## **Original Research Article**

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20214262

# Prevalence of co-morbidities in hospitalized patients with COVID-19 in a COVID dedicated hospital

Kirti Vinayak Kinge<sup>1</sup>, Smita Santosh Chavan<sup>1,2</sup>\*, Balkrishna Adsul<sup>3</sup>, Maharudra Kumbhar<sup>4</sup>

<sup>1</sup>Department of Community Medicine, HBT Medical and Dr. Cooper Hospital, Juhu, Mumbai, Maharashtra, India <sup>2</sup>Additional Dean, <sup>3</sup>Dean, <sup>4</sup>OSD, Seven Hills Hospital, Mumbai, Maharashtra, India

Received: 22 January 2021 Revised: 01 October 2021 Accepted: 02 October 2021

## \*Correspondence:

Dr. Smita Santosh Chavan, E-mail: drsmita1409@gmail.com

**Copyright:** © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

#### **ABSTRACT**

**Background:** A novel corona virus causing severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection become a public health emergency of international concern. The infection has increased and caused pandemic. Underlying co-morbidities may worsen the clinical outcome. So, more attention is to be given to COVID patients with co-morbidities. Few studies have been conducted on the prevalence of predominant chronic diseases with COVID-19. Taking into consideration the above factors, a study has been undertaken to assess the prevalence of co-morbidities in a COVID dedicated hospital.

**Methods:** A centre based retrospective study was carried out at a COVID dedicated hospital, Mumbai. All admitted patients of COVID 19 in a COVID dedicated hospital, Mumbai were selected in 4 and half months (19<sup>th</sup> March 2020 to 31<sup>st</sup> July 2020) by universal sampling technique. Patients above 20 years were included in the study and patients below 20 years were excluded from the study. Ethics Committee approval taken from an institutional ethics committee

**Results:** All 6072 patients who were above 20 years were included in the study. Mean age was 48 years and 67.7% were male. The prevalence of various co-morbidities was 25% for hypertension, 22.3% for diabetes mellitus, 5.2% for chronic kidney disease, 1.7% for chronic obstructive pulmonary disease, 0.9% for cerebrovascular disease and 0.3% for one or the other malignancy.

**Conclusions:** It has been concluded that various co-morbidities are present in patients with COVID-19 which may worsen the clinical outcome. So, more attention is to be given to COVID patients with co-morbidities.

Keywords: Co-morbidities, COVID-19, Prevalence

## INTRODUCTION

A novel corona virus causing severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection become a public health emergency of international concern. The infection has increased and caused pandemic.

It can spread through respiratory tract and causes respiratory tract infections. It develops symptoms like cough, fever, breathlessness, myalgia etc.<sup>3-5</sup> Severe pneumonia may develop requiring intensive care. It is

associated with morbidity and mortality. Death is due to respiratory failure.<sup>6,7</sup>

Underlying co-morbidities may worsen the clinical outcome. So, more attention is to be given to COVID patients with co-morbidities.<sup>8</sup>

Few studies have been conducted on the prevalence of predominant chronic diseases with COVID-19. Taking into consideration the above factors, a study has been undertaken to assess the prevalence of co-morbidities in a COVID dedicated hospital.

#### **Objective**

To find the prevalence of co-morbidities in hospitalized patients with COVID-19 in a COVID dedicated hospital.

#### **METHODS**

#### Study design

It was a centre based retrospective study was carried out at a COVID Dedicated Hospital, Mumbai.

#### Selection of study group

All admitted patients of COVID-19 in a COVID dedicated hospital, Mumbai were selected in 4 and half months (19<sup>th</sup> March 2020 to 31<sup>st</sup> July 2020) by universal sampling technique.

#### Inclusion criteria

Patients above 20 years were included.

#### Exclusion criteria

Patients below 20 years were excluded.

Ethics committee approval taken from an institutional ethics committee.

### Statistical analysis

Analysis was done in MS excel with proportions and percentages.

#### **RESULTS**

All 6072 patients who were above 20 years were included in the study. Mean age was 48 years and 67.7% were male. The prevalence of various co-morbidities were as follows.

Table 1: Prevalence of hypertension in COVID cases.

Hypertension	Number	Percentage
Present	1518	25
Absent	4554	75
Total	6072	100

Hypertension was the most prevalent co-morbidity. 25% cases were hypertensive.

Table 2: Prevalence of diabetes mellitus in COVID cases.

Diabetes mellitus	Number	Percentage
Present	1353	22.3
Absent	4719	77.7
Total	6072	100

Second common co-morbidity was diabetes mellitus. 22.3% cases were diabetic.

Table 3: Prevalence of chronic kidney disease (CKD) in COVID cases.

CKD	Number	Percentage
Present	314	5.2
Absent	5758	94.8
Total	6072	100

The prevalence of chronic kidney disease was 5.2%.

