ORIGINAL ARTICLE

Epidemiological and Clinical factors associated with mortality of confirmed COVID-19 cases admitted and treated in a tertiary care hospital of Patna, Bihar

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Citation

Ranjan A, Kumar S, Singh C M, Kumar P, Ayub A, Tiwari L, Sanjeev P, Singh P K. Epidemiological and Clinical factors associated with mortality of confirmed Covid-19 cases admitted and treated in a tertiary care hospital of Patna, Bihar. Indian J Comm Health. 2021;33(1):30-40. https://doi.org/10.47203/IJCH.2021.v33i01.005

Source of Funding: Nil **Conflict of Interest:** None declared

Article Cycle

Received: 01/01/2021; **Revision:** 18/02/2021; **Accepted:** 20/03/2021; **Published:** 31/03/2021

Abstract

Background: A significant proportion of the individuals having the illness of moderate to severe nature due to COVID-19 infection require immediate critical care. High incidence of mortality among elderly population or those with comorbid conditions were reported. **Objectives**: The study was carried out with objectives to assess the epidemiological and clinical factors associated with mortality among the COVID-19 cases admitted and treated in AIIMS, Patna. **Methods**: This was a hospital-based cross-sectional analytical study of epidemiological and clinical features of COVID-19-positive patients admitted and treated during the outbreak from March 20, to August 31, 2020. **Results**: The median age of COVID-19 cases was 51.5 years (IQR: 37-62 years) which was significantly higher (p-value = 0.001) as compared to females. Male-female ratio of cases was 2.88:1. Out of 1696 cases, the case-fatality rate was 309 (18.22%). The mean age of cases who died due to COVID-19 was significantly higher (p-value=0.001) as compared to those who survived. The odds of mortality was significantly higher in males as compared to females (Adjusted OR = 1.534, 95% CI = 1.10 – 2.13, p=0.011). The odds of mortality showed a significant increasing trend with increasing age (Mantel-Hanszel p-value for trend = 0.015). The covariates like gender, age groups 45-59, 60-74 and 75>=, breathlessness and CKD were found to be significantly associated with mortality after controlling for the confounders. **Conclusions**: Factors like gender, higher age, lower oxygen saturation causing breathlessness and chronic kidney diseases could be attributed to high risk of mortality in COVID-19 patients.

Keywords

COVID-19; Clinical; Epidemiological; Risk; Mortality; Bihar; India

Introduction

The novel coronavirus (SARS-cov2) or COVID-19 as it is now called is rapidly spreading worldwide from its place of origin in Wuhan City of Hubei Province of China. The virus was initially named as 2019 novel coronavirus (2019-nCOV) by the WHO, then was later on updated as SARS-CoV-2 and the name of the disease as coronavirus disease 2019 (COVID-19).(1,2) On the 11th March 2020, the WHO has declared COVID-19 as a global pandemic and most of the countries worldwide have registered COVID-19 cases and as of 10th September 2020, a total of 2.91 billion cases, and 9,28,340 deaths (4.28%) have been reported at the global level.(3)

In India, the first case of covid19 was reported on 30th January 2020, and almost for 1 month, there was no incidence until 3rd March 2020. From 3rd March onwards, there has been a regular incidence of covid19 reported from all the states and UTs except a few. Till 10th September 2020, a total of 45,59,725 cases and 76,304 deaths have been reported from almost all the states and UTs of India. The first case of Covid-19 was reported on 20th March 2020 in Bihar. The total cases and deaths reported from various districts of Bihar till 10th September was 153,735 and 927 respectively. (4)

The first covid-19 cases were reported to AIIMS, Patna on 20th March 2020, and henceforth, many Covid-19 cases were admitted and treated at the hospital. Even though a high proportion of the infected persons have manifested with mild symptoms not requiring hospitalization, it has been observed that a significant proportion of the individuals have an illness of moderate to severe nature requiring immediate critical care. A high incidence of mortality among the elderly population or those with comorbid conditions was reported. (5)

There have been inconsistencies related to many of the epidemiological features, which vary from country to country or are not known or explained properly. Therefore, there is an urgent need to generate epidemiological evidence of COVID-19 at the state level based on the data generated in course of the admission and treatment at the hospital.

