ORIGINAL ARTICLE

An Epidemiological Profile of the Laboratory Confirmed COVID-19 Cases Reported in Baluchistan Province

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Abstract

Introduction
The novel Corona virus disease 2019 (COVID 19) is an emerging respiratory tract disease caused by a corona virus's family virus, SARS COV-2 virus. This illness emerged from China during December 2019. Now it has spread to whole world becoming a pandemic. Pakistan is also affected with COVID-19 and bordered with countries, which were highly affected by COVID-19. It entered Baluchistan province with the of return of Pilgrims from Iran through Pak-Iran border.

Methods
A (Cross-sectional) study was conducted in Baluchistan province in the second quarter of 2020. In this study, the epidemiological analysis of the laboratory positive cases was conducted including the deaths reported. The data was collected on using standard case investigation form for COVID-19, analyzed in SPSS-22, and Microsoft excel. Descriptive analysis was done and data was presented in form of mean, attack rates, frequency tables, graphs, and figures.

Results
Total 45016 individuals were screened in Baluchistan province in the second quarter of 2020, and 41% (n=18627) were found suspected based on case definition used. PCR for COVID-19 was done for 91% (n= 16884) among suspected cases and 15% (n=2544) resulted COVID-19 positive. The overall attack rate calculated was 25.41/100000 population. Recovery rate among COVID-19 positive cases was 16.3% (n=417) and deaths reported were 2.2 % (n=36). Majority 77.8 % (n=1980) of positive cases were Males. The mean age was 34.9 years with age range 0 - 94 years. Total 66 % (n=22) districts were infected, among these 84.75% (n=*2156)* cases were from district Quetta with an attack rate of 88.66%. Total 36 deaths reported among the laboratory positive COVID 19 Cases during study period. The overall mortality rate was 2.33% with Male gender predominance 83 % (n=30) mostly 86 %(n=31) among age group above 45 years.

Conclusion and recommendations
Immediate measures like lockdown in province and closure of borders were implemented to cease transmission of virus. The incoming pilgrims were quarantined at the borders in quarantine centers, screened, and tested for COVID-19. We recommended governance, policy formulation, enhanced operational capability, capacity building of the Health workforce, awareness among community to follow the lockdowns, social distancing, and other preventive measures against this novel corona virus disease.

Keywords
COVID-19, SARS-COV 2, Baluchistan, Pak Iran Border, Zaireen (Pilgrims)

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Background
The novel Corona virus disease 2019 (COVID 19) is a newly known respiratory illness that can only spread from person to person causing mild to severe illnesses and in severe cases, death[1]. The pandemic causing coronavirus belongs to a family of viruses which cause symptoms like pneumonia, fever, breathing difficulty and lung infection.[2] The corona viruses are found common worldwide in animals but till 2019 December very few cases of human affected were known. The virus that caused he lower respiratory tract infection (pneumonia) was named as novel corona virus by the World Health Organization in Wuhan, China on 29th December 2019.[3-5] The World Health Organization as Corona virus disease (COVID-19) announced the official name of the novel corona virus on February 11, 2020.[6] Later, On the same day later, International Committee on Taxonomy of Virus named the novel coronavirus as Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2. The pneumonia caused by unknown pathogen was reported as cluster, which was linked to Huanan south china seafood market in Wuhan, Hubei Province, China in December 2019.[7] To conduct epidemiological and etiological investigation rapid response team accompanied by health authorities of the affected district of china was dispatched by the Chinese center for disease control and prevention. A hypothesis was established that the Huanan south china seafood marketplace is associated with the epidemic outbreak of coronavirus, but no animal association was identified by world health organization.[8]

This COVID 19 was declared as outbreak as sixth public health of emergency Services (SPHEC) on January 30, 2020 by world health organization.[9] In past already coronavirus outbreaks had been documented which include the Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV) outbreak and Middle East Respiratory Syndrome Coronavirus (MERS-CoV) outbreak.[10] This COVID-19 is considered as the 3rd of its type which hit more than 209 countries globally including Pakistan. According to the World Health Organization (WHO), total of 1,093,349 confirmed cases with 58,620 mortalities. To date, the number of highest positive cases encountered in USA followed by Italy and Spain.[11] WHO then declared COVID-19 as Public Health Emergency.[12]

