

Epidemiological Characteristics of COVID-19 among the Individuals from Nasik District, Maharashtra

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ABSTRACT

Background: Coronavirus Disease 2019 (COVID 19) pandemic has created havoc around the world. All states of India, including Maharashtra, are severely affected by this viral infection. In Maharashtra, various regions including Mumbai, Pune and Nasik are largely affected due to this pandemic. **Objectives:** To study the epidemiological characteristic of COVID-19 Individuals from the Nasik district. **Materials and Methods:** A cross-sectional e-survey was conducted to study the epidemiological characteristics of COVID-19 individuals from and around Nasik. A random sampling method was adopted. Information from the individuals was collected in the form of a questionnaire, which was shared among 300 individuals, out of these 253 responses were received. Data analysis was done using Chi-square method. **Results:** Of 253 individuals, 90 (35.57%) were found to be COVID positive. Majority (50%) of them belonged to the age group 40–60 years. Among those tested positive, 83 (92.2%) individuals were symptomatic while, 7 (7.8%) were asymptomatic. Of 90 COVID positive individuals, 39 (43.3%) individuals with pre-COVID comorbidities showed severe symptoms and were hospitalized, while those without any comorbidity showed mild symptoms and were home quarantined, (Odds ratio = 15.88, 95% confidence interval = 5.6–44.95, $P < 0.0001$). Post COVID symptoms, particularly diabetes and Mucormycosis, were developed among 8.8% and 1.1% individuals, respectively. **Conclusion:** Severity of illness was associated with comorbidity, among majority of the patients.

Key words: Comorbidity, Epidemiology, Pandemic, Post-COVID symptoms

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INTRODUCTION

Coronaviruses are a large family of viruses that cause illnesses ranging from the common cold to more severe diseases, in animals and humans. A novel coronavirus, also named as Coronavirus Disease 2019 (COVID-19) virus, is a new strain that is newly identified in humans. COVID-19 outbreak was declared as a global pandemic by the World Health Organization on March 11, 2020. This disease known to originate from Wuhan city of China, and has become a major health problem all over the world.^[1] It is highly infectious and its human to human transmission occurs if aerosols or droplets containing the virus are inhaled or if virus comes in contact with the eyes, nose, or mouth of an individual, through contaminated surfaces. Clinical symptoms of this viral infection include fever, cold, sore throat, dry cough, pain in bones and muscles, breathing problems ultimately leading to pneumonia.^[2] COVID-19 pandemic has severe impact on every field of life, including health of individuals. The virus is causing mild diseases in many individuals. The course of illness may be severe leading to hospitalization and even death in elderly or those with comorbidities.^[3] The present survey was done to study the pre and post COVID comorbidities among the COVID positive patients from and around Nasik.

MATERIALS AND METHODS

A cross-sectional e-survey was performed using social media platform, in July 2021. Informed consent was obtained from the subjects for their willingness to participate in the study. Participation in the study was voluntary and during the study, anonymity and confidentiality of the participants was maintained, as personal information such as name, contact number or email id was not inquired. The study population consisted of individuals who themselves were COVID positive or had at least one family member who was COVID positive.

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Sample Size

The sample size for the study was estimated by using the formula for estimating proportion: $n = Z\alpha^2 P(1 - P)/d^2$, where $Z\alpha = 1.96$; $P = 90\%$ of the response rate of the online survey, and $d = 5\%$.^[3] Sample size calculated for the study was 253. A simple random sampling method was used to select the individuals of the population.

Regular exercise enhances immunity and reduces the risk of infection but reduction in physical activity during lockdown period might have affected the physiological processes of the body such as cardiovascular function, insulin sensitivity, cholesterol level, obesity and hypertension.^[4]

Research Instrument

A self-designed questionnaire was prepared, both, in English and Marathi (vernacular Language). The questionnaire was pre-tested for validity and reliability. Only one response was accepted per subject. The questionnaire was divided into three sections. Section I-consisted of informed consent. Section II comprised

Demographic details of the individuals, while section three included eleven questions related to corona information.