Aims & Objectives

To describe the epidemiological characteristics of COVID-19 outbreak in India in general and Bihar in particular from a tertiary care setting.

Material & Methods

All India Institute of Medical Sciences (AIIMS), Patna is one of the National Institutes of Importance, which is a tertiary care hospital in Patna and has been designated for isolation and management of suspected cases of COVID-19 as a dedicated COVID hospital by the State Health Department during the outbreak. This center started admitting the patients of COVID-19 from March 20, 2020, onwards. The current study was a hospital-based cross-sectional analytical study of epidemiological features of COVID-19-positive patients who presented themselves to this center during the outbreak from March 20, to August 31, 2020.

Case definitions: We followed the NCDC/ICMR guidelines for defining suspected cases. (6,7) This included patients with acute respiratory illness, and a history of travel to or residence in a country/area or territory reporting local transmission; a patient/ health-care worker with any acute respiratory illness, AND having been in contact with a confirmed COVID-19 case in the last 14 days before the onset of symptoms; all hospitalized patients with severe acute respiratory illness (fever and cough and/or shortness of breath); all asymptomatic direct and high-risk contacts of a confirmed case tested once between days 5 and day 14 of coming in his/her contact and a positive swab report; and a case for whom testing for COVID-19 is inconclusive.

Laboratory Confirmed Cases: A person, with laboratory confirmation by any of the designated laboratories in Bihar, approved by Indian Council of Medical Research (ICMR), Department of Health Research, Ministry of Health and Family Welfare, Government of India for testing of COVID-19 infection, irrespective of clinical signs and symptoms, was considered as confirmed COVID-19 cases.

Study Conduct and Data Collection: Initially, a Flu Clinic has been started in the Covid designated area of the hospital in the second week of March 2020 under the supervision and management of the Department of Community Medicine with an

emphasis to screen out the suspected cases based on the signs and symptoms relevant to Covid-19 illness. First, patients, who were found to be suspected based on the clinical signs and symptoms or satisfying any of the conditions for the case definition as mentioned above, were admitted and quarantined in this tertiary care hospital. Symptoms were clinically confirmed by the attending physicians, and self-reported comorbidities were assessed based on previous history, prescriptions, or medications being taken for the specific illness. Nasopharyngeal swab samples were collected by a team of trained ENT specialists of the Department of ENT. Collected samples were transferred to the Department of Microbiology, Central Lab for testing the presence of SARS-CoV-2 using a reverse transcriptase-polymerase chain reaction (RT-PCR) test. Once patients were confirmed as COVID-19 positive by the RT-PCR, they were shifted to isolation ward for further clinical management. However, during the first week of July when the outbreak was at its peak in Bihar, logistically it was not possible to test all the suspected cases coming to the hospital. Hence it was decided to admit all those cases coming to the hospital with an RT-PCR test by any of the designated laboratories approved by the ICMR.

All confirmed cases were eligible for inclusion in this study. The epidemiological data were collected through a personal interview with a predesigned pro forma developed on Google Form. The interviews were conducted by the Junior/Senior Residents on duty at the Flu Clinic using their mobile apps. The Google Form pro forma included items such as socio-demographic data, clinical signs, and symptoms present at the time of admission, history of co-morbidities such as Diabetes Mellitus, hypertension, CKD, Liver diseases, CVD, COPD, GI, carcinoma of any type, contact with any Covid cases, history of domestic travel in last 14 days, place of residence, etc. The data on the outcome of the patient was obtained from the Medical Record Department (MRD) of the institute, which recorded the outcome as recovery and discharge, and death. The data collected through the Flu Clinic and MRD were linked through the patient registration code and were compiled on MS Excel for the period from 20th March to 31 August 2020.

Statistical Analysis: Data were entered into an MS Excel sheet. All analyses were performed using SPSS, Version 22. Age was categorized into six categories with equal intervals based on epidemiological consideration. Categorical variables were presented as the proportion with a 95% confidence interval. Continuous variables were presented as mean with a 95% confidence interval. The student's T-test was used to compare the continuous variables between two groups. Mantel-Haenszel's extension of the chi-square test for trend was used to test the trend of mortality with increasing age. Bivariate analysis of categorical variables was performed using the chi-square test and a crude odds ratio with a 95% confidence interval was estimated for all the potential covariates associated with mortality. Logistic regression analysis was performed using death as an outcome variable using covariates having a p-value equal to 0.20 in bivariate analysis.