Pakistan is bordered with countries which were highly affected by COVID-19 outbreak specially including China, where the COVID-19 outbreak started initially and it was thought that this disease will enter Pakistan from china as we have strong friendly relationship with China and currently a big project is run by China known as Pak-China Economic corridor(CPEC) which is based at Gwadar district of Baluchistan province. In the west of Pakistan is Italy which had highest number of COVID-19 mortalities while in the north, there is Iran with a high number of mortalities after Italy[13] and also the cases were reported in Pakistan with history of travel from Iran. In Pakistan, the Ministry of Health, government of Pakistan on February 26, 2020 in Karachi Sindh province, confirmed the first case of COVID-19. Same day another case confirmed by the Pakistan Federal Ministry of Health in Islamabad.[14-15]

The number of total COVID-19 Positive cases reached to 20 out of 471 suspected cases within 15 days in Pakistan with majority from Sindh and Gilgit Baltistan provinces. All these confirmed cases had history of recent travel from Iran, Syria, and London. At present the situation is worst and these cases are increasing at a high rate.[16] Hence, because of this critical geographical location of Pakistan, and with the continuous increases in the number of CVOID-19 positive cases there is a need of immediate actions and response. On 12th of February 2020, the Ministry of National Health Services, Regulation & Coordination (NHSRC) Islamabad Pakistan formulated and launched a "National Action Plan for Preparedness & Response to Corona Virus Disease (Covid-19) Pakistan". This National action plan aims to control the spread of virus within the country and to strengthen country and community emergency preparedness to ensure a timely, efficient, and operative response to possible proceedings due to Covid-19 which also includes the local, regional and national outbreaks that can have a significant impact on the health of Pakistani population and society.[17]

In Baluchistan province, initially this outbreak started on March 11 with the of return of Pilgrims (Zaireen) through the Taftan border between Baluchistan and Iran. Thousands of pilgrims or Zaireen visit Iran regularly for visiting the Holy places from all provinces of Pakistan mainly by road route through Taftan border situated in district Chagai of Baluchistan province, throughout each year. So Baluchistan being the South western province of Pakistan, became the first port of entry of the virus in Pakistan.[18] These Zaireen belonged to all parts and provinces of Pakistan, which entered in Baluchistan initially through this border and were quarantined at same place, later they were shifted to their respected provinces. Department of Health with support of federal government and other partners (WHO, UNICEF, CTC) responded to this outbreak promptly and established quarantine and isolation centers throughout the province at entry and exit points of the districts. Rapid response teams (RRT) were established from the health department in each district, which started screening of healthy, symptomatic individuals by checking their body temperature with thermal scanner and later testing them by taking Nasopharyngeal swabs.

Methodology

A retrospective descriptive (Cross-sectional) study was conducted in Baluchistan province in the second quarter of 2020 after the corona outbreak started**.** All the suspected cases of COVID-19 were included in this study, which were reported during the study period. Whereas the laboratory confirmed COVID-19 cases data were used for analysis only. The Case definitions used for a suspected COVID-19 case was "*A person with acute respiratory illness (fever and at least one sign/symptom of respiratory disease, e.g., cough, shortness of breath), and a history of travel to or residence in a location reporting community transmission of COVID-19 disease during the 14 days prior to symptom onset OR A patient with any acute respiratory illness and having been in contact with a confirmed COVID-19 case (see definition of contact) in the last 14 days prior to symptom onset; OR A patient with severe acute respiratory illness (fever and at least one sign/symptom of respiratory disease, e.g., cough, shortness of breath; and requiring hospitalization) and in the absence of an alternative diagnosis that fully explains the clinical presentation"*.

The Case definition used for a confirm COVID-19 case was*" Any person with laboratory confirmation of COVID-19 infection, irrespective of clinical signs and symptoms"*.

In this cross-sectional study, the epidemiological analysis of the laboratory positive cases was done along with the deaths reported. The PCR of all suspected COVID -19 cases reported during the study period were done at two laboratories i.e. Public Health laboratory at Fatima Jinnah hospital Quetta and a Mobile PCR Laboratory at Taftan district Chaghi. The Data from these sources were included in this study. Their general and other epidemiological characteristics of COVID-19 Cases with positive PCR for Corona virus (SARS COV2) were described. Apart from Taftan border, our study also included the data of COVID-19 positive cases from various other districts of the province including Pak Afghan Border at Killa Abdullah district because the tests of these were also sent and conducted at Quetta. The

study was conducted after the approval of ethical review committee of EOC Baluchistan and the data was collected on using standard case investigation form for COVID-19 and analyzed in SPSS-22 and Microsoft excel. Descriptive analysis was done and data presented in form of mean, attack rates, frequency tables, graphs, and figures.

