



# DATA ANALYTICS OF COVID-19 INFECTION PROPAGATION IN KARACHI DISTRICT CENTRAL (CASE STUDY)

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## ABSTRACT

COVID-19 brings a new alarming situation to World when infected cases hike drastically. The infected cases show numerous symptoms including flu, fever, cough, etc. The confirmed mode of transmission due to physical contact introduced, lockdown as the first method to control. After restricting people's contact, significant decreases in cases were observed. However, the relaxation in lockdown brought the graph of infected cases up again. Knowing, the prevention of the virus by following standard SOP fewer people caught the virus. The study addresses and analyzes the data of Karachi, Central district for December 2020 and January 2021. It is observed that cases sharply decrease by 25.97% in preceding months. Homemakers are infected more in all sectors. Considering infected patients, not as carriers, it is believed that a closed working environment could cause the virus to transmit virus effectively.

**Keywords:** Assessment of information related to COVID-19 infection, COVID-19 crisis in Karachi, case history of COVID-19, COVID-19 infective rate in Karachi, Data interpretation of COVID -19 outbreak, Data reviewed of COVID-19 infection, Data inspection of COVID-19 in Karachi, Spread of COVI-19 in Karachi, Spread of COVID-19 in Karachi.

## 1 INTRODUCTION

The sixth public health emergency was declared on 30<sup>th</sup> January 2020 by WHO, when Coronavirus outbreak in China. Coronavirus belongs to the Coronaviridea family. The outbreak of the Novel Corona Virus is an illness caused by the SARS-Corona virus 2 [1]. The virus killed more than 1,800 people and infected more than 70,000 people during the first five days of the epidemic [2]. The virus was re-named COVID-19 later. The actual point of origin is still unknown, however, there are assumptions regarding that. But its mode of transmission from human to human via physical contact is confirmed [3].

The virus has the same symptoms as flu, cold, fever, and shortage of breath in extreme cases [4]. An infected person can be classified into three phases. Phase 1, is an asymptomatic incubation period with or without noticeable virus; phase 2, non a severe symptomatic period with the occurrence of the virus; and phase 3, is a severe respiratory symptomatic phase with a high viral load [5].

Due to its ability to replica and mutation [6], the infection spread rapidly and became lethal worldwide. Major gaps in our knowledge about the origin of the virus, epidemiology, mode of human transmission, and clinical spectrum of the disease need to be further studied.

The main reason for the spread of the Novel Coronavirus in Pakistan is traveling, it is imported from Iran, and then it is locally spread among the population [7]. Since then, it has been spread by travelers to almost every city in the country. The other main reason for the locally spread of the virus includes the direct transmission from person to person [8].

Addressing the transmission and infection cases in "Karachi-District central" for the month of December 2020 and January 2021, this study is carried out to observe the frequency of spread involved in certain age groups, and the role of immunity in it, and occupation.

## Case study

When the first case of COVID 19 appears in Pakistan on 26<sup>th</sup> February[9] the ministry of health, the educational department, and the Government of Pakistan come into action to know the cause of its spread and its transmissible capability. As the first case appeared in Karachi, after that, all the departments get involve to further investigate the hidden cases and to know the causes of its further spread in the future. Sample collection and data compilation were begun in District Karachi Central Karachi from the month of March till now.

The study is carried out for a cluster of cases that appeared in the month of December and January to see the spike of its frequency and to see which age group, occupation, and gender has been affected.

