



## Research Article

# The COVID-19 and its Impacts on Progressive Sectors of Pakistan

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**Abstract:** The COVID-19 pandemic has shocked the entire world. It originated in China and is now spreading around the world. The COVID-19 outbreak has caused major disruption in people's lives. Various steps are being taken by countries to prevent the spread of COVID-19 disease. This review article aims to investigate about each likely impact of the COVID-19 outbreak in Pakistan. According to the results, agriculture loss in GDP from 2019-2020 is 0.22%, Pakistan's exports decreased by 54.19%, while imports decreased by 34.49%, industries manufacturing reduced up to 40%. The poverty rate increased to 43%, annual growth in waste production is up to 2%, children's pattern of daily screen use increased from 1.4% to 33.3% and physical activities decreased from 10.1% to 5.8% during the COVID-19 pandemic. Till now, 5 strong waves have affected millions of people in Pakistan. To control this disease, different national and international vaccines have been introduced and about 80% people have been vaccinated in the country till date. How much these vaccines are effective against COVID-19 disease is a question mark and is important to check its efficiency as its effects varies from person to person. Therefore, it is important to know the effectiveness of vaccines against COVID-19. For this, both medical and conventional methods need to be adopted depending on the severity of viral attack. Moreover, vaccination is also referred to improve the immunity against this viral attack.

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## Introduction

The "COVID-19" disease was first identified in Wuhan city of China, in December 2019. Since then, it extended to other provinces across China as an epidemic. Following that, many adjacent nations such as Singapore, Thailand and South Korea were recorded for this pandemic, spread at an alarming rate from person to person (Workie *et al.*, 2020). After

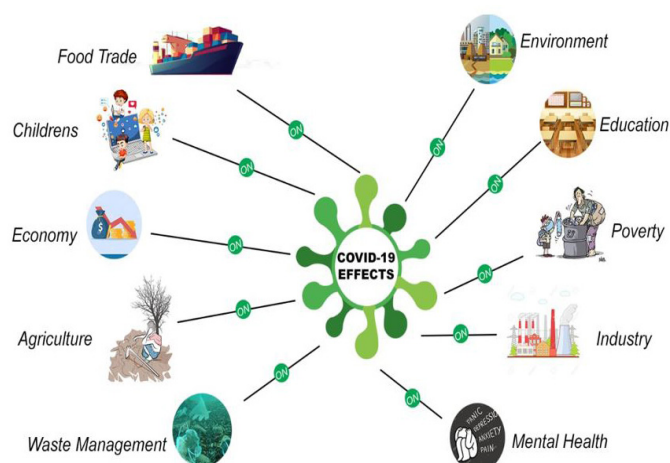
that, this pandemic started worldwide epidemic as declared by the World Health Organization on March 11, 2020. More than 224 million people have been affected globally by the deadly COVID-19 virus, putting the economic pressure as well (Khan, 2021). The OECD has anticipated a drop in economic development from 2.9% to 2.4% in 2020, and has cautioned that if the epidemic continues, economic development might reach roughly 1.5%. According

to the International Labor Organization declared this pandemic as “COVID catastrophe: Since World War-II was the most catastrophic crisis putting harmful effects, shown in Figure 1 (Poudel and Gautam, 2020). Literature revealed that in 2020, around 49 million individuals on the earth will be living in poverty. While the recent estimations showed 820 million people living below the poverty line (Pereira and Oliveira, 2020). The COVID-19 dropped the GDP lower than 9.9% globally. This loss lead to increase joblessness which increases poverty, food insecurity, and undernourishment (Meo *et al.*, 2020). A local or immigrant labour shortage occurred due to illness or travel limitations forced by lockdown that affected the supply chain significantly. In situation wherever the condition directly influences the quality of life, it also decreases manufacturing capacity. The epidemic concern, in specific, caused significant disturbances in different labour-intensive industries and marketing (Aday and Aday, 2020). Similarly, trade consequences on food supply chains have received little attention in the slew of COVID-19 studies that have surfaced in 2020 (Erokhin and Gao, 2020). This pandemic resulted in severe worldwide socio-economic concerns, such as anxiety of deliver shortages, which resulted in fright buying. This epidemic affected 41% of global exports. While the ILO estimates that about 2,700 million employees will be effected by temporary or complete lockdown throughout this epidemic. During the pandemic, 19 incidences are reported among US workers in 115 meat processing businesses. The American Veterinary Medical Association has expressed worry about a veterinary medicine scarcity caused by panic purchasing at animal medicine. A shortage like this, have an impact on animals and human’s health (Hussain *et al.*, 2020).