Ethical Consideration: Ethical approval was taken from the Institutional Ethical Committee for the study.

Results

A total of 7760 individuals from different parts of the state and other states visited the Flu Clinic during the period. Out of these, 2420 individuals were referred to the quarantine ward as suspected cases for RT-PCR testing. A total of 724 (29.92%) persons were tested negative by RT-PCR, hence they were discharged from the hospital. Rest 1696 persons were either tested positive or were tested positive by other laboratories. Hence a total of 1696 COVID-19 confirmed cases were admitted and given treatment at the hospital during the period as described.

(Figure-1) presents the trend of daily admission during the period. In the initial phase of the outbreak, the number of cases being admitted to the hospital was in the range of 5-8 cases per day until the second week of June 2020. After that, there had been an increasing trend of admitted cases which reached its peak on 16th July 2020 having 60 cases being admitted. This trend also coincides with the trend of cases confirmed in Bihar over the period. The total test positivity rate of COVID-19 cases in Bihar during the third and fourth weeks of July 2020 had been in the range of 14 to 23% per day with a maximum test positivity rate of 23% on 25th July 2020. (4)

Out of 1696 cases, 1679 cases were from Bihar and 17 cases were from other states like UP (8 cases), Jharkhand (6 cases), and one each from Odisha, Andhra Pradesh, and Punjab. COVID-19 cases were reported from all the districts of Bihar with

maximum cases from Patna district (975) followed by Muzaffarpur(64), Bhojpur(55), Saran (54), Vaishali (43), Darbhanga(37), Gaya (33), Begusarai (32), etc. The pattern was almost the same as reflected by district-wise case reporting of Bihar during the period.

(Table-1) presents the association of socio-demographic characteristics with death as an outcome. Out of 1696 cases, 1259 (74.23%) and 437 (25.77%) cases were males and females respectively indicating a 2.88:1 male to female ratio. The median age of COVID-19 cases was 51.5 years (IQR: 37-62 years). The mean age of males was 50.81 years (±15.70 years) which was significantly higher (p-value = 0.001) as compared to females with a mean age of 45.69 years (±18.16 years). Out of 437 females, 15 (3.43%) women had pregnancy at the time of admission.

Out of 1696 cases, the case-fatality rate till 31st August 2020 was 309 (18.22%). The mean age of cases (58.91±13.30 years) who died due to COVID-19 was significantly higher as compared to those who survived (47.39 ± 16.43 years) (Students T-statistic for the difference of mean = 11.55, p-value = 0.001). The odds of mortality were significantly higher in males as compared to females (Crude OR = 1.736, 95% CI = 1.264 – 2.383, p=0.001).

(Figure-2) presents the age distribution of covid-19 cases which shows an increasing trend of cases with increasing age till 60years after that it decreases with increasing age. The distribution is skewed towards higher age groups as more than 65% of the cases were in the age group above 45 years. However, the incidence of age-wise case-fatality rate (CFR) showed a sharp increasing trend with an increase in age.

The odds of mortality was showing a significant increasing trend with increasing age (Mantel-Hanszel p-value for trend = 0.015) when crude odds ratio for mortality in each age group was computed taking the rest of the other groups as reference. These data indicated that the risk of mortality increases as the age of COVID-19 cases increases.

Nearly 142(8.34%) cases were health care workers like doctors and nursing staff in which the odds of mortality was not significantly higher as compared to non-healthcare workers (Crude Odds ratio = 0.697, 95% CI: 0.39 – 1.159), p=0.0927). A very small proportion (6%) of COVID-19 cases had a history of domestic travel in the last 14-days before their admission, however, nearly 568(33.37%) of them had a history of contacts with their close relatives or colleagues at their workplace. Out of a total of 1696 cases, 148 (8.72%) cases were of the Muslim religion and the rest were Hindus and others.

