



Pandemic Situation in Pakistan: Recoveries and Mortalities Rate of COVID-19 during First and Second Waves of Pandemic in Pakistan - Data from Feb to Dec 2020

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Abstract

The novel coronavirus disease COVID-19 outbreak has caused significant global issues and challenged healthcare systems across the globe and in Pakistan as well. This infectious disease is found to be a pandemic and has massively impacted countries across the world. The disease is still rapidly spreading and has caused many deaths in Pakistan, according to the world health organization; early in the year of 2020, Pakistan was ranked among the top 10 countries in the world reporting the highest number of new cases of COVID-19 per day during the first wave of the outbreak. The second wave of COVID-19 was relatively high on the first wave of disease in the current scenario of the pandemic. In the all over Pakistan, the real-time PCR is being applied for the qualitative detection of COVID-19 in the human nasopharyngeal swab specimen. From Feb to Dec.2020, in Pakistan there were a total of 416,499 cases registered across the country there have been (2%) deaths, with (85.2%) total recoveries. Sindh and Punjab were the most affected provinces; however, Balochistan, KPK, and other regions of Pakistan were less affected comparatively. This short communication is carried out to shed light on the coronavirus outbreak in the country; it will help to highlight the recoveries and mortalities rate of first and second waves of the disease.

Keywords: Real-time PCR, COVID-19, Coronavirus, Pakistan, pandemic.

Introduction

The coronavirus disease outbreak-2019 has badly affected national and global populations.

In the current scenario, Coronavirus (COVID-19) is a global pandemic that has caught the attention of many scholars. The number of daily COVID-19 cases rapidly increased during the first and second waves (1-2). As of Dec. 2020, 76,023,488 confirmed cases of COVID-19 have been reported including 1,694,128 deaths globally (<https://covid19.who.int/>) (3).

First time the cases of COVID-19 in humans were reported by an official announcement from the Government of China in Wuhan City, in Dec. 2019 that caused 1,023 deaths in this part of China as of Feb. 2020 (4).

In Pakistan, the first positive case of the coronavirus (COVID-19) was identified in Karachi in a 22-year-old male with a "history of travel from Iran where he got an infection of COVID-19 in Feb 2020 (5). Pakistan still has the worst situation for the speedy rate of COVID-19 cases. As of March 15, 2020, due to the arrival of pilgrimages from Iran via the Taftan border, the

number of confirmed cases had begun to increase rapidly. In addition, since then, cases in all provinces of the country have been rising exponentially day by day (6). October 28, 2020, the government of Pakistan has officially announced, the second spell of COVID-19 in the country, with a daily surge in cases reaching 750 compared to 400 to 500 a few weeks earlier. Sudden increases in active cases from 6,000 to 11,000 and hospital admissions were registered nationally with critical cases of 93 on ventilators across Pakistan. The condition of the second wave of the COVID-19 pandemic was getting worse due to the ignorance and irresponsibility of the public and community as the results are increasing the positive ratio of the virus after a gap of 70 days by more than 3% from the first wave of disease (7). This short communication aims to raise awareness about the country's update of coronavirus outbreak. It will help to highlight the recoveries and deaths situation of the first and second waves of disease. In a nutshell, as well as the steps made by Pakistan's health sector to reduce the risk of communication.

Methodology

The ministry of National Health Service Pakistan recommended the real-time PCR method for the Coronavirus detection. This molecular diagnostic assay is being applied to samples of patients; those are hospitalized and non-hospitalized in various healthcare facilities of Pakistan (8). The finding of this qualitative testing is revealed in the results section. (The data sets of confirmed cases were acquired from (www.covid.gov.pk) on December-2020. Specifically, we have approached Proportion-hypothesis testing for the comparison of recoveries and deaths of all regions of the country in the COVID-19 pandemic.

Results

As of Dec-05-2020 total numbers of reported cases in Pakistan were 416,499, regional-wise break up as shown in (Figure 1.), 8,361 individuals had died, while total recoveries were 355,012.