In Pakistan, the COVID-19 infection started in late February 2020 and its impact on Pakistan has been disastrous. The COVID-19 epidemic struck Pakistan when the country dealt with some other issues, including a water shortage, desert locust infestation, a harsh cold season, spiraling financial losses, consistently extensive poverty, and resulting food protection issues. According to Pakistan’s most recent data, the overall number of cases of COVID-19 in Pakistan is more than 1 million (Ali and Bibi, 2020). Besides human loss, COVID-19 has a huge impact on food security and nutrition. People are unable to protect food due to COVID-19 and lockdown. Food safety refers to the accessibility of food and one’s capacity to obtain it. According to Pakistan’s NNS (2018), the global speed of severe undernourishment amongst children under the age of five has previously surpassed the WHO urgent situation threshold of 18%, with the situation particularly concerning in Sindh (23.3%), KP (23.2%), and Baluchistan (18.9%) (Ubaid-ur-Rehman *et al.*, 2021). Since mid-March 2020, Pakistan has been on a partial lockdown for 222 million people. Early steps slowed the spread of COVID-19 across the country. However, in future, the COVID-19 shutdown is proving to be a significant source of anxiety for the general people, particularly labours and framers. A new iceberg of catastrophe awaits the general public and, in particular, farmers who are battling to harvest, thresh, load, and transport their products such as wheat, fruits, and vegetables to designated markets. For two reasons, the financial and commercial inactivity shock waves will likely be substantially more severe in Pakistan, affecting industry and agriculture. First, the pre-COVID economy is still abbreviated because of the persistent and compounding problems of joblessness, insufficient income, and starvation. Second, day-to-day wage work is the most vulnerable segment of our population (Khan and Noureen, 2020). The purpose of this study is to investigate, the significant effects of COVID-19 pandemic on various sectors such as agriculture, food trade, socio-economic, industries, health, education, waste management and environment of Pakistan.

## Materials and Methods

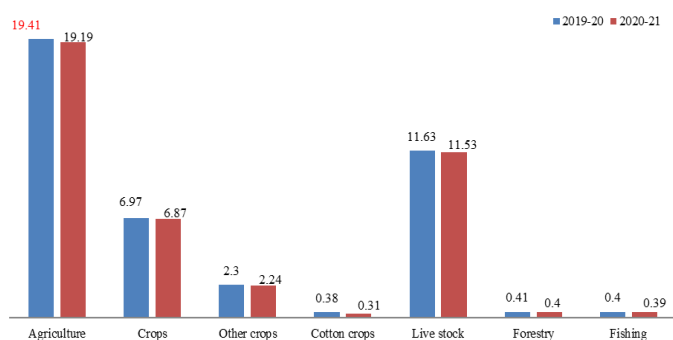
This is table study and the data was collected from different research articles (mentioned in the reference section), news and relevant reports to the topic concerned. While for graphical representation of data, MS. Excel-2010 was used.



**Figure 1:** COVID-19 effects.

## Effects of COVID-19 on different sectors of Pakistan

**COVID-19 and agriculture:** Agriculture sector employs over a billion people worldwide and is important for many emerging countries. Pakistan holds an important place in the economy. This sector contributes 19% of GDP, 39% of employment and represents the backbone of the rural population which constitutes 63% of the country's population. The COVID-19 outbreak is disrupting agriculture with an estimated 32% unemployment in the sector.



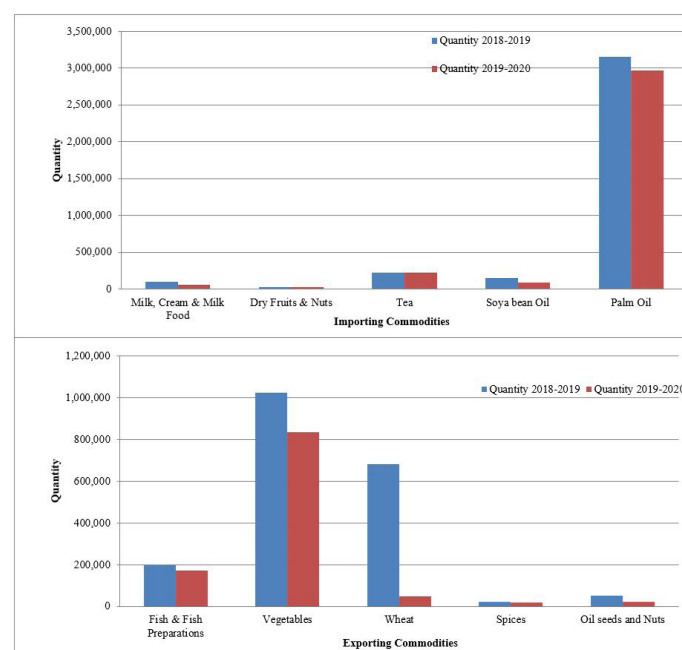
**Figure 2:** Agriculture sector shocks due to Covid-19 (Aday and Aday, 2020).

Pandemic prevention tactics hamper the manufacture and delivery of agricultural products (Workie *et al.*, 2020). It also appears to have had an impact on food and agricultural production as well as food value chains. The main food delivery system, especially the food supply between the city and rural areas, has been severely disappointed during the pandemic. Figure 2 shows the percent loss in GDP in agriculture sector during to COVID-19 pandemic. Restricting mobility or importing and exporting can make it difficult to transport essential foods and get them to processing plants and markets, impacting producers and consumers. It could have important consequences, in particular for the poorest actors, such as migrant workers, urban populations at risk, displaced people and others who mainly depend on the bazaar to meet their food needs. Wage cuts or freezes, price volatility and ease of access to essential foods will have a significant impact on the food security and malnutrition of populations (Yamano and Arif, 2022). Pakistan has granted exemptions to food systems during the pandemic and a large number of farmers have reported disruptions in the purchase of agricultural inputs due to rising prices. Farmers also faced difficulties with labor and obtaining machinery or spare parts for land preparation, which caused the level of production to drop from 26% to 14 for tomatoes, 31% to 27% for fruits and vegetables and

33% to 27% for milk in 2020. These disruptions in the food supply chain have persisted in 2021. Maintaining the situation, many farmers have been wary of growing crops to high added value for fear of prolonging market disruptions. In this regard, the government should help farmers to ensure market access for the production of agricultural products (Mustafa and Yasin, 2020).