A total of 10,942 tests have been conducted in District Central in the month of December 2020 and January 2021. Of which, 434 samples were rejected, and the rest 10,508 were tested. Which, out of 10,508, cases laboratory-confirmed positive patients were 2,729 (25.97 %), which shows low infected cases in District central in this period. If we compare the infective ratio in both genders then a total of 4994 females test have been conducted out of which 1205 (24.12%) became positive, contrarily, to men 5514 tests have were conducted from which 1524 (27.63%) were laboratory-confirmed positive cases. In gender, the proportion of positive cases in males is higher (1,524 [55.84%] of 2729 positive patients) than in females (1,204 [44.11%] of 2729 positive patients) as shown in the figure.1

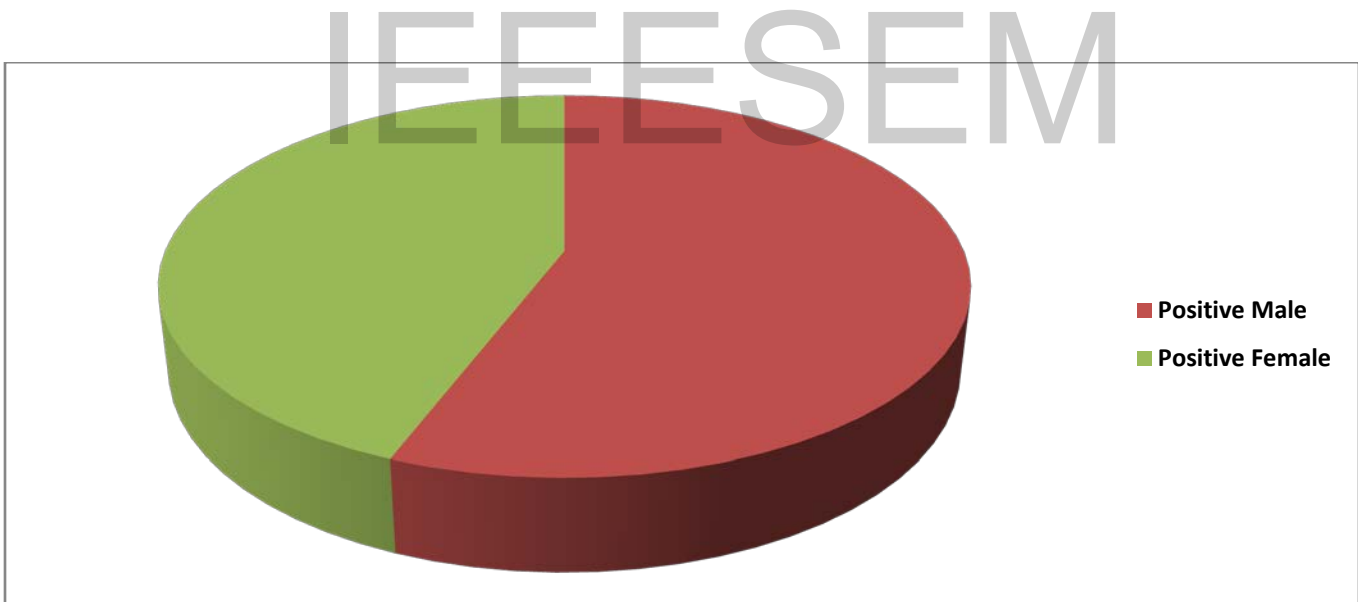
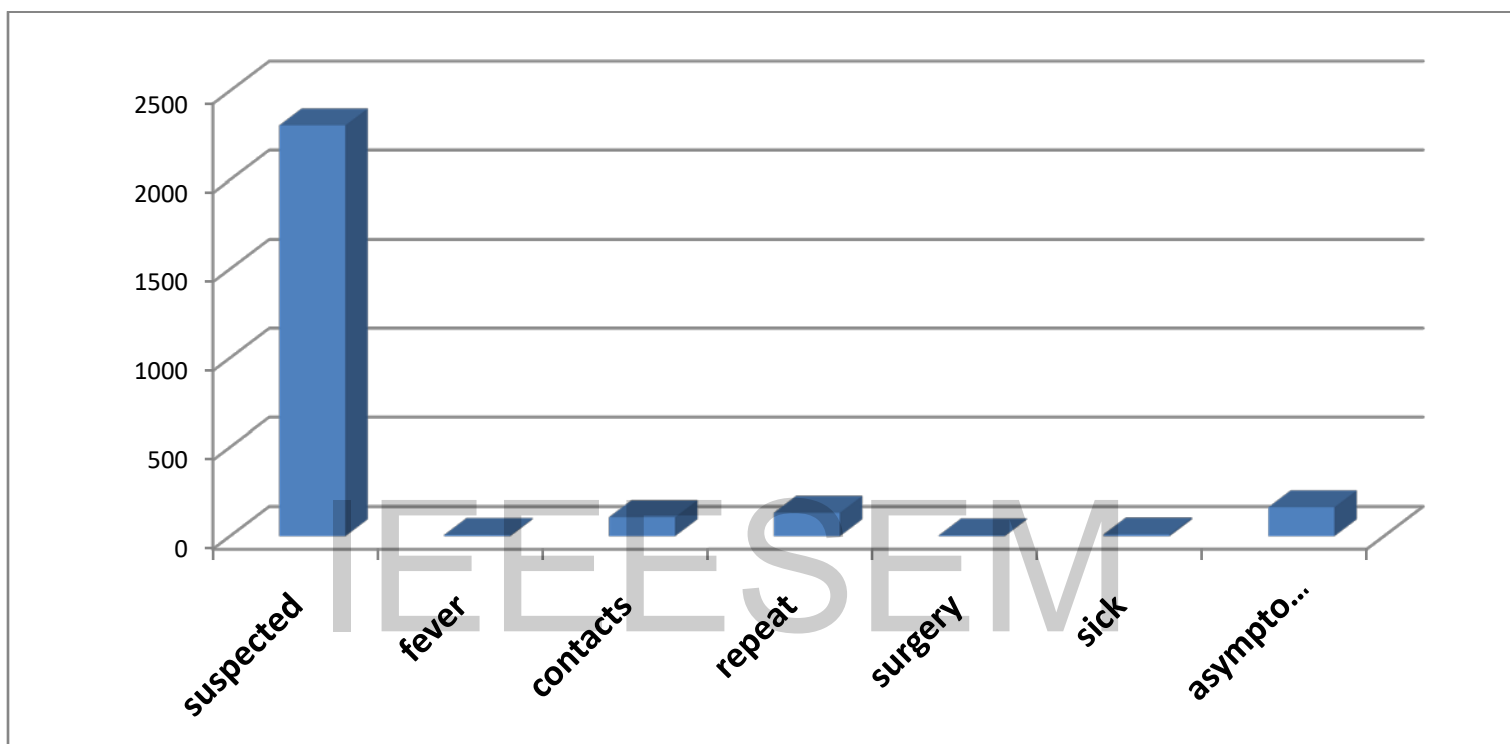