The demography questions included name of the individual (which was not mandatory), age group, gender, area of residence (urban or rural), and district. While the questions related to corona infection included comorbidity questions and the genes of coronavirus that were detected during the reverse transcription-polymerase chain reaction (RT-PCR) test. The RT-PCR report was demanded from those individuals who were found to be positive. The survey questionnaire was sent to 300 individuals belonging to the Nasik district of Maharashtra, out of which 253 responses were received. A time span of 30 days was given to the participants to submit their responses. Deceased individuals were not reported.

Data Analysis

The data were analyzed by IBM Statistical Package for the Social Sciences 28.0.0 version. Descriptive statistics was done, using Chi-square tests and significance of the test was decided at $P = 0.05$

RESULTS

Of total 253 individuals, 90 (35.57%) were found to be COVID positive. Slight male predominance (54.4%) was observed among the positive individuals. About 74.4% individuals were inhabitants of urban area, whereas 25.6% were inhabitants of rural area. Majority, i.e, 45 (50%) of them belonged to age group 40–60 years [Table 1]. 82.2% of the individuals were detected corona positive in 2021 while 17.8% were positive in 2020 [Table 2].

This shows the severity of the pandemic in 2021 than in first wave, i. e, in the year 2020. During the first wave of pandemic, the severity was more in the month of September 2020 (11.9%) and in the second wave, during March (14.3%) and in April (52.4%) 2021.

Among the 90 individuals confirmed as COVID-19 positive, 93.4% individuals had done the RT-PCR testing and had received the laboratory report, whereas 6.6% individuals had done rapid antigen test. Among the remaining 163 individuals who were not detected corona positive, 56 (34%) individuals had done rapid antigen test and were detected negative but showed mild symptoms such as cold and/or cough.

Among those tested positive, Corona symptoms were observed in 83 (92.2%) individuals while 7 (7.8%) were asymptomatic [Table 3].

Symptoms of these individuals are described in Figure 1. The most common symptom was fever 58 (64.4%), followed by breathlessness 47 (52.2%). Other symptoms include, Cough 39 (43.3%), body ache 28 (31.1%), Muscle weakness 25 (27.7%), headache 23 (25.5%), Loss of appetite 15 (16.6%), Diarrhea 9 (10%), and Conjunctivitis (Redness of eyes) 7 (7.8%).

The association of comorbidity diseases, such as diabetes and hypertension with the severity of COVID-19 has been assessed repeatedly.^[5] In the present study, 43.3% of individuals who were hospitalized showed comorbidities of either one or more diseases. The remaining (56.7%), who were home quarantined, showed mild symptoms and cured themselves either by allopathic or ayurvedic or a combination of the therapy medicines (Odds Ratio = 15.88, 95% confidence interval = 5.6–44.95, $P < 0.0001$) [Table 4]. Out of 90 COVID-19 positive individuals, 62 (79.5%) individuals were not vaccinated, 13 (16.7%) had taken the first dose of vaccine

Table 1: Frequency distribution and percent of age group of COVID-19 positive individuals

Year of infection	Frequency	Percent
2020	16	17.8
2021	74	82.2
Total	90	100.0

Table 2: Frequency and percent of COVID Infections in 2020-2021

Age group	Frequency	Percent
Below 20	4	4.4
Between 20 and 40	35	38.9
Between 40 and 60	45	50.0
Above 60	6	6.7
Total	90	100.0

Table 3: Percent COVID-19 symptomatic and asymptomatic individuals

Whether symptomatic or asymptomatic	n	%
Asymptomatic	7	7.8
Symptomatic	83	92.2

Table 4: Percent of individuals hospitalized or home quarantined

Whether Hospitalized or Home quarantined	n	%
Home quarantined	51	56.7
Hospitalized	39	43.3

Table 5: Frequency of individuals vaccinated before turning COVID positive

Vaccination Status	n	%
Not vaccinated before viral infection	67	74.44
Only first dose of Vaccine was taken	18	20
Both the doses of vaccine were taken	05	5.5