## COVID-19 and food trade

The COVID-19 pandemic has hit rural households in Pakistan in 2020. A decline in food consumption was reported at 58% in 2020 and further decreased by 21% in 2021. While non-food expenditure fell from 45% to 34% (Mustafa and Yasin, 2020). Some governments' food trade policies have been changed due to the current COVID-19 pandemic with some imports are facilitated while exports are prohibited. The main reason why countries set sales limits to other countries is to ensure that the amount of goods available in the domestic market remains stable (Rasheed *et al.*, 2021). Although the export ban usually has this impact in the short term, it also has inevitable negative consequences such as (i) export restrictions lower domestic prices, harming farmers economically, leading to lower agricultural production and fewer incentives in business and (ii) by losing their position in international markets, nations will lose their competitive advantage (Haider, 2020). In Pakistan, how did the pandemic affect the import, export commodities are shown in Figure 3.

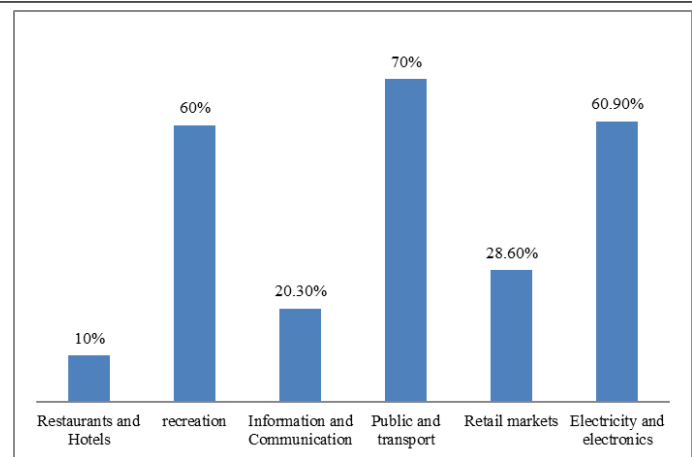


**Figure 3:** Decrease in import, export of Pakistani commodities (<https://www.pbs.gov.pk/>).

### Socio-economic effects of COVID-19

Regardless of geographic region, race, color, religion or income status, the socio-economic repercussions of the COVID-19 epidemic have been seen around the world. It has been noticed that majority of countries have experienced declining GDP and increasing unemployment, especially in the unorganized sector, as a result, poverty and food insecurity have worsened and undernourishment. The pandemic has caused mess on economies around the world. One of the countries in Pakistan where supply and demand shock is standard, and this shock has left unsightly imperfections on the economy (Geven and Hasan, 2020). According to a study, the Pakistani market is on the verge of a downturn and as a result millions of employees are left out of work due to the pandemic. The pandemic has had a major pressure on the Pakistani economy. For example, sharp declines were observed in rugs and carpets (-19.2%), play products (-14.9%), surgical or medical instruments (-8.44%) and leather goods (-27.1%). Large-scale manufacturing output fell 24.8% in May 2020 (Geven and Hasan, 2020).

The COVID-19 pandemic has hurt rural households and it is reported that about 1/3 of farms have observed loss of wages and non-farm income in Punjab province in 2020 and 2021. The rate of decline has been the same for Sindh with 37% to 26% over the same period. The total labor force in Pakistan is 75 million. The pandemic could affect the jobs of around 20 million people in different sectors, slowing economic value (Mustafa and Yasin, 2020). The COVID-19 has influenced almost all of Pakistan's key export partnering countries, including China, UK, US, Italy, France, Spain and Germany. As a result, export demand has dropped dramatically. Due to this, Pakistan's exports decreased by 54.19%, while imports decreased by 34.49% (Song-Jiang, 2020). This decrease is detrimental to income from charges and excluding charges, while State charges have increased, leading to a worsening of the budgetary imbalance. Figure 4 shows the economic loss in different sectors of Pakistan. Because Pakistan's economy is built on culture, industries, and services, lockdown restrictions have disrupted manufacturing and supply chain management, which has negatively impacted the economy and society, especially low-wage workers and the disadvantaged. Tourism-related businesses, including hotels, cafes, small businesses and transport, have all been affected by the pandemic (Mukhtar, 2020).