(Figure-3) presents the distribution of symptoms as observed by the physicians at the time of admission. On admission, the most common symptom was fever 1159 (68.33%) followed by breathlessness 936 (55.18%), cough and cough 902 (53.18%), sore throat 136 (8.01%), gastrointestinal problems such as loose motion, pain in the abdomen and lower extremities 88 (5.18%), headache or body ache 102 (6.01%), and nausea and vomiting 38 (2.24%). The other 214 (12.61%) included symptoms such as weakness, chest pain, loss of appetite, dizziness, difficulty in urination, and palpitation. While two patients had myalgia as a symptom at the time of admission. Out of 1696, 135(7.95%) patients were asymptomatic at the time of admission. Nearly 75% of the cases presented with more than two symptoms with a maximum of six symptoms in one case only at the time of admission. (Table-2) presents the symptoms of COVID-19 cases at the time of admission with mortality. Difficulty in breathing was found to be significantly associated with mortality (crude OR = 2.038, 95% CI: 1.567 – 2.651, p=0.001). However, none of the symptoms except breathlessness were found to be associated with mortality.)

(Figure-4) presents the distribution of co-morbidities as observed by the physicians at the time of admission. On admission, 356 (21%) of the patients admitted had reported with one or more comorbidities, and 1340 (79%) of them had no comorbidities. The most common co-morbidity was Diabetes mellitus 189 (11.1%) followed by hypertension 173 (10.2%), CKD 53 (3.12%), CVD 51 (3.00%), hypo-thyroid 37 (2.18%), COPD/Asthma 24 (1.41%), Cancer of any type 23 (1.35%), and tuberculosis 9 (0.53%).

Out of 309 patients who died of COVID-19, comorbidity was one of the significant risk factors for death (OR=1.595, 95% CI: 1.187-2.13,p-value=0.0011). (Table-3) presents the co-morbidity in COVID-19 cases at the time of admission in relation to mortality. Morbid conditions such as Diabetes Mellitus (Type-2) (Crude OR=1.679,95% CI: 1.18 -2.386,p=0.005), hypertension (Crude OR=1.619,95% CI: 1.12 – 2.34,p=0.013), and chronic kidney disease (CKD) (crude OR=2.61,95%CI:1.466 - 4.636,p=0.001) were found to be significantly associated with mortality.

The median days of hospitalization of cases who died were 6 days (IQR: 3- 10 days) in a range of 0 to 33 days. Nearly 57% of the cases that died were in the first week, 29% in the 2nd week, 8% in the 3rd week, and 6% in the 4th week or more. Almost 86% died within 15 days after admission to the hospital. Twelve cases died on the same day after admission.

Logistic Regression Model: We performed a logistic regression analysis to model the risk of various factors on mortality taking death as the dependent variable. Potential covariates were selected based on bivariate analysis with mortality with a cut-off p-value of 0.20. In bivariate analysis, gender, age, breathlessness, hypertension, diabetes mellitus, and chronic kidney disease were found to be significantly associated with mortality. Dummy variables were created for each age group taking other age groups as reference. We used the backward stepwise method to enter variables into the model. The final model converged at the 4th step. The covariates gender, age groups 45-59, 60-74 and 75>=, breathlessness, and CKD were found to be significantly associated with mortality after controlling for the confounders. The result is presented in (Table-4). The Hosmer and Lemeshow test of the goodness of fit suggests the model is a good fit to the data as p=0.873. The -2LL (1453.75) showed a significant decrease indicating that the explanatory variables were a significantly better fit than the null model.

Discussion

This study presents the epidemiological and clinical characteristics of COVID-19 patients admitted to the hospital during the period 20th March 2020 to 31st August 2020. A sharp increase in admission of COVID-19 patients was observed after the hospital was declared as a dedicated center for treatment by the State Government in July 2020. The place and time distribution of COVID-19 cases admitted in the hospital showed an almost similar pattern as observed through the daily case reporting from all the districts of Bihar during the period indicating a representative sample of the state. (4)

A high proportion of males, almost three times, as compared to females was observed in this study. A high proportion of male infection as compared to female has been reported from other studies (8,9,10,11). This could be related to a high chance of exposure to infection in males because of their outdoor activities and travel due to their livelihood. However, most of the elderly persons might have got the infection through their immediate contacts in the family or in course of getting treatment in some clinics or hospitals for their non-COVID illness. Similar results were observed in studies conducted in New Delhi and Pune.(8,9)

The median age of COVID-19 cases in the study was 51.5 years (IQR: 37-62) which is almost comparable to other studies. In study cohorts of Wuhan, the median age of affected patients ranges from 49–56 years.(12,13,14) In the USA, the median age of covid-19 patients was 48 years (IQR: 33-65). (15) In this study, nearly 65% of the patients were in the age group of 45 years and above. The broad-based nature of India's population pyramid means there are more people in the younger age group and very few people in the ≥75 year age group. Hence, because of more percentage of the population in the younger age group, they are more likely to be infected but we have observed a reverse trend where people in adult age are more affected than younger age which indicates a higher risk of getting exposure in adult over 45 years of age.