Results

During the study period, a total number of 45016 individuals were screened in Baluchistan province, among them 41% (n=18627) were suspected cases based on the case definition. Out of these suspected cases 91% (n= 16884) were tested for COVID-19 through PCR and 15% (n=2544) were found COVID-19 positive from 22 out of total 33 districts of the Province. The overall attack rate calculated was 25.41 per 100000 populations for Baluchistan province at that point of time. Percentage of recovered cases among the positive cases was 16.3% n=417 and deaths reported were 2.2% (n=36). It was observed that majority 77.8% (n=1980) of positive cases were Males. The mean age of positive covid19 was 34.9 years with age range 0 - 94 years. The most affected age group is 31-45 years of age 31.4% (n=799)

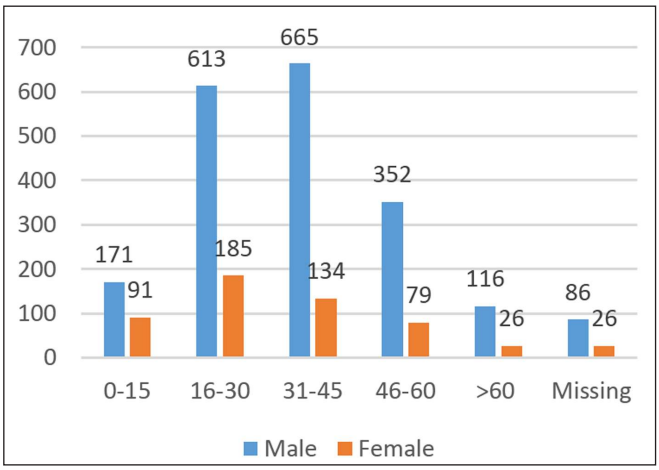

Fig 1. Age distribution of positive cases

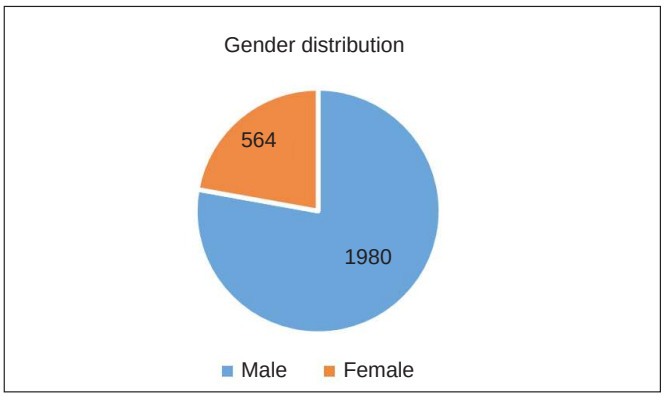

Fig 2. Gender distribution of Positive COVID-19 cases

Demographical distribution of the cases

Out of total 33 districts in the province, 66% (n=22) districts were infected. Among these 84.75% (n=*2156)* cases were from district Quetta with an attack rate of 88.66/100000 population, followed by Pishin district with an attack rate of 12.58/100000 population. The community circulation had been established in 74% (n=37) union councils out of total 50 in district Quetta. The details of district wise COVID-19 positive cases distribution with attack rates in Baluchistan province is given below as Table 1.

There was a gradual increase in the number of Positive COVID-19 cases started from Epid week 11 March 11th, 2020 till Current week 20 May 16th, 2020 in Balochistan. The number of Positive COVID-19 cases increased with daily cases reported from community, entry points at different places (airport, borders) which was also directly related with increased number of testing done as shown in Figure 2. The Positive case was declared as recovered cases after being tested negative two times at PCR for COVID-19.

Table 1: Demographical distribution of cases and attack rate

Districts	Frequency (n=2544)	% of total cases	Attack rate/100000 population
Quetta	2156	84.75	88.66
Pishin	99	3.89	12.58
Sibi	17	0.67	11.74
Mastung	31	1.22	10.89
Killa Abdullah	64	2.52	7.91
Killasaifullah	28	1.10	7.64
Jaffarabad	28	1.10	5.10
Chaghi	12	0.47	4.97
Ziarat	7	0.28	4.09
Noshki	6	0.24	3.14
Lasbela	18	0.71	2.93
Kharan	4	0.16	2.40
Harnai	2	0.08	1.93
Loralai	8	0.31	1.88
Musakhail	3	0.12	1.68
Panjgur	4	0.16	1.18
Dera bugti	3	0.12	0.96
Zhob	3	0.12	0.90
Sohbatpur	1	0.04	0.47
Kohlu	1	0.04	0.44
Bolan	1	0.04	0.39
Khuzdar	2	0.08	0.23
Other Provinces	44	1.73	-
Blank	2	0.08	-

It took 44 days to get to the first 500 positive COVID-19 cases in the Baluchistan. Later, the numbers started increasing and it took only 5-7 days to reach each 500 positiveCOVID-19 cases. Figure 4.

