center for Disease Control (CDC), cough and shortness of breath with at least two additional symptoms (e.g., fever, chills, sore throat, muscle pain, headache, and loss of taste or smell), may indicate COVID-19. It can also cause gastrointestinal symptoms e.g., nausea, vomiting, anorexia, and diarrhea. [23] Symptoms may appear two days to two weeks after the virus exposure. [24] Most of these patients in our data had a high fever, sore throat, and body aches. These findings are in line with the already documented results which suggest a difference in viral tropism as compared to SARS-CoV, MERS-CoV and seasonal influenza. [25] As per the test result, a strong positive association was observed among all clinical parameters of COVID-19 patients.

Taftan is the interconnected route that pilgrims use to cross the border between Pakistan and Iran. Numerous Iranian pilgrims are redirected to their cities by the porous border. Due to Taftan border's low resources, lack of quarantine area, and lack of sufficient screening or testing, the virus was introduced into the province and eventually the entire nation without the proper screening or testing. [26] The exceedingly contagious COVID-19 virus moved quickly from one province area to the next. Geotemporal studies suggested that 8 of Baluchistan's 31 districts have been affected the most. The highest incidence rate was in Quetta (59.28%), followed by Panjgur (9.27%), Lasbella (6.46%), and Khuzdar (5.15%). A recent study has confirmed that Quetta recorded the highest number of patients i.e., 82% followed by Pishin.[27] Quetta is the most populous district in Balochistan and many people from this area often visit Iran.

The administration of Balochistan took remarkable measures with limited resources to restrict the spread of COVID-19 infection. These actions incorporated the initial screening process, establishing isolation centers, shutting borders with adjoining nations, implementing forced restrictions on open social events, and territory wise lockdowns. Because of the lack of COVID-19 testing kits, it was suggested to modify standards of clinically analyzed cases in view of their history of exposure to virus, signs, and symptoms. Simple X-rays and computed tomography (CT) scans of the chest were utilized to distinguish, segregate and screen suspected cases, consequently restricting the COVID-19 spread and saving the medical care offices for the extremely severe cases. COVID-19 has caused enormous difficulties for nations with insufficient medical services and an absence of readiness to manage the pandemic. Feeble framework and monetary imperatives in Pakistan are the major reasons for obstructing reaction to the ongoing

pandemic. Thus, the public authority ought to contact private areas to put resources into general health care system.

CONCLUSION

The descriptive analysis of the epidemiological data in our study showed a large majority contracting the virus through contact with an already infected person and highlighted the significance of following the guidelines of maintaining social distancing. COVID-19 cases and case casualty proportion were low in Balochistan. Whether this is because of failure to do more tests is still to be discovered. Males and individuals of older age are more impacted, and mortality rate is higher in cases with comorbid conditions. Balochistan has a feeble medical care framework and with many cases being asymptomatic, the region needs more rigid screening activities.

RECOMMENDATIONS

Regarding future measures, it is suggested that clinical supplies including individual defensive gears, ought to be provided to emergency clinics at the local level to help the medical care suppliers in managing the steadily expanding instances of the pandemic. Furthermore, obtrusive hardware including ventilators ought to be provided to divisional hospitals, so the approaching weight of serious cases can be diminished in the tertiary level emergency clinics of the principal urban communities. When the COVID-19 hit the Balochistan region there was not a single PCR laboratory present in the region but with the commendable efforts of the Balochistan government, there are 11 PCR laboratories running in the province. But to deal with any future pandemic, these laboratories need to be well equipped. Research studies ought to be completed to help the public authority in shaping strategies for future pandemic attacks.

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ETHICAL APPROVAL

This study was approved by the Public Health Laboratory, Government of Balochistan, Pakistan prior to starting the research.

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