In this study, nearly 94% of the patients had not reported any travel history within the country in the last 14-days. However, one-third of the cases had a history of contacts within the family or from their workplaces which suggests that local and to some extent community transmission is going on in the state. Few cases had reported a history of foreign travel from UAE and European countries during the initial phase of admission in the hospital.

Healthcare workers, due to frequent exposure to the patients, are supposed to be at high risk of acquiring COVID-19 infection. In this study, nearly 142(8.34%) cases were healthcare workers like doctors, nursing staff, or para-medicals. In a study conducted in a cohort of healthcare workers in India, a prevalence of 1.8% was observed.(16) The prevalence among the selected population was 4.13% based on pooled data of the Indian Council of Medical Research (ICMR) and WHO.(17,18) The National Health Commission of the People's Republic of China had reported a prevalence of 4.4% among healthcare workers or individuals who worked in medical facilities.(19) In Italy, the number of health workers who were tested positive for COVID-19 was 10% of the total cases.(20) Considering these data, the healthcare workers in Bihar are at high risk of getting an infection.

The most common symptom of the presentation was fever followed by breathlessness and cough. These findings were similar to findings of a study in India reporting fever as the most common symptom.(8) However, symptoms of breathlessness at the time of admission were found to be significantly associated with mortality. In this study, 55.2% of cases had symptoms of breathlessness which was higher compared to a study conducted in a tertiary care center in Pune (46.7%) where this was found to be the most common symptoms on admission.(9) Fever, cough, and breathlessness were reported as the most common clinical findings in studies conducted in China and Singapore. (12,21) The reasons for these clinical findings could be because the majority of the patients came with serious signs and symptoms to tertiary level care hospital which has been recognized as dedicated COVID hospital in the state.

One hundred thirty-five (7.95%) patients were asymptomatic at the time of admission. Most of these asymptomatic cases were the contacts of the COVID-positive cases. These cases were tested for exposure and found positive by RT-PCR. Out of 135 asymptomatic cases at the time of admission, 16 (11.85%) died in course of treatment possibly due to the development of some major ailments, and also 5 had comorbidities like diabetes mellitus, hypertension, and CKD. Atypical symptoms with low proportion like diarrhea, weakness, loss of appetite, and myalgia were reported by COVID-19 patients. Similar results were seen in various studies. (8,22) Although it was unclear whether there was a definite link between diarrhea and COVID-19, both studies raise a question concerning whether the gastrointestinal tract might be another site of viral replication, indicating the possibility of faeco-oral transmission.

The case fatality rate among the admitted cases was 18.22% which was quite higher than the state and national average figure of 0.62% and 2.45% as of 31st August 2020. (4) All the serious cases were admitted directly or referred to the hospital by other hospitals with symptoms like breathlessness with poor oxygen saturation. This could be the reason for the high case fatality rate observed in the hospital during the period. Rapid respiratory failure was one of the major reasons observed among the cases who died. The average age of death (58.91±13.30 years) among COVID-19 cases was significantly higher as compared to those who survived at discharge (47.39 ± 16.43 years). Also, the risk of death among COVID-19 cases was significantly higher in males as compared to females probably due to the high proportion of presence of symptoms and comorbidities among males as compared to females.

Among the admitted patients, 79.0 % had no history of any comorbidity while 21% reported one or the other comorbidity; diabetes mellitus being the most common one followed by hypertension. Out of 309 patients who died, 42 (13.59%) patients had two or more comorbidities. The majority of the death (87.8%) were in the age group of 45 and above years while the highest death rate of 41.57% was observed in the age group 75 years and above followed by the age group 60-74 years (29.14%).