**Figure 4:** Sectors economic loss in percentage (Rasheed, et al, 2021).

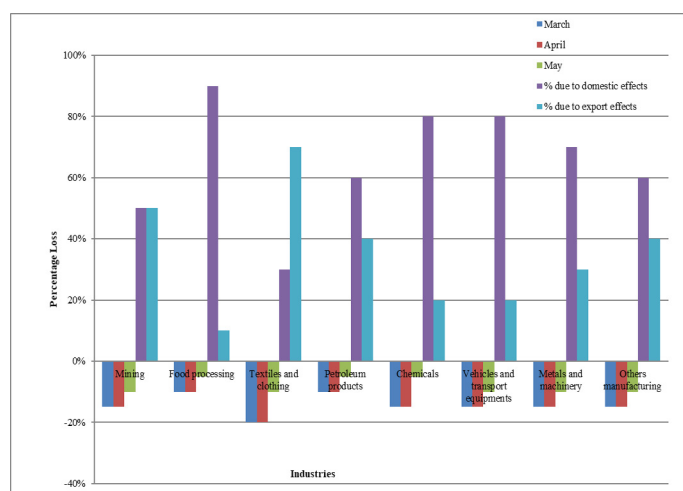
### COVID-19 and industries

Industries under the manufacturing sector constitute about 20% of the total output of the country's economy. This sector contributes approximately 60% to tax revenue, 13% to GDP and 17% to employment. COVID-19 has lowered the share of manufacturing industries in GDP in 2020-21. To combat the situation, the government announced an economic relief package for financing 100 billion shares to the industrial sector (Tarkar, 2020). COVID-19 influenced the manufacturing sector in terms of the supply of raw materials for production. Due to the scarcity of raw materials, the working and production capacities of producers are limited. Due to the COVID-19 epidemic and resource containment, the availability of resources is prohibited. Items imported and exported for food production were banned, and agricultural production suffers, which is also linked to a shortage of raw materials. In the wake of the pandemic, private businesses have also closed, increasing unemployment and forcing workers and farmers to return home. The production capacity of industries has become limited due to limited resources and the scarcity of raw materials (Tarkar, 2020). Figure 5 shows the industrial loss due to lockdown during March to May, 2020.

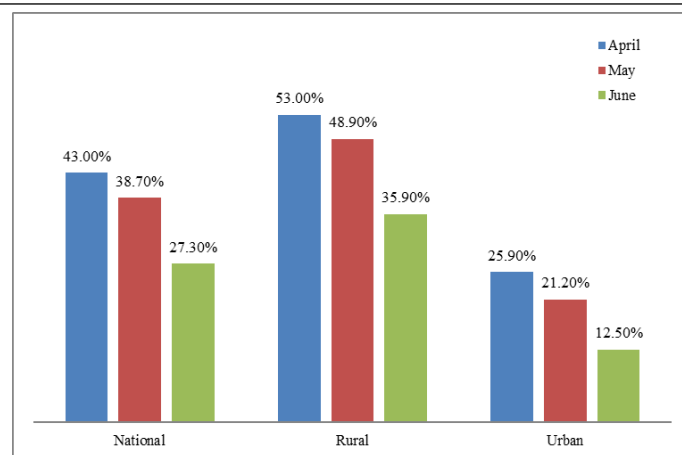
### COVID-19 and poverty line

The COVID-19 pandemic is having a huge impact on poverty and the labor market in Pakistan. In terms of poverty, Pakistan ranks 1500th out of 189 countries with around 55 million people (29.5% of the total population) living below the poverty line. The pandemic may affect 50% of the total population, i.e., 120 million people likely to fall below the poverty line in 2020 (Song-Jiang, 2020). Pakistan's poverty rate

peaked at 43% before falling to 38.7% in May (Figure 6). The reopening of the economy and the government's ERP resulted in a quick reduction in poverty. By the end of June, the poverty rate had risen slightly over the baseline of 27%. Workers in manufacturing, wholesale and retail, and construction, as well as those employed informally as domestic assistance and day laborers, all lost their jobs, at least temporarily. Job losses were exacerbated by workers' inactivity following the closure of public transportation, resulting in a massive increase in poverty during the first 12 weeks of the lockdown (Haider, 2020). The inner city poor live with inadequate quality services, which increase their chances of becoming infected in Pakistan. In contrast, the rural poor are less exposed to the virus but have less access to health services, which represents a significant risk. While many rural residents receive remittances from urban migrants, the city's closures have had a financial impact on them in addition to the health challenges. People who are poor or in the lower middle class are more likely to have dangerous jobs and cannot afford time off work due to illness. The odd-job economy has provided women and the poor with a convenient way to work and start businesses, but the crisis has wiped out Pakistan's two most vulnerable communities (Andrabi *et al.*, 2020). About 27% of Pakistanis live in poverty, and this pandemic disease is said to exponentially increase the number of people living in poverty. Doctors have repeatedly urged authorities to restore the lockdown of the country as the spread of the virus is stubborn and threatens to ruin every nook and cranny. Today, hundreds of people are regularly infected with the virus, and the death toll is rising as poverty worsens (Farooq, 2021).