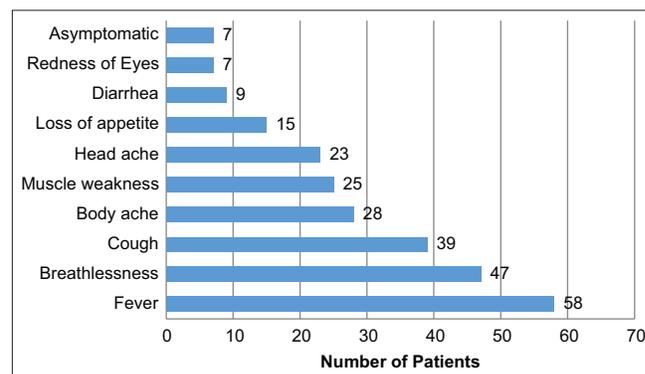


Figure 1: Symptoms of COVID-19 patients

(Covishield or Covaxin), and hardly 3 (3.8%) individuals had taken both the doses of vaccine [Table 5].

Out of 90 individuals, 50 (55.5%) had no history of any comorbidity, while remaining 40 (44.5%) reported one or more comorbidities, among them hypertension was the most common, followed by diabetes. Of 40 reported cases of COVID-19, 10 (11.11%) had only diabetes, 15 (16.6%) had only hypertension, 9 (10%) had dual comorbidity of hypertension and diabetes, 3 (3.3%) had respiratory disorders such as asthma or bronchitis, 2 (2.2%) had dual comorbidity of diabetes and kidney disorders [Table 6].

Post-COVID symptoms in the recovering patients are becoming a cause of concern. Among health conditions plaguing

Table 6: Pre-COVID diseases among COVID positive individuals

Pre-COVID diseases	n	%
Diabetes	10	11.11
Diabetes, hypertension	9	10
Hypertension	15	16.6
Diabetes, kidney disorders	2	2.2
None	50	55.5

Table 7: Post COVID diseases among COVID positive individuals

Post COVID diseases	Frequency	Percent
Diabetes	8	8.8
Diabetes, hypertension	0	0.0
Mucor-mycosis	1	0.0
Hypertension	0	0.0
Psychological disorder	0	0.0
None	81	91.1
Total	90	100.0

the COVID-recovered patients, diabetes has emerged as a prominent health concern. 8 (8.8%) have developed diabetes after recovering from COVID-19. Mucor mycosis was not significant (1.1%). Remaining 81 (91.1%) have not developed any post-COVID disorders [Table 7].

DISCUSSION

The present survey was undertaken to study the epidemiological characteristics of COVID-19 patients from and around Nasik. The results of the survey showed that there was a slight predominance of male infected individuals. Most of these males belonged to age group 40–60 years and had got infected to coronavirus either at their workplace, during travel, or at market place. Similar results were also observed in a study conducted in Sassoon hospital Pune.^[3]

COVID-19 is reported to be a mild disease for those aged <50 years.^[6] Results of the present study also reflect the same. 56.7% of the individuals showed mild symptoms and were home quarantined. Most of these individuals belonged to age group 40–60 years and had either none or less comorbidities. They responded to the treatment properly, that increased their chances of survival. The most common symptom observed among the COVID-19 infected individuals was Fever (64.4%), followed by breathlessness (52.2%). These findings are at par with those reported by Gupta *et al.*,^[7] but the findings are in contrast to the findings reported by Tambe *et al.*^[2] This may be because of the fact that the individuals were asked to mention all the symptoms right

from the day of early infection till the day of complete cure, while hospital study recorded only those symptoms observed in the patients at the time of hospitalization.

The most common Post COVID-19 symptom among the hospital discharged individuals was diabetes. According to Doctors, the mental and physical stress of COVID-19 infection on the pancreas has affected the production of insulin in the bodies of many patients. Some patients with moderate or severe COVID symptoms are administered steroids such as dexamethasone, which can also increase blood sugar.^[8]

CONCLUSION

The present study reports that the COVID-19 has affected males more than females. Those with one or more pre-COVID comorbidities had severe COVID symptoms and had to be hospitalized, but those with mild symptoms were home quarantined. Post COVID diseases such as diabetes has developed in some of individuals due to the side effects of certain drugs.

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