Comorbidity was one of the significant risk factors for the progression of disease and death (OR = 1.595, 95% CI - 1.18 – 2.13, P =0.0011). A similar pattern was observed in a study conducted in Pune, however, the risk of death due to the presence of comorbidity was very high in that study.(9) The most common risk factor among the dead patients was chronic kidney diseases (35.84%) followed by diabetes (24.46%) and hypertension (24.41%). These findings suggest that older adults have a high rate of COVID-19–associated hospitalization and the majority of COVID-19 cases have underlying medical conditions. In previous studies on COVID-19, it has been established that risk increases with age and comorbidities. (9,12,13,14,22,23,24)

A high risk of death was observed among those with chronic kidney disease in this study. COVID-19 patients with chronic kidney disease have been reported to be at higher risk of death.(25) Patients with kidney disease also have other comorbidities, including hypertension, diabetes mellitus, and cardiovascular disease, that are risk factors for poor outcomes in COVID-19. Two reports had examined these high-risk populations, patients requiring dialysis and kidney transplant recipients, in the setting of COVID-19.(25,26)

Finally, it was observed that the factors like age more than 45 years, gender, breathlessness, and CKD were found to be significantly associated with mortality after controlling for other confounders. The risk of mortality showed a significantly increasing trend with increasing age.

Other studies have reported a high association of these factors with mortality due to COVID-19.(12-14,22-26)

This is a hospital-based study comparing COVID-19 cases who died (309) with a set of COVID-19 cases who survived (1387). The ratio of COVID-19 deaths to survived was 1:4 which is considered optimum for conducting a case-control study with maximum statistical power or precision of the various estimates based on the data. (27,28) Considering this fact into account, the size of this study is sufficient enough to establish the association of various factors with mortality. This is one of the strengths of the study. Selection bias is one of the limitations of a hospital-based study, which is inherent in this study as only patients with serious signs and symptoms come to tertiary level care hospital for treatment, hence, it lacks generalizability.

Conclusion

In this study, fever was the main presenting symptom followed by breathlessness and cough among the COVID-19 cases admitted to the hospital. The case fatality rate among the admitted cases was significantly higher than the state and national data. Comorbidity was one of the significant risk factors along with increasing age in males

Recommendation

It was seen that the factors like age more than 45 years, gender, breathlessness, and CKD were found to be significantly associated with mortality after controlling for other confounders. Hence a focus on the above factors like immunization of elderly on a priority basis and mechanical ventilation care with focused care of the comorbid population would definitely help in controlling the situation.

Limitation of the study

Since the data was collected only from a tertiary care COVID only hospital of the state, it lacks generalizability. A chance of selection bias was also there.

Relevance of the study

A male preponderance of almost 3 times was seen for COVID-19. Also there was a higher risk of getting exposure in adult over 45 years of age. The case fatality rate was very high when compared to the national average because of the tertiary care nature of the institute. Comorbidity was found to be a significant factor for mortality with odds as high as 1.5.

Authors Contribution

AR: Concepts, Design, Definition of intellectual content, Literature search, Data acquisition, Data analysis, Statistical analysis, Manuscript preparation, Manuscript editing, Manuscript review, SP: Concepts, Design, Definition of intellectual content, Literature search, Data acquisition, Data analysis, Manuscript preparation, Manuscript editing, Manuscript review, CMS : Concepts, Design, Definition of intellectual content, Literature search, Data acquisition, Manuscript editing, Manuscript review, PK : Literature search, Data analysis, Manuscript preparation, Manuscript editing, AA: Literature search, Data acquisition, Data analysis, Manuscript preparation, LT : Data acquisition, Manuscript editing, Manuscript review, SK : Data acquisition, Manuscript editing, Manuscript review, PKS : Manuscript editing, Manuscript review

Acknowledgement

The authors acknowledge the efforts put by the Junior residents, nurses & other paramedical staff of the institution who helped a lot in data collection and entry.