**Figure 5:** Initial size of shock due to COVID-19 on industries (Haider, 2020).

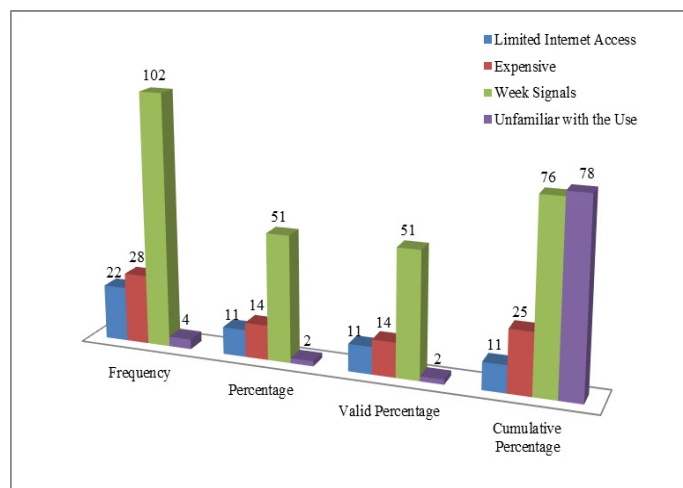


**Figure 6:** Poverty rate during the lockdown period in percentage (Haider, 2020).

### COVID-19 and education

Pakistan was among the top countries in the world in closure of educational institutions due to COVID-19. The closure was started from February to March-2020 according to the severity of the disease. This pattern of closing schools and colleges across the country was to minimize the spread of COVID-19 (Maity *et al.*, 2021). Various important activities were to take place, including competitions and written tests for several universities, board and semester examinations and admissions. No immediate solution had been identified to stop the COVID-19 epidemic and the learning system. The closure of schools and universities would have a short-term effect on the continuity of learning for young people. Nevertheless, it will also have a significant influence on the economic development and society of the country. Due to the quarantine, the teaching technique in institutes and universities has also changed. The old chalk conversation model has been replaced with new online technology (Chatterjee *et al.*, 2020). In this situation, e-learning solutions make teaching and learning possible, but interaction is an important issue with e-learning. The descriptive statistics for student's perspective for online learning is given in Figure 6 (Baloch *et al.*, 2021). Policy makers are trying to address the issue of student engagement as well as the digital divide. To effectively manage the long-term education crisis, multi-pronged management is needed. Now the online teaching and learning mode is a normal routine (Baloch *et al.*, 2021). After getting the minimum record of COVID-19 disease, the educational institutions began a staggered re-opening starting with classes on September 15. For this, all the students had to attend their respective institutions on alternate days. At the global level, Pakistan is expected

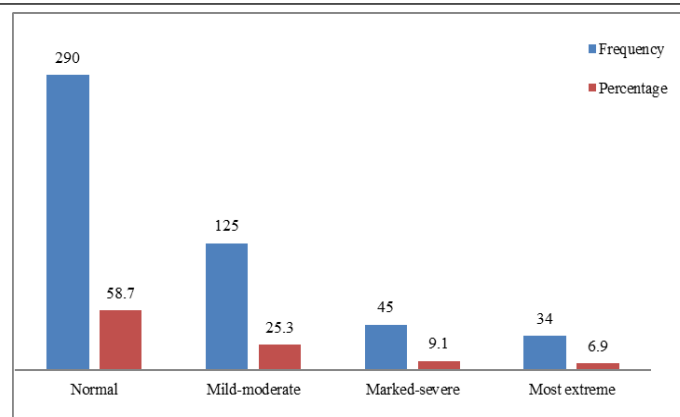
with highest dropout of students due to COVID-19. It was estimated that about 930,000 children expected to be dropout from schools. This estimation is based on low income pattern of education which is closely associated with (i) high poverty level, pushing children towards labor or marriages in early age and (ii) the cost of private schools in which 38% of children aged 6-10 were enrolled before crisis (Farooq, 2021).



**Figure 7:** Descriptive statistics for students' perspective for online learning (Tarkar, 2020).

#### COVID-19 effect on humans health

According to Pakistan's most recent data, the overall number of cases of COVID-19 in Pakistan is more than 1.21 million, with 26,877 deaths and 923 thousand recovered cases (Ali and Bibi, 2020). Similarly, the pandemic and the nationwide lockdown are likely to increase the cases of anxiety. Patients with obsessive-compulsive disorder, especially those with compulsive controlling, hoarding, or washing, are at higher risk (Chatterjee et al., 2020; Baloch et al., 2021). Patients with recurrent depression face a significant amount of stress, threatening typical day-to-day activities, and increasing levels of anxiety would rise as a result in cyclical worsening of symptoms of depression. Widespread anxiety disorders, chronic insomnia and even suicide are examples. The anxiety level of people affected by COVID-19 and implementation of lockdown is shown in Figure 8 (Khan, 2021). Quarantine can cause a whole host of problems. Fear, fury, anxiety, loneliness, and the guilt of being absent at family gatherings are all common reactions. These issues may reappear as a result of new severity in someone who has had a previous psychiatric illness, resulting in suicidal thoughts and attempts (Kilince et al., 2021).