Fig: 01 Distribution of cases according to sex.

## REASON OF TEST

Fig: 02 shows (84.53% of 100 % of positive cases) patients who came for tests who are suspecting COVID-19 infectivity and 5.97% of patients who are asymptomatic. The least positive COVID-19 patients recorded were planning to undergo surgery.



Graph: 01 Reasons of test

## CLINICAL FEATURES

Most of the patients present with the following percentage of clinical features.

Out of 2729, 1900 (69.62%) manifest asymptomatic, headache 299 (10.95%), cough and flu 174 (6.37%), cough, flu and fever 149 (5.45%), flu 40 (1.46%), Shortness of breath 33 (1.20%), cough 30 (1.09%), anosmia or loss of smell 29 (1.06), fever 27 (0.98%), loss of taste 21 (0.76%), procedure 12 (0.43%), chest congestion 9 (0.32%), pregnancy 4 (0.14%) and asthma 2 (0.073%).

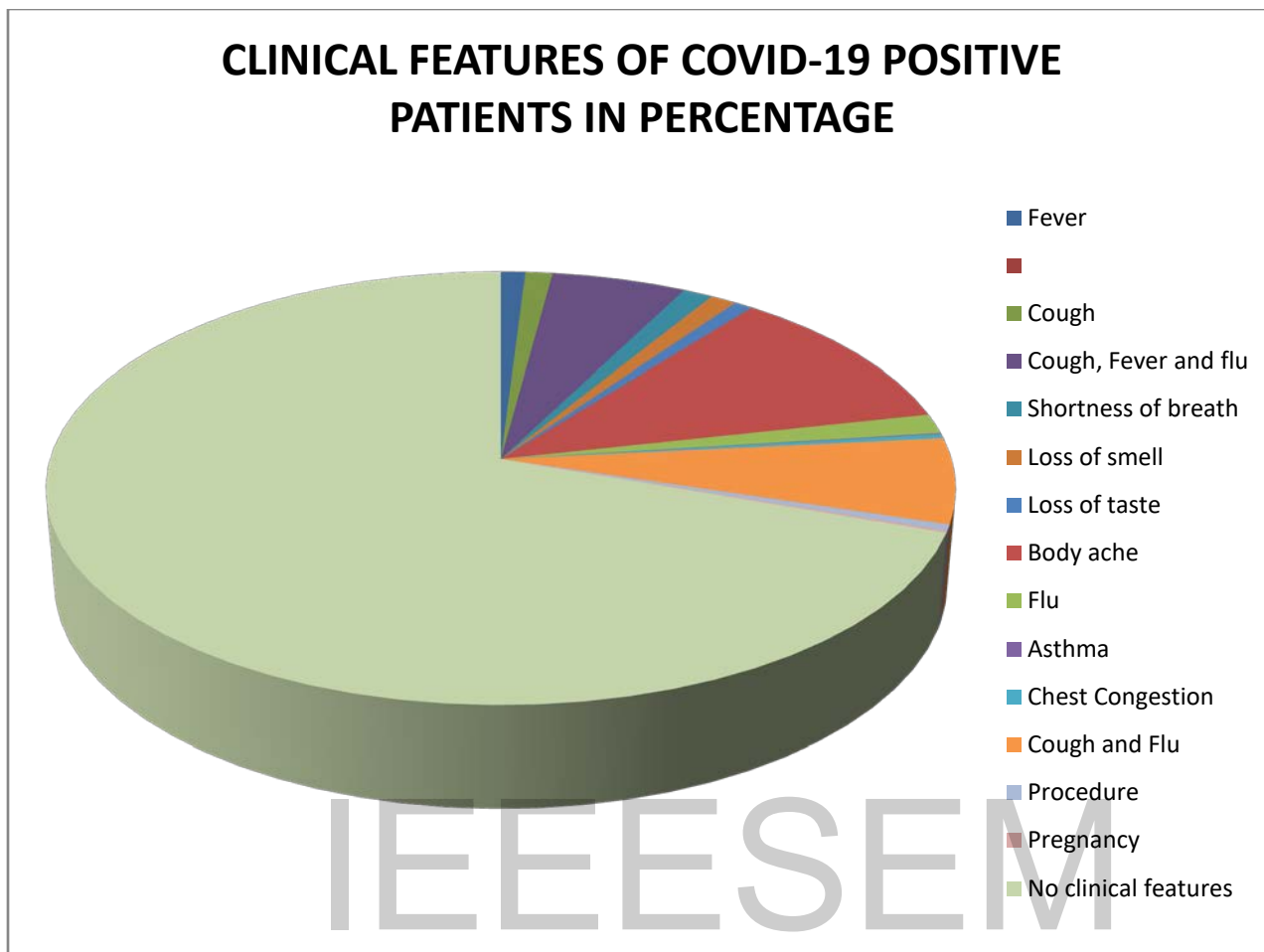
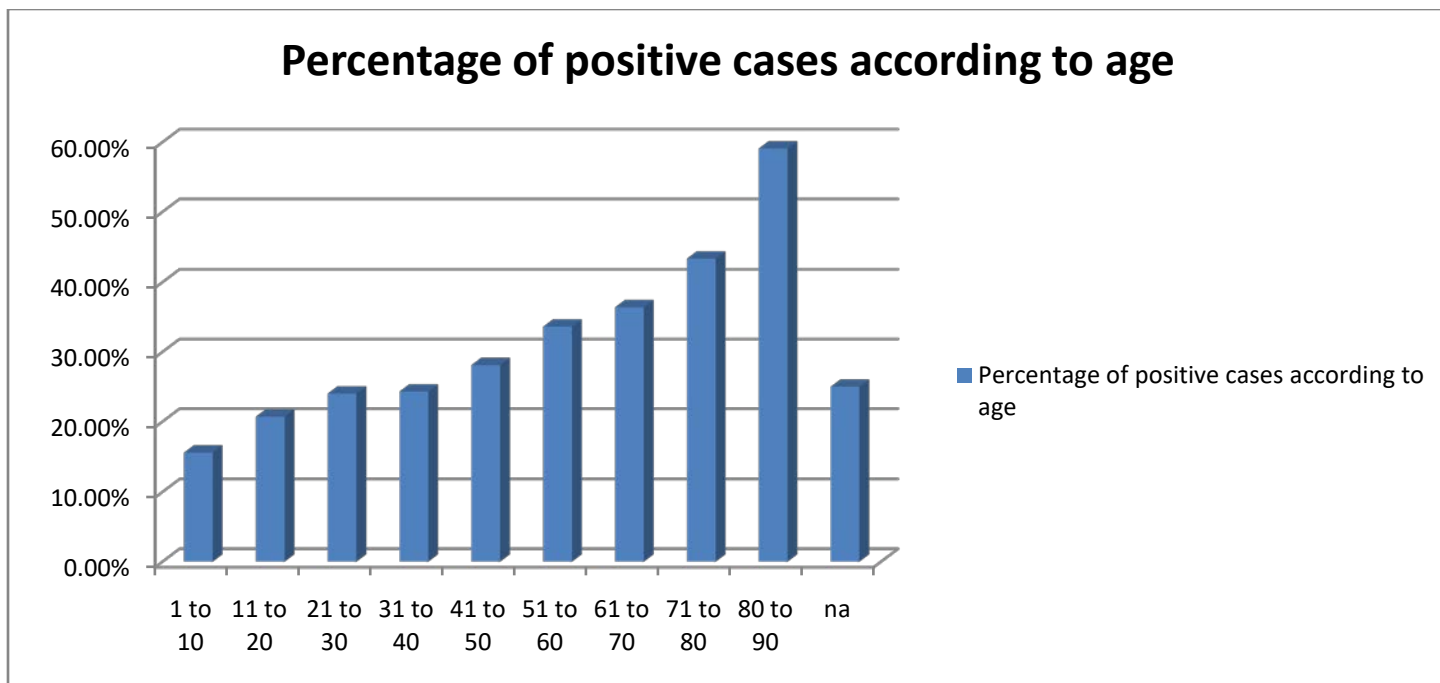