Local and imported cases

Local transmission in Balochistan specifically in Quetta city is gaining momentum with every day passing, the total number of local transmission community circulation cases in Balochistan has reached 94% of the total cases (n=2398), See Figure 6 below. The local circulation established after the introduction of first COVID-19 case reported from the individual returning from Iran (Zaireen) on March-11, 2020.

Deaths among these positive cases in Balochistan

There are total 36 deaths reported among the laboratory positive COVID 19 Cases in Balochistan during March 11th to May 16th, 2020, with overall mortality rate 2.33%, with Male gender predominance 83%(n=30) mostly among age group above 45 years 86%(n=31). Table No. 7 below shows the age and gender wise distribution of the deceased positive covid-19 cases. The highest numbers of deaths recorded 61% (n=22) was among age group 45-60 years followed by 25%(n=9) above 60 years. The youngest age among the deceased is 20 years old and oldest 84 years old. Highest number of deaths (n=29) were recorded in district Quetta followed by 04 deaths from district Pishin, 02 from district Lasbela and 01 from district Sibi.

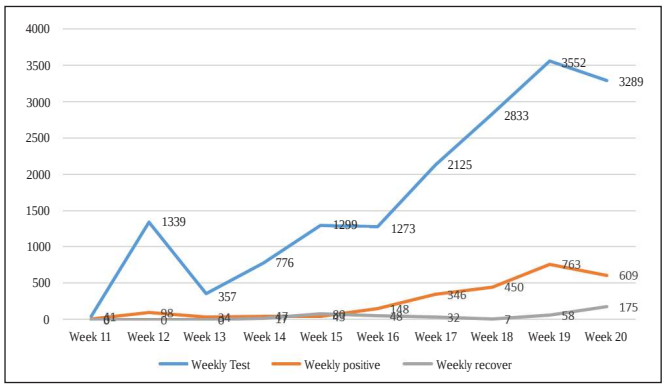

Fig3. Weekly lab tests, positive and confirm cases

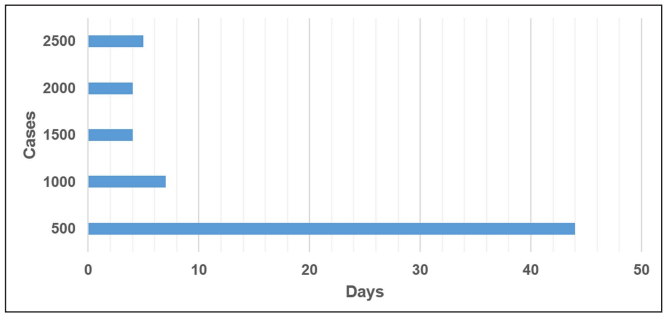

Fig 4. Numbers of days taken against each 500 cases

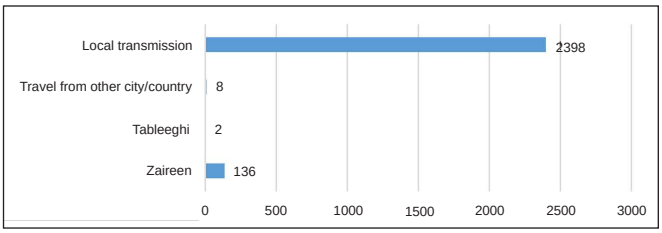

Fig 5. Distribution of cases among Zaireen, Tableeghi, traveling and community Local transmission