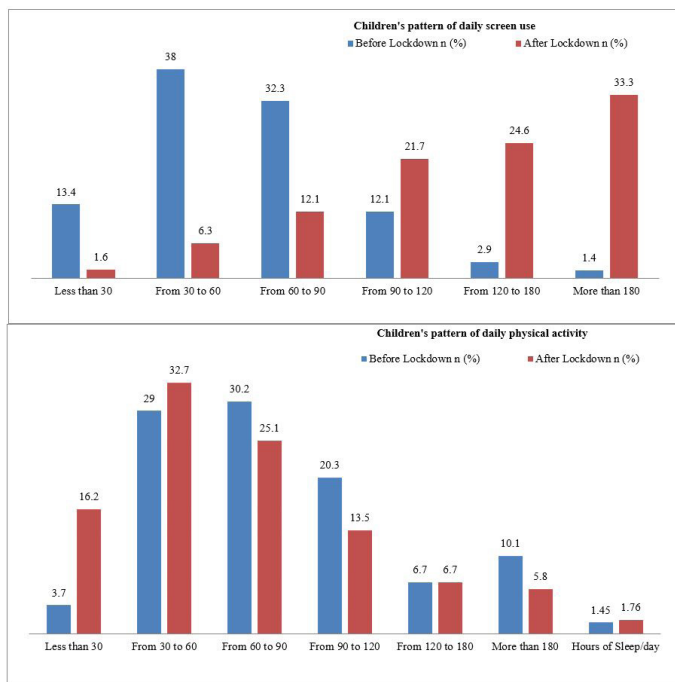
**Figure 8:** Anxiety level of people due to Covid-19 (Baloch et al., 2021).

#### COVID-19 effect on children

Although the number of children infected by the pandemic is small but the psychological impact on this group is often harsh. The Epidemic has dramatically affected children's lifestyle and routines. School closures, lack of outdoor activities, social actions, and lack of direct engagement with friends, changes in eating and sleeping habits are some of the most typical factors (Morgul, 2020). One of the universal tactics to control the spread of deadly COVID among children was social distancing through school closures. As a precaution, all additional activities have also been suspended. These have made a significant impact on the psychology and mental health of the children, as they prevent them from socializing with their peers, classmates and teachers. During the lockdown of COVID-19, one of the alternatives to help students continue their education online and keep them busy was distance learning (Kluwer, 2020). While it was difficult to get the kids to focus and take all the online lessons under these extraordinary circumstances, it eventually became manageable. The impact of the pandemic's influence on children, eating and resting habits has changed dramatically in most households. As a result, a significant increase in display time has become the new norm. With so much free time, young people are opting for indoor entertainment such as game shows/ video games, smartphones and tablets over outdoor activities. In turn, this has an impact on children's sleep patterns (Geven and Hasan, 2020). Figure 9 shows the children's pattern of daily screen use as well as regular physical activity, before and after lockdown (Mukhtar, 2020).

#### COVID-19 and waste management

The WHO Centers are attempting to put an end to it COVID-19 from spreading and posing health hazards.



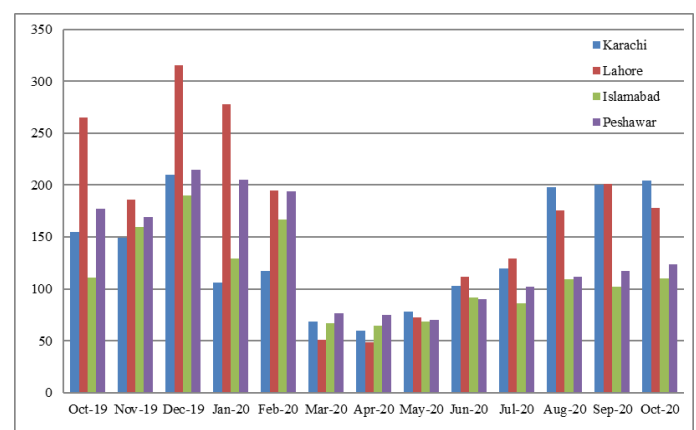
**Figure 9:** Children's pattern of daily screen use, physical activity, before and after lockdown (Dharmaraj et al., 2021).

Personal protection equipment, e.g., masks and gloves should be used by medical staff and the general public. Due to complete lock down, the recycling centers were closed. If infectious material produced by the pandemic is inadequately kept, transported, and handled, it poses a significant environmental and health risk (Debata et al., 2020). Face masks are primarily constructed of plastic, which is very fluid resistant and non-biodegradable, and may leave traces long after it has been discarded. Table 1 shows Pakistani medical waste and daily face mask usage estimates. This type of toxic plastic garbage either disposed in landfills or in the oceans, wreaking havoc on the ecosystem. The disposed masks finally enter the sea, posing a serious threat to marine species and plants, as well as humans. Because humans are the primary consumers of seafood, the potential for micro-plastics to enter the aquatic food cycle has caused tremendous concern, and its negative impacts on human health are now difficult to measure (Dharmaraj et al., 2021). Generally, the solid waste generated per year in Pakistan is estimated around 48.5 million tonnes, with an annual growth of more than 2%. While the per day production is estimated at 87,000 tonnes. Pakistan, like other developing states, lacks

waste disposal infrastructure, resulting in significant environmental issues. The vast majority of solid waste is burned or buried on undeveloped land, endangering the general public's health and welfare (Sangkham, 2020).