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Tables

TABLE 1 SOCIO DEMOGRAPHIC CHARACTERISTICS OF COVID-19 PATIENTS

Variables	Death (n=309)			Çrude Odds Ratio (95% Confidence Interval)	p-value
Gender	**Yes**	**No**	**Total**	1.80 (1.31-2.47)	0.0001
Male	255	1004	1259		
Female	54	383	437		
Age Group					
0-14	2	28	30	0.32 (0.04-1.265)	0.1478
15-29	9	195	204	0.18 (0.08-0.36)	0.0001
30-44	27	339	366	0.295 (0.188-0.45)	0.0001
45-59	111	474	585	1.07 (0.826-1.41)	0.5524
60-74	123	299	422	2.40 (1.83-3.14)	0.0001
75>	37	52	89	3.49 (2.89-5.54)	0.0001
Religion					
Muslim	33	115	148	1.322 (0.879-1.989)	0.217
Hindu	276	1272	1548		
Domestic Travel in last 14 days					
Yes	14	89	103	0.692 (0.388-1.233)	0.216
No	295	1298	1593		
Contact with COVID-19 cases					
Yes	102	466	568	0.974 (0.749-1.266)	0.895
No	207	921	1128		
Health Care Workers					
Yes	19	123	142	0.673 (0.408-1.11)	0.148
No	290	1264	1554		

TABLE 2 SYMPTOMS OF COVID-19 CASES AT THE TIME OF ADMISSION IN RELATION TO MORTALITY

Symptoms	Death			Crude odds Ratio (95% CI)	p-value
Fever	**Yes**	**No**	**Total**	0.911 (0.701-1.184)	0.528
Yes	206	953	1159		
No	103	434	537		
Cough				0.933 (0.729-1.195)	0.629
Yes	160	742	902		
No	149	645	794		
Breathlessness				2.038 (1.567-2.651)	0.0001
Yes	213	723	936		
No	96	664	760		
Sore Throat				0.758 (0.464-1.239)	0.322
Yes	20	116	136		
No	289	1271	1560		
Headache/Body ache				0.526 (0.278-1.00)	0.061
Yes	11	91	102		
No	298	1296	1594		
Nausea/Vomiting				0.522 (0.184-1.482)	0.331
Yes	4	34	38		
No	305	1353	1696		
GI Problems				0.918 (0.519-1.624)	0.88
Yes	15	73	88		
No	294	1314	1608		

Symptoms	Death			Crude odds Ratio (95% CI)	p-value
Others				1.189 (0.832-1.699)	0.393
Yes	44	170	214		
No	265	1217	1482		

TABLE 3 COMORBIDITIES PRESENT IN COVID-19 CASES AT THE TIME OF ADMISSION IN RELATION TO MORTALITY

Comorbidities	Death			Crude odds Ratio (95% CI)	p-value
Hypertension	**Yes**	**No**	**Total**	1.619 (1.22-2.337)	0.013
Yes	44	129	173		
No	265	1258	1523		
Diabetes Mellitus				1.1679 (1.18-2.386)	0.005
Yes	49	140	189		
No	260	1247	1507		
Chronic Kidney Disease				2.607 (1.466-4.636)	0.001
Yes	19	34	53		
No	290	1353	1643		
CVD				1.23 (0.630-2.45)	0.656
Yes	11	40	51		
No	298	1347	1645		
COPD/Asthma				1.506 (0.593-3.826)	0.598
Yes	6	18	24		
No	303	1369	1672		
Hypothyroid				1.048 (0.456-2.409)	0.917
Yes	7	30	37		
No	302	1357	1659		
Cancer of any type				0.944 (0.319-2.795)	0.866
Yes	4	19	23		
No	305	1368	1673		
Tuberculosis				1.284 (0.266-6.212)	0.914
Yes	2	7	9		
No	307	1380	1687		

TABLE 4 LOGISTIC REGRESSION ANALYSIS TO MODEL THE RISK OF POTENTIAL FACTORS ON MORTALITY

Factors	Adjusted Odds Ratio (95% confidence Interval)	Wald Statistic p-value
Gender	1.534 (1.10 – 2.13)	0.011
Age (Years)		
45 - 59	3.08 (2.08 – 4.56)	0.0001
60 – 74	5.32 (3.58 – 7.89)	0.0001
75= >	9.27 (5.39 – 15.93)	0.0001
Breathlessness	1.63 (1.23 – 2.14)	0.001
Chronic Kidney Disease	2.45 (1.32 – 4.53)	0.004