Fig: 02 Clinical features of COVID-19 positive patients

### **AGE Factor**

Now concerning positive cases, this graph shows the age breakdown in 10-year intervals from zero years old up to 90 years of old age people.

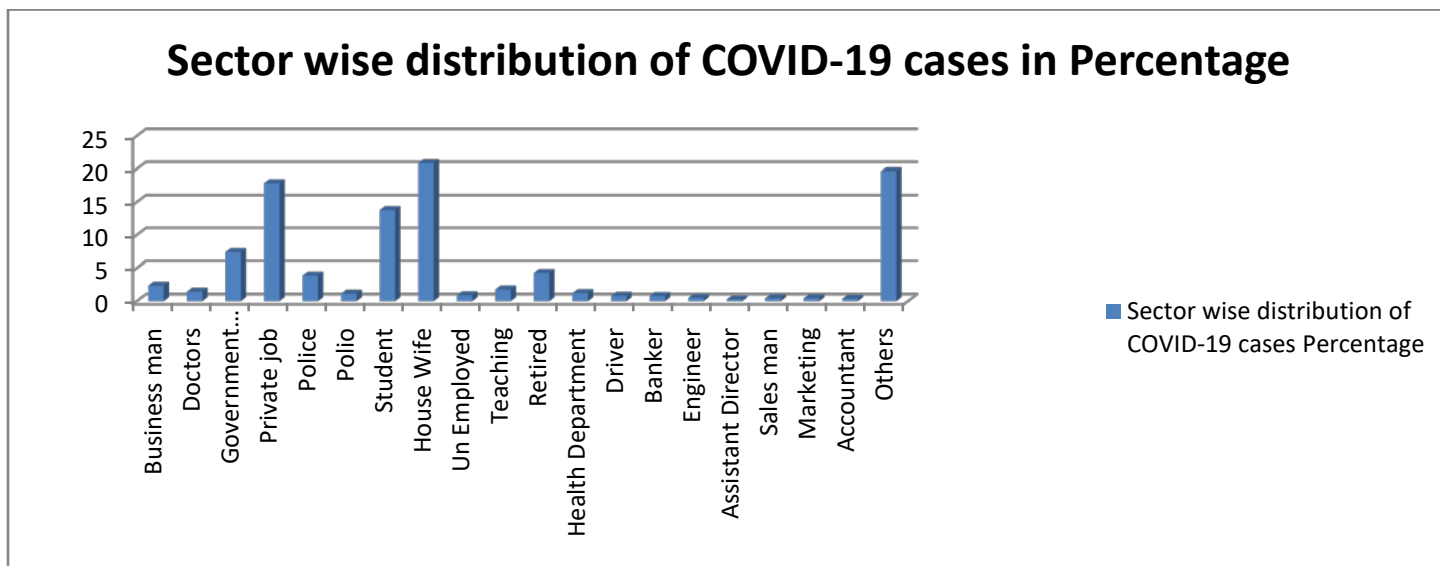


Graph: 02 – Distribution of cases according to age

From the graph of the percentage of positive cases, we see that elderly individuals account for a large portion of infective cases. The age dependency of infectivity increases by increasing age. For the age factor, a high susceptibility for infection generates a large number of infections and results in more positive cases as age advances. This assumption is reasonable because elder age has mostly the existence of co-morbidities and having low immunity and it has been reported as a risk factor for severe COVID-19 infections [10]. Most of the affected age is from 81 to 90 years showing that it mostly affects old age people than younger ones.

The least positive cases were recorded from 1-10 years which is 15.55%. . So, our study revealed that the morbidity or infectivity rate of COVID-19 cases does depend on the age and immunity of patients.

## SECTOR WISE DISTRIBUTION OF COVID-19 CASES



Graph 03 Sector wise COVID-19 positive cases

According to the graph shown above most of the positive patients have been recorded as housewives which is about 20.85% showing that females are at home mostly affected by this virus due to living in an enclosed area.

## FACTORS CAUSING THE SPREAD OF COVID-19

### 1. IMPORTATION OF VIRUS THROUGH TRAVELLING.

In conclusion, we understand that the first main cause of the spread of COVID-19 is the importation of the virus through foreign countries and local spread by traveling from one country to another or from one place to another so, the only solution is to restrict the movement of people from one country to another [11]. We overcome this situation in District Central by taking proper follow-up situations for the implementation of lockdown from time to time.

### 2. LOCAL TRANSMISSION

After the importation of the virus, the other main cause of its spread is a local transmission from person to person [12]. By following proper guidelines and acting upon them, the infectivity percentage of the virus decreases markedly.