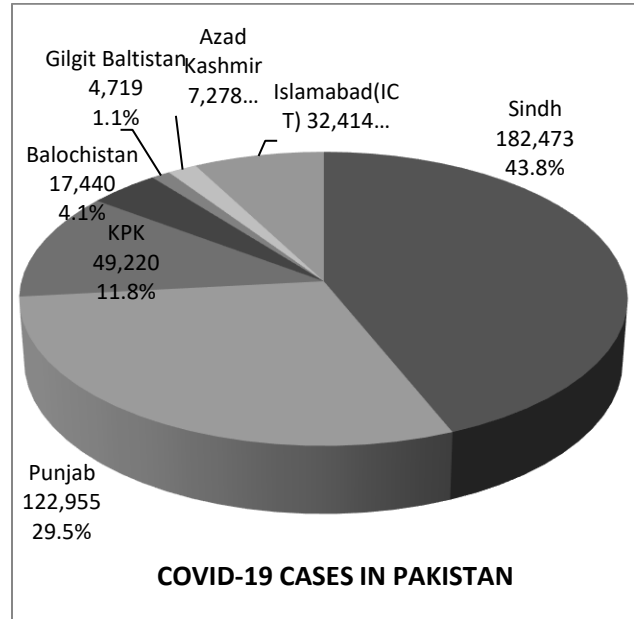


Figure 1. Describes the confirmed cases in the provinces of Pakistan

The acquired data shows that 43.8% (182,473) of confirmed cases were registered in the Sindh region which is the highest number of cases all over the country; second highest cases were reported from province of Punjab with 29.5% (122,955) (9).

Through proportion-hypothesis testing the calculated Z-score/P-value of recoveries and mortalities rate as shown in Table 1.

Table 1. Calculated Z-score/P-value of total recoveries and deaths in all regions of Pakistan Assuming large sample size > 10000 and using test of proportion following p-values are calculated

Regions	Recoveries				Mortalities			
	1st wave	2nd wave	Z-Score	p-value	1st wave	2nd wave	Z-Score	p-value
Sindh	46.45%	43.95%	3.552	0.0004	31.33%	41.26%	-14.602	0.000
Punjab	27.26%	28.25%	-1.563	0.118	40.09%	35.35%	6.915	0.000
KPK	12.96%	12.23%	1.556	0.1198	21.64%	11.44%	19.412	0.000
Balochistan	4.44%	4.79%	-1.18	0.2382	2.75%	1.21%	7.817	0.000
Gilgit Baltistan	1.11%	1.31%	-1.293	0.1958	0.59%	1.67%	-7.225	0.000
Azad Kashmir	0.54%	1.99%	-9.174	0.000	0.68%	3.71%	-14.623	0.000
Islamabad	7.20%	7.45%	-0.678	0.4975	2.91%	5.35%	-8.671	0.000

The report analyzed the cases of Pakistan (Figure 2.); it has been found that a high percentage of recovery cases was reported from Sindh in both waves of disease. The highest death cases of the first wave are reported from Punjab and KPK comparatively.

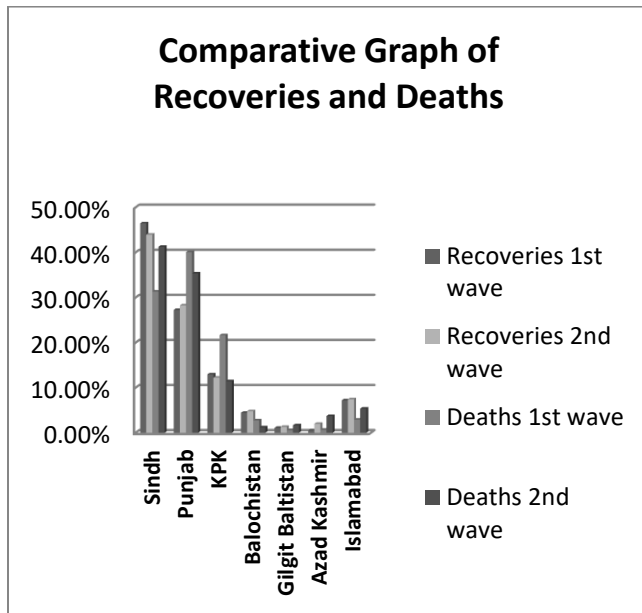


Figure 2. Comparison of Recoveries & Mortalities of 1st and 2nd waves of all regions of Pakistan