Figures

FIGURE 1 DAY WISE DISTRIBUTION OF COVID-19 CASES ADMITTED DURING THE PERIOD

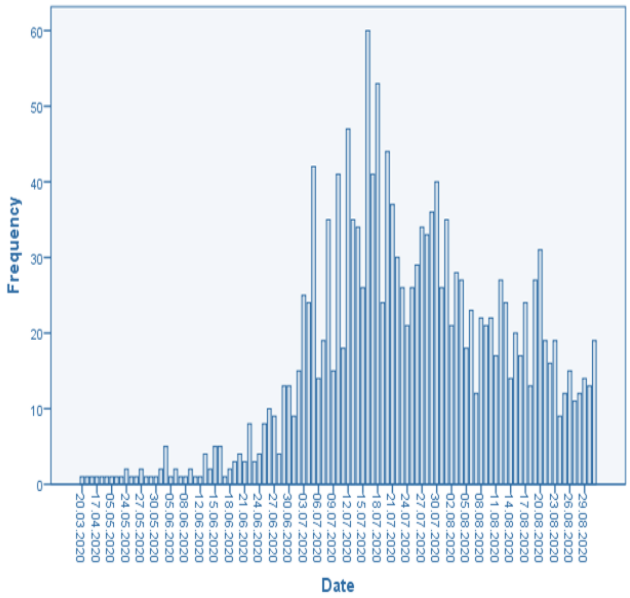

FIGURE 2 AGE WISE DISTRIBUTION OF CASES AND CASE-FATALITY RATE

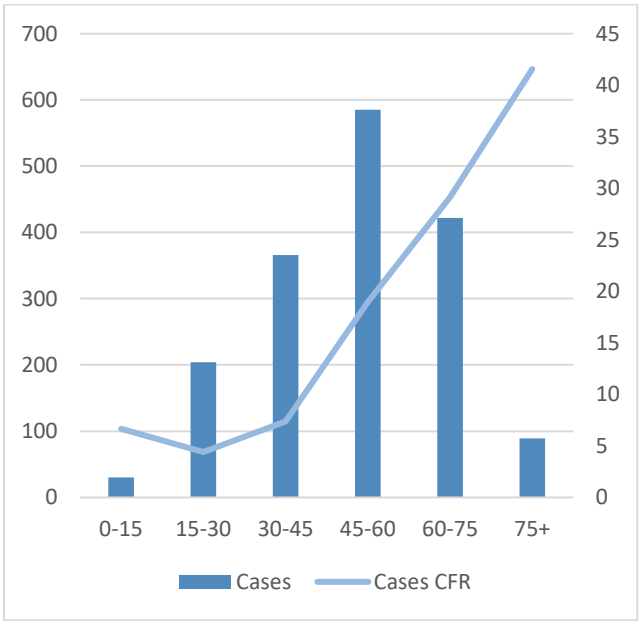

FIGURE 3 DISTRIBUTION OF SYMPTOMS OF COVID-19 CASES AT THE TIME OF ADMISSION

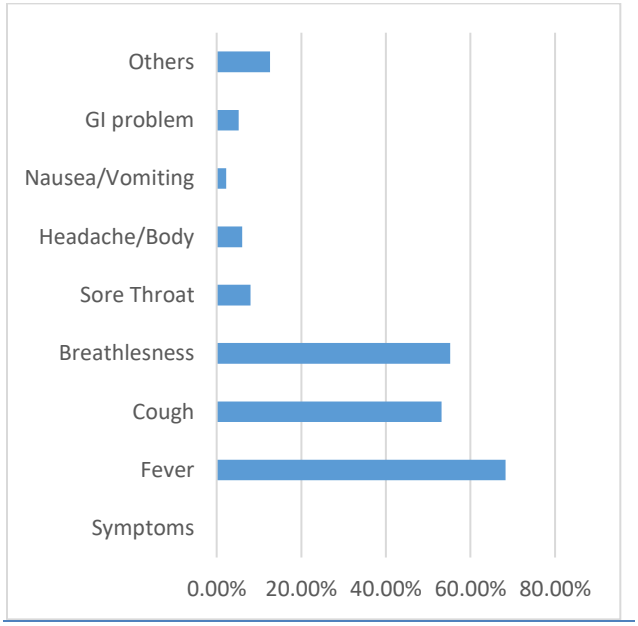

FIGURE 4 DISTRIBUTION OF CO-MORBIDITIES AS OBSERVED BY THE PHYSICIANS AT THE TIME OF ADMISSION