### 3. SOCIAL CULTURE/ HABITS

As most men have a usually addictive habit of smoking, they have a nonliable attitude towards many things, and also some people have a petty attitude towards this pandemic, most the people live a sedentary lifestyle, they usually prefer to eat canned food which changes the circadian rhythm of the body and weakens the immune system. Moreover their habits of meeting and gathering, violation of SOPs, overcrowding, poor hygiene, improper disposal of infected material, and many more. By doing proper counseling many people started to adopt proper guidelines for the betterment of the health of their families and their loved ones.

#### 4. VIOLATION of SOPS

This is the most important factor involved in the spread of coronavirus. As most of the persons have a reluctant attitude toward the existence of this pandemic because they don't see those cases, and they do not follow proper SOPs. It was a local observation that most of the people throw face masks and PPE on roads; there is no proper use of bins for garbage, no maintaining proper social distancing, attending many gatherings, and not wearing face masks properly. Moreover, due to the increased healthcare waste owing to the COVID-19 pandemic, the threat that unsafe disposal of medical waste will spill over into environmental pollution is palpable and immediate [13].

Additionally, most of the people in remote areas have poor hygiene, practice improper hand washing [14], not following proper waste management plans and these are alarming. In the future, one should advise and council to follow proper SOPs and proper packaging of health care waste material temporarily in a safe place, at regular intervals of time after proper transportation dispose of it in safe places which are out of reach of the local community.

#### CRITICAL ANALYSIS

By reviewing the data we came to know that the positive COVID-19 cases in Karachi, District Central is low in the month of December and January which is around 25.97%. This is because of the implementation of lockdown from time to time, a proper following of the SOPs, continuous proper check-ups, early reporting of the cases, and the liable attitude of District Central people in concern to this pandemic. Among the men are more affected than women. As we know the biological difference in the immune system between men and women exists and women are less susceptible to infections than men due to many factors like sex hormones, their survival rate is greater than men, their well-managed lifestyle, and responsible attitude toward this pandemic [15]. Moreover, they do not perform outdoor activities during this pandemic because of the implementation of lockdown. Contrarily, men have usually addictive habits of smoking, eating gutka, which weakens the immune system, and irresponsible attitude towards this pandemic, as well they performed their job duties and all the outdoor activities during this period, which makes men more susceptible to the exposure to the virus and a higher rate of COVID-19 positive cases in men. Among suspected cases, 84.53% became laboratory-confirmed positive cases. If we look at the clinical features then 69.62% were the patients who did not manifest clinically any signs and symptoms suggesting that it's not mandatory that signs and symptoms must be present for the confirmation of COVID-19 cases. Asymptomatic cases are greater than symptomatic ones and this is notable. Among symptomatic cases only 10.95% of cases present with the symptom of body ache, this is because of the weakness, and 6.36% of cases present with cough and flu which is usually present during winter weather. So it is clear that positive COVID-19 cases may present with signs and symptoms but for all COVID-19 cases presence of signs and symptom is not the rule, despite asymptomatic or hidden cases being higher which needs to be focused on mind and further investigated in the future.

Although all age groups are susceptible to the infection of COVID-19 older people from 71- to 90 years have been faced many threats and challenges this time, with a significant risk of developing severe illness if they contract the disease, this is because of low immunity in old age group and virus get easily chance to spread its infectivity among these age group and also because of suffering from chronic illness and potential underlying health conditions.

On the sector-wise distribution of positive cases, most of the cases recorded in housewives which are around 20.85% because they look after their home, perform all house duties or are mostly in contact with water which is also the main source of its spread. In short women are the front-line workers at home. After that, private job candidates and students are

mostly affected. Health care workers or doctors are more likely least affected in Karachi, District Central this is because of their responsible attitude and proper following of all SOPs.

## **CONCLUSION**

After all the discussion, we came to the conclusion that men are affected more than females due to performing all the outdoor activities and it's not necessary that signs and symptoms must be present for the confirmation of COVID-19 cases. As we see asymptomatic cases are more severe than symptomatic ones. Moreover, it usually affects old age. By following proper SOPs and implementing proper lockdown in high infective areas we can overcome this pandemic.

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