Relatively, the regions of Balochistan, Gilgit Baltistan, and Azad Kashmir had a well-improved rate in both waves as well. The data of Islamabad (ICT) showed the moderate rate of both cases separately.

Proportion-hypothesis testing has shown the significant P-values in recoveries of Sindh and Azad Kashmir regions only, and it is less than 0.05 in mortalities of all Pakistan's regions, so the null hypothesis is rejected in mortalities of all over the country during both waves of COVID-19.

Discussion

The outbreak of COVID-19 associated with SARS-CoV-2 began in the Wuhan city of China in early December 2019. It has spread rapidly with confirmed cases in almost every country around the world and has become a new global public health crisis. Since the beginning of March-2020, there has been a fast increase in new cases of COVID-19 and related deaths outside of China, more than seven million confirmed cases and over 400 thousand deaths had been reported from 213 countries and territories as of June 8, 2020.

The disease is usually diagnosed by detecting viral RNA in a nasopharyngeal swab or broncho-alveolar lavage (BAL) using real-time reverse transcriptase-polymerase chain reaction (RT-PCR) (10).

COVID-19 is still on pandemic status throughout the world, the Global data trends indicate that the pandemic is not yet over (11).

In Pakistan, the death and morbidity rates raised to unexpected levels since the year 2020 and the frequency of coronavirus disease increased as well, the main reasons are that public negligence of proper SOPs and traveling of people by land, air, and sea from neighboring states, cities, and provinces (12).

Although, vaccines are helping the nations to exit COVID-19 faster but some countries have a high rate of virus yet. Pakistan faced a greater risk of coronavirus spreading during the first and second waves of the pandemic.

Additionally, The COVID-19 cases are fluctuated in different regions of the country time by time; Sindh and Punjab have remained on the top among all the regions in the scenario of pandemic high ratio. However, the government of Pakistan acquired all reasonable ways against the COVID-19 to reduce virus transmission in the community.

Conclusion

The general analysis revealed the mortality and recovery surveillance rate of COVID-19 cases in a high burden of disease through real-time PCR testing to diagnose these cases in Pakistan. Real-time PCR is the highly sensitive and specific assay that provides a higher resolution of pathogen detection. The COVID-19 is a global pandemic and has affected a high number of populations across the globe. The COVID-19 cases are increasing at a rapid pace. The results of the reported study are Pakistan has an extremely high number of patients diagnosed during the second wave of COVID-19 in 2020 and Karachi was the most affected city on that time. The infection rate of COVID-19 was a little bit decreased in July, Aug., and Sept. 2020, but the situation was worsening again from Oct. 2020 after the government's decision of easing lockdown.

Pakistan is a highly populated country with low facilitation. As a developing country, it has also a weak financial position as compared to other developed countries such as China, UK, and the USA to fight the COVID 19 pandemics. The number of hospitals and quarantine facilities is not enough to fulfill the requirements of the COVID-19 outbreak. If these healthcare facilities are improved, then they can control the transmission of viruses and the patient's treatment. The testing facilities in Pakistan are much

lower than the requirements. The healthcare facilities could be more increased by five to ten (5 to 10) folds. Pakistan's government and people should take the right steps to control the situation worst. Hopefully, Pakistan will overcome the COVID-19. However, it has been found that the disease of coronavirus transmission can be mitigated if several biosafety measures are taken. For instance, social distancing, wearing masks, washing hands often, putting the hands-on mouth while sneezing, taking special care while going outside the home, and controlling habits as touching face with hands.

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