### COVID-19 and environment

When businesses, institutions and economic activity come to a halt, there is an inevitable beneficial influence on the environment. The lockdown resulted in clear skies, lower carbon emissions and healthier breathing air. The environmental quality was a little bit improved in terms of air quality during the first layer of COVID-19. As industries were shut down and transportation was stopped, therefore, it improved the air quality for limited time. In short, COVID-19 has helped restore the environment. On the other hand, the epidemic has led to an increase in the volumes of biomedical and toxic waste (Khan et al., 2020). Additionally, plastics have increased, while garbage recycling has decreased, posing a future problem. In addition, the government's focus has shifted from economic and environmental operations to people. Money has been allocated for health care and the provision of basic necessities to people. Even after the epidemic is over, the main goal of government may be to reduce unemployment and engage people in more economic activities, leading to short-term neglect of green ideas, climate change and the economy as well as environmental development (Sangkham, 2020). Figure 10 shows the air quality index of different cities during pandemic.



**Figure 10:** Variation in air quality index ppm of major cities of Pakistan (Ali and Bibi, 2020).

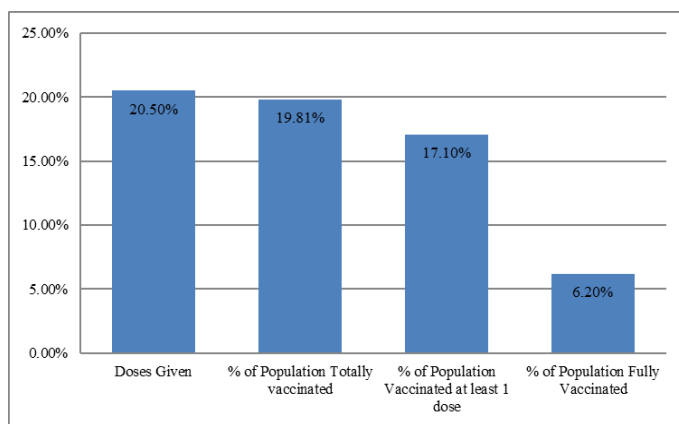
**Table 1:** Pakistani medical waste and daily face mask usage estimates.

| Country  | Population  | Population of cities (%) | Acceptance rate of face masks (%) | Every day, the ordinary population needs a certain number of face masks | Pieces used on a daily basis with a face mask | Medical waste Tones/day |
|----------|-------------|--------------------------|-----------------------------------|-------------------------------------------------------------------------|-----------------------------------------------|-------------------------|
| Pakistan | 221,213,683 | 35                       | 80                                | 1                                                                       | 61,762,860                                    | 1,099,30                |

Source: Debata et al., 2020.

### Prevention

The government has started educating the public on the importance of adopting standard procedures to prevent the transmission of virus such as disinfecting hands, wearing mask and maintaining a safe distance of 2 meters (COVID-19 Facilitation, 2020-2021). Pakistan's Prime Minister, Imran Khan, gave a speech regarding public awareness and encouraged people to cooperate government by implementing smart lockdown, ensuring the availability of food and medical services and prohibiting overseas travel. Every policy action, particularly the smart lockdown, is greatly assisting the containment and COVID control. Other states can take the same steps as Pakistan's government to improve their recovery (Meo *et al.*, 2020).



**Figure 11:** People vaccinated in Pakistan (<https://www.who.int/news-room/feature-stories/detail/vaccine-efficacy-effectiveness-and-protection>).

### Conventional treatments

For present period, these medications such as Lopinavir and Ritonavir may be beneficial in combating the condition. Lopinavir is a proteinase inhibitor that blocks a post-entry stage in the replication process of MERS and prevents SARS. Ritonavir is another inhibitor that has antiviral properties. In vitro, chloroquine is an antimalarial medication that inhibits the replication of a variety of intracellular bacteria, including coronavirus (Kluwer, 2020). Besides, medical treatment, conventional treatments are also used effectively against COVID-19 disease. The patient who is suffering from COVID-19 disease first isolates himself and can be treated the symptoms in COVID at home: First symptom is a sour throat and cold. For this, the intake of lukewarm water with honey is effective. Second symptom is fever and chills. For this, Panadol tablet is effective. Third symptom is fatigue, restless and pain in different parts of the

body. For this, complete rest and intake of healthy and pertinacious food is required (Debata *et al.*, 2020). Fourth symptom is disturbance of smell and taste. The intake of lentil sugar and use of lemons is effective. Moreover, Nigella seeds may potentially be beneficial against COVID-19 disease (Kluwer, 2020).

### Vaccination as preventive measures against COVID-19

Besides, medical and conventional treatments, vaccination is another preventive measure effective against COVID-19 attack. Review of different COVID-19 vaccines and authorization for emergency use and according to a spokesman for the Pakistan Drug Regulation Authority, AstraZeneca vaccines have been given to Pakistan with specific conditions. The vaccines are consulted for their safety and effectiveness. According to the National Command and Operation Center, the Moderna vaccine is available at approved vaccination clinics across Pakistan. On May 28, Covax delivered the 1<sup>st</sup> shipment of Pfizer-BioNTech vaccine to Pakistan (<https://covid19.trackvaccines.org/country/pakistan>). Pakistan produced single-dose CanSino vaccine with the help of China. Locally, the vaccine produced by the National Institute of Health (NIH) named as Pakvac COVID-19 vaccine. Moreover, 7 other brands of vaccine have been approved for Pakistan under the WHO. These include Moderna (mRNA-1273), Pfizer/BioNTech (BNT162b2), CanSino (Ad5-nCoV), Gamaleya (Sputnik V), Oxford/AstraZeneca (AZD1222), Sinopharm (BBIBP-CorV), and Sinovac. The DRAP Registration Board has approved the vaccine for use in children over 12 years of age. It can also be given to people with low immunity, such as pregnant women and those over 40-years who wish to perform Hajj (Williamson *et al.*, 2020). In response to an increase in COVID-19 infections in Pakistan, the Drug Regulatory Authority of Pakistan (DRAP) has cleared a vaccine made by Chinese company Sinopharm and Sinovac for emergency use. All these vaccines have been started at a mass vaccination centers across Pakistan. These vaccinations have been given to 18 years of age or older (Khan *et al.*, 2020).