Table 4: Prevalence of ischemic heart disease (IHD) in COVID cases.

IHD	Number	Percentage
Present	265	4.4
Absent	5807	95.6
Total	6072	100

4.2% COVID cases were having Ischemic heart disease.

Table 5: Prevalence of hypothyroidism in COVID cases.

Hypothyroidism	Number	Percentage
Present	192	3.2
Absent	5880	96.8
Total	6072	100

Table 5 shows 3.2% COVID cases were having hypothyroidism.

Table 6: Prevalence of chronic obstructive pulmonary disease (COPD) in COVID cases.

COPD	Number	Percentage
Present	102	1.7
Absent	5970	98.3
Total	6072	100

1.7% COVID cases were having chronic obstructive pulmonary disease.

Table 7: Prevalence of cerebrovascular disease (CVD) in COVID cases.

Cerebrovascular disease	Number	Percentage
Present	58	0.9
Absent	6014	99.1
Total	6072	100

0.9% COVID cases were having cerebrovascular disease as shown in Table 7.

0.3% COVID cases were having one or the other malignancy (Table 8).

**Table 8: Prevalence of malignancy in COVID cases.** 

Malignancy	Number	Percentage
Present	17	0.3
Absent	6055	99.7
Total	6072	100

#### DISCUSSION

SARS-CoV2 is a newly detected strain causing challenge to countries all over the world. Its long incubation period (3 to 14 days), its contagiousness, estimating positive cases in community, insufficient protective resources are the key problems. 9,10 As SARS-CoV2 is a novel virus, pre-existing immunity does not exist for this infection. No specific treatment exists for the disease. Vaccine does not exist till date. These all factors make the disease more complicated specifically for vulnerable population like elderly individuals, patients with one or more comorbidities.

In our study, the prevalence of hypertension was 25% in COVID cases. Similarly the prevalence of hypertension was 9.5%, 12%, 15% in studies carried out by Kui et al, Xu et al, Huang et al. 11-13 It is higher i.e. 31.2% and 30% in studies carried out by Wang et al, Zhang et al. 14,15 The difference may be due to different age groups of study population.

The prevalence diabetes mellitus was 22.3% in our study. The prevalence of diabetes mellitus was 10.2%, 10.1%, 12.1%, 10.2% in studies carried out by Kui et al, Wang et al, Zhang et al, Liang et al.<sup>11,14-16</sup> It was higher i.e. 19.5% in study carried out by Huang et al.<sup>13</sup> It was lower i.e. 7.37% in study carried out by Guan et al.<sup>17</sup>

In our study the prevalence of chronic kidney disease (CKD) was 5.2%. It was 3%, 2.8%, 0.01%, 1.41%, 1.2% in studies conducted by Chen et al, Wang et al, Guan et al, Zhang et al, Wu et al. <sup>12,14,15,17,19</sup> It was higher i.e. 47% in study carried out by Guarner et al and 7.3% in study conducted by Huang et al. <sup>13,18</sup> Chronic kidney disease is an immune compromised state making patients with CKD more prone to COVID-19 disease.

The prevalence of ischemic heart disease (IHD) was 4.2% in this study. It was 5.8%, 23% and 25% in study conducted by Guan et al, Huang et al and Wang et al.  $^{13,14,17}$ 

The prevalence of hypothyroidism was 3.1% in this study. It was 6.8% in study conducted by Van Gerwen et al.<sup>21</sup>

The prevalence of chronic obstructive pulmonary disease (COPD) was 1.7% in this study. It was 2.9%, 1.6%, 1.4%, 1.5%, 2.4%,1.1% in the study done by Wang et al, Xu et al, Zhang et al, Kui et al, Huang et al, Guan et al respectively. Unregulated ACE<sub>2</sub> and dipeptidyl

peptidase IV (DPP<sub>4</sub>), a specific receptor of this virus has a higher rate of expression in COPD patients.<sup>20</sup>

The prevalence of malignancy was 0.3 % in the study. It was 1%, 1.5%, 2.4% and 1.2% in studies carried by Chen et al, Kui et al, Huang et al, Wu et al respectively. <sup>2,11,13,19</sup> It was higher i.e. 7.2% in study conducted by Wang et al. <sup>14</sup>

Thus, it provides a tool for planning preventive and supportive services to patients. It is very important for healthcare policy makers to form strict guidelines to prevent novel corona virus infection transmission mainly in vulnerable people with hypertension, diabetes mellitus, CKD, IHD, COPD, CVD and malignancy like social distancing, washing hands, wearing mask etc.

The knowledge and understanding of prevalence of comorbidities with COVID-19 help clinicians for timely interventions for management of COVID-19 disease and control of these co-morbidities.

#### **CONCLUSION**

It has been concluded that various co-morbidities are present in patients with COVID-19 which may worsen the clinical outcome. So, more attention is to be given to COVID patients with co-morbidities.