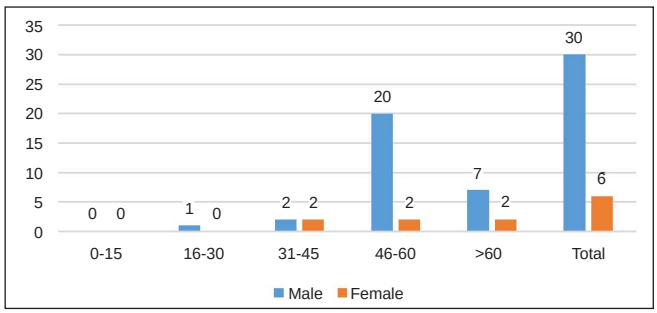

Fig 6. Distribution of Age and Gender among deceased

Discussion

COVID-19 is caused by novel coronavirus (SARS-COV2) and initially appeared in Wuhan, China during the end of December 2019. Later on January 30th 2020, it was declared an international emergency by the WHO.[19] Respiratory droplets and direct contact have been distinguished as the primary routes of COVID-19 transmissions.[20] China immediately responded to this Outbreak and launched quick control and inhibition approaches towards SARS- COV2 virus and these caused a reduction in new cases, but countries like Italy, Spain, UK, Iran and most of Europe and the USA are still fighting to control the spread and lessen the load over their health system.[21-22] Distinct steps have been taken all over the world at international level for the control of COVID-19. Still having with fewer resources, Pakistan also has taken strong and rigorous actions against COVID-19 such as Lockdowns, quarantine facilities, designed specific hospitals, Laboratories for testing, and National level awareness campaigns to control the spread of this deadly virus.[23]

After COVID-19 appeared in Baluchistan province, through Iran Border by the home returning Pilgrims, government with directions of federal Government immediately decided to quarantine them on the Pak-Iran border by establishing quarantine centers for proper screening and testing of these pilgrims.

This descriptive cross-sectional study was conducted during Epid week 11th to 20th (March 11th to May 16th, 2020), right after the first laboratory positive case of COVID-19 appeared in Baluchistan. Among all tested suspected cases, 15% (n=2544) were found COVID-19 positive from 22 out of total 33 districts of the Province, with recovery rate of 16.3% n=417 and

2.2%(n=36) deaths. Their majority 77.8%(n=1980) were Males. The mean age of positive covid19 was 34.9 years with age range 0 - 94 years. A same type of study conducted in Sindh province in Sukkur and Hyderabad city Isolation centers for Zaireens and Tablighi Jamat people during March and April 2020. Results of that study showed that among 700 people screened from Sukkur city and out of them 39.4%(n=276) were positive while recovery rate was 88.7%(n=245). Whereas in Hyderabad city 200 people were screened and out of them 48.1% (n=106) were positive with 100%(n=106) recovery rate. The mortality rate was 2.8% at Hyderabad center with no mortality at Sukkur isolation center. and all cases had history of smoking and were having co-morbidities like CVDs, diabetes mellitus, and obstructive lung diseases.[24]

In our study the results showed that the most affected age group 31.4 %, n= 799 is 31-45 years of age. Among total 33 districts in province, 66%(n=22) districts were infected. Among these 84.75% (n=*2156)* cases were from district Quetta with an attack rate of 88.66/100000 population, followed by Pishin District with an attack rate of 12.58/100000 population. Among the total cases 90% (n=2398) are as a result of local transmission in community of the virus. A study conducted to analyze low mortality rates in Baluchistan province during this pandemic showed that most affected age group by COVID-19 during the study period was middle age group 21-30 years (23.4%, n=101). The 60.6% (n=262) of these cases were infected by local spread, while only 28.9% (n=125) were pilgrims (Zaireen) returning from Iran. Like our study results District Quetta and Loralai have displayed the highest COVID-19 attack rate of 14 among all the other districts. Furthermore, the mortality rate was 1.15% and all cases were of age above 40 years, as reported in this study.[25]

Conclusion

Keeping in view the current situation in the province, the government still needs to come up with the implementable solutions, ranging from the governance, policy formulation, enhanced operational capability, capacity building of the Health workforce to increased finances in the provinces through fund reallocation and re –budgeting. At the same time for the community prevention, government with its administrative bodies need to ensure and enforce strict lockdown measures, practice of the social distancing at all level, avoidance of the social gatherings at all levels, ban on religious and non-religious congregations closure of schools universities and madrassas in the province, and policy formulations for the current situation for the community. There is also a dire need at the provincial level to enhance the technical support for the situation and have input for the technical personnel and stakeholders at multiple strata of the society. Pakistan, especially Baluchistan, need to learn from the experience of the European nations to put control to the calamity, otherwise there may be more of the non-health consequences to the population rather than health consequences with the province going farther deeper into state of deprivation and scarcity of the resources.

Limitations

Main limitation was that we did have the data of comorbidities and COVID-19 symptoms of these laboratory positive COVID-19 patients included in our study including the deaths reported during this study period. No other tests available other than PCR. Follow up of the patients could also not done.

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