### Vaccines effectiveness

All COVID-19 antibodies are effective in reducing the disease, according to clinical testing. There is a growing belief that COVID-19 vaccines provide immunity. Vaccination against COVID-19 is a vital instrument in combat against the epidemic. It can keep people from becoming ill or suffering from it, and it may also prevent others around them ([https://youtu.be/SeET\\_CPCas](https://youtu.be/SeET_CPCas)).

**Table 2:** *Clinical trial results of effectiveness of COVID-19 vaccines.*

| Vaccine         | After the first dose, protection against all symptomatic diseases (95% CI) | After the second dose, protection from any symptomatic diseases (95% CI) | From the start of vaccination, protection against serious disease or hospitalization (95% CI) | From the 21st day after the first dose, protection against severe disease or hospitalization (95% CI) |
|-----------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| AstraZeneca     | 73% (56%-83%)                                                              | 67% (57% to 74%)                                                         | 90% (58%-98%)                                                                                 | 100%                                                                                                  |
| Moderna         | 85% (66%-93%)                                                              | 95% (90%-97%)                                                            | 100%                                                                                          | 100%                                                                                                  |
| Pfizer-BioNTech | 82% (76%-87%)                                                              | 94% (90%-97%)                                                            | 89% (12%-99%)                                                                                 | 83% (-38% to 98%)                                                                                     |
| Sinopharm       | N/A                                                                        | 78% (65%-86%)                                                            | N/A                                                                                           | 79% (26%-94%)                                                                                         |
| Sinovac         | N/A                                                                        | 51% (36%-62%)                                                            | N/A                                                                                           | 100%                                                                                                  |

**Source:** <https://www.gavi.org/vaccineswork/how-effective-are-covid-19-vaccines-real-world>.

To acquire the best immunity, individuals should get most of the recommended doses of the COVID-19 vaccine. Since no vaccine is 100% efficient, some people vaccinated against COVID-19 may nevertheless get ill (COVID-19 Facilitation, 2020-2021). Some clinical trials have proved the effectiveness of vaccines against COVID-19 disease (Table 2). But some vaccines have their side effects as well depending upon the immunity of individuals. Some minor side effects may be tiredness, headache, muscle soreness, chill, fever and nausea (<https://www.who.int/news-room/feature-stories/detail/vaccine-efficacy>). As of August 21, 2021, Pakistan had provided 44.73 million COVID-19 vaccine doses. People who have gotten at least one vaccine dosage number is 37.04 million, while those who have been fully immunized may have received more than one shot number 13.4 million (<https://www.cdc.gov/coronavirus/2019-ncov/vaccines/vaccinebenefits>).

## Conclusions and Recommendations

The COVID-19 epidemic affected the people's mental health with Fear and insecurity due to potential loss of livelihood. The pandemic of COVID-19 affected the economy, health, education and agriculture sectors of the underdeveloped countries such as Pakistan. Majority of the people lost their lives due to insufficient medical treatment or due to unawareness of the COVID-19 disease and its precautions. About 1.21 million people effected and 26,787 (2.2%) deaths are in the record list of COVID-19 deaths in Pakistan. 34.49 % loss in economy is recorded due to complete lockdown in the country. While the poverty range increased to 43%. Still the 4<sup>th</sup> wave is in progress and majority of people (90,545) are fighting for their lives. The government has started vaccinations of different type as a protective treatment. But there is need to provide hygiene goods, nutritious organic

food, fitness, education, medical needs, and financial investments. Companies will be forced to intensify their focus on massive output in the aftermath of COVID-19 to minimize the loss that occurred during the lockdown period. Furthermore, as the lockdown limitation is lifted, the environment may see an increase in pollution. Vehicles, industry, wastewater discharge into water sources, and excessive plastic usage may all have an impact on the ecology. As a result, the current scenario can serve as a wake-up call for government officials, policymakers, corporate leaders, and environmentalists to work together to address ongoing climate change challenges and design a cleaner, green environment for future generations.

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## Novelty Statement

To know about the possible impacts of COVID-19 on various progressive sectors which may affect the livelihood directly or indirectly. The main purpose was to find ways how to prepare pre-plan strategies to combat such pandemics in near future.

## Author's Contribution

Nazish Huma Khan and Muhammad Sufyan proposed the idea and collected data related to the topic concerned. Tooba Saeed helped in data compilation while Muhammad Ilyas and Hazrat Hussain helped in report writing.

## Conflict of interests

The authors declare that they have no issue, no known

competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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