Funding: No funding sources Conflict of interest: None declared

Ethical approval: The study was approved by the

Institutional Ethics Committee

#### **REFERENCES**

- 1. Tan W, Zhao X, Ma X, Wang W, Niu P, Xu W, et al. A novel coronavirus genome identified in a cluster of pneumonia cases-Wuhan, China 2019-2020. China CDC Weekly. 2020;2(4):61-2.
- 2. Chen N, Zhou M, Dong X, Qu J, Gong F, Han Y, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. Lancet. 2020;395(10223):507-13.
- Carlos WG, Dela Cruz CS, Cao B, Pasnick S, Jamil S. Novel Wuhan (2019-nCoV) Coronavirus. Am J Respir Crit Care Med. 2020;201(4):P7-8.
- 4. Paules CI, Marston HD, Fauci AS. Coronavirus infections- more than just the common cold. JAMA. 2020;323(8):707-8.
- 5. Livingston E, Bucher K, Rekito A. Coronavirus disease 2019 and influenza 2019-2020. JAMA. 2020;323(12):1122.
- 6. Wang C, Horby PW, Hayden FG, Gao GF. A novel coronavirus outbreak of global health concern. Lancet. 2020;395(10223):470-3.
- 7. Rodríguez-Morales AJ, MacGregor K, Kanagarajah S, Patel D, Schlagenhauf P. Going global- travel and

- the 2019 novel coronavirus. Travel Med Infect Dis. 2020;33:101578.
- 8. Sun K, Chen J, Viboud C. Early epidemiological analysis of the coronavirus disease 2019 outbreak based on crowd sourced data: a population-level observational study. Lancet Digital Health. 2020;2(4):e201-8.
- 9. Zu ZY, Jiang MD, Xu PP, Chen W, Ni QQ, Lu GM, et al. Coronavirus disease 2019 (COVID-19): a perspective from China. Radiology. 2020;296(2):E15-25.
- 10. Peng L, Yang W, Zhang D, Zhuge C, Hong L. Epidemic analysis of COVID-19 in China by dynamical modelling. arXiv preprint arXiv:200206563. 2020.
- 11. Kui L, Fang YY, Deng Y, Liu W, Wang MF, Ma JP, et al. Clinical characteristics of novel coronavirus cases in tertiary hospitals in Hubei Province. Chinese Med J. 2020;133(9):1025.
- Xiao-Wei X, Xiao-Xin W, Xian-Gao J, Kai-Jin X, Ling-Jun Y, Chun-Lian M, et al. Clinical findings in a group of patients infected with the 2019 novel coronavirus (SARSCov-2) outside of Wuhan, China: retrospective case series. Br Med J. 2020;368.
- 13. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet. 2020;395(10223):497-506.
- 14. Wang D, Hu B, Hu C, Zhu F, Liu X, Zhang J, et al. Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus- infected pneumonia in Wuhan, China. JAMA. 2020;323(11):1061-9.
- 15. Zhang JJ, Dong X, Cao YY, Yuan YD, Yang YB, Yan YQ, et al. Clinical characteristics of 140

- patients infected with SARS-CoV-2 in Wuhan, China. Allergy. 2020;75(7):1730-41.
- Liang W, Guan W, Chen R, Wang W, Li J, Xu K, et al. Cancer patients in SARS-CoV-2 infection: a nationwide analysis in China. Lancet Oncol. 2020;21(3):335-7.
- 17. Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX, et al. Clinical characteristics of coronavirus disease 2019 in China. N Engl J Med. 2020;382(18):1708-20.
- 18. Guarner J. Three emerging coronaviruses in two decades the story of SARS, MERS, and now COVID-19. Am J Clin Pathol. 2020;153(4):420-1.
- 19. Wu J, Liu J, Zhao X, Liu C, Wang W, Wang D, et al. Clinical characteristics of imported cases of COVID-19 in Jiangsu province: a multicenter descriptive study. Clin Infect Dis. 2020;10.
- Seys LJM, Widagdo W, Verhamme FM, Kleinjan A, Janssens W, Joos GF, et al. DPP<sub>4</sub>, the Middle East respiratory syndrome coronavirus receptor, is upregulated in lungs of smokers and chronic obstructive pulmonary disease patients. Clin Infect Dis. 2018;66(1):45-53.
- 21. Van Gerwen M, Alsen M, Little C, Barlow J, Naymagon L, Tremblay D, et al. Outcomes of patients with hypothyroidism and COVID-19: a retrospective cohort study. Front Endocrinol. 2020;11:565.

Cite this article as: Kinge KV, Chavan SS, Adsul B, Kumbhar M. Prevalence of co-morbidities in hospitalized patients with COVID-19 in a COVID dedicated hospital. Int J Community Med Public Health 2021:8:5293-6.