Original Research Article

Journal of College of Medical Sciences-Nepal, Vol-20, No.4, Oct-Dec 2024

ISSN: 2091-0657 (Print); 2091-0673 (Online) Open Access

DOI: 10.3126/jcmsn.v20i4.69601

Epidemiological and Clinical Characteristics of Deceased Patients with COVID-19 in Chitwan and Pokhara: A Multicentric Study

Bhoj Raj Adhikari[1], **Mukesh Mallik**[2], **Nuwadatta Subedi**[3], **Harihar Wasti**[4], **Babita Ghimire**[5], **Sabita Paudel**[6]

[1]Department of Medicine, Bharatpur Hospital, Chitwan, Nepal, [2]Hospital Administration Section, College of Medical Sciences-Teaching Hospital, Bharatpur, Chitwan, Nepal, [3]Department of Forensic Medicine, Gandaki Medical College, Pokhara, Kaski, Nepal, [4]Executive member, Nepal Medical Council, [5]Department of Nursing, Shree Medical and Technical College, Bharatpur, Chitwan, Nepal, [6]Department of Pharmacology, Gandaki Medical College, Pokhara, Kaski, Nepal.

ABSTRACT

Background

Appearance and reappearance of COVID-19 pandemic is a major global health problem seeking attention because of its high mortality and spreadability. In Nepal, as of the report of 24th April 2022 published by Ministry of Health and Population, there were 97873 detected cases of COVID-19 and 11951 deaths attributable to the pandemic. Reports suggest that there is variation in mortality rate across the clinical and demographic features of the population. Therefore, we aimed to find out the clinical features and demographic characteristics of the people who died in Chitwan and Pokhara due to COVID-19.

Methods

This is a quantitative descriptive cross-sectional study conducted from the data of record file of Bharatpur hospital and those of Gandaki Medical College which are representative of the patients who died due to COVID-19 in the respective hospitals. Descriptive statistical parameters like frequency, percentage, mean, interquartile range etc. were calculated.

Results

We found that mean age of the people dying of COVID-19 was 60.12 ±15.97 years. Number of males [163 (67.92%)] dying of COVID-19 was slightly more than twice the number of females [77 (32.08%)] dying due to the same. People with respiratory diseases and/or other comorbidities were greater among those who died due to the pandemic and died within eight number of average days after getting symptoms.

Conclusions

Old-aged people and males are at greater risk of death due to COVID-19. People with respiratory diseases and other comorbidities have higher chances of mortality.

Keywords: COVID-19; death; clinical features; demographic.

INTRODUCTION

There was an outbreak of pneumonia of unknown cause in Wuhan, the capital city of Hubei province of China in December 2019.[1] Later, the disease was named Coronavirus disease 2019 (CoVID-19) and the causative virus as severe acute respiratory syndrome coronavirus 2 (SARS-CoV -2).[2] The 2019-nCoV is the seventh member of the family belonging to coronaviruses which infect humans.[3] Since its identification in China, it has spread to most of the countries and the spread of the disease is very rapid.[4]

Epidemiological and clinical characteristics of COVID-19 have been presented from different countries[5-9] and there may be variations in different settings.The exploration of such data would be important for better treatment planning and analyze the situation of treatment, health care facilities

Correspondence: Mr. Mukesh Mallik, Hospital Administration Section, College of Medical Sciences-Teaching Hospital, Bharatpur, Chitwan, Nepal. Email: mallikcmc@gmail.com, Phone: +977-9844051217. **Article received**: 2024-08-08. **Article accepted**: 2024-12-02. **Article published**: 2024-12-31.

etc. in our set up. The study was conducted with objective to explore the epidemiological and clinical information of deceased with COVID 19 in Pokhara and Bharatpur.

METHODS

This was a descriptive cross-sectional quantitative study conducted at Gandaki Medical College (GMC) of Pokhara and at Bharatpur Hospital of Bharatpur. Data for the analysis was collected in structured performa from the hospital records of the two centres and included all the hospital deaths due to COVID-19 which had occurred till 31st May 2021. The duration of the study was from May 2021 to August 2021. The total number of deceased of whom we received complete information as per our performa who were included in this study was 240. Interestingly, the number of deceased at both the centres were same. For this study, a patient confirmed of COVID-19 was defined as a person with or without symptoms and positive for the results of reverse transcriptase polymerase chain reaction (RT-PCR) tests from nasopharyngeal or oropharyngeal swabs for SARS-COV-2. A deceased COVID-19 patient was defined as the person who was dead and confirmed of COVID-19 before death. As it was a record review and had no risk to any human, animal, or environment, the consent was not required and was waived off by the Ethical Review Board (ERB). The ethical approval for this multi-centric study was obtained from the ERB of Nepal Health Research Council (Ref: 135-2021) and administrative approval was obtained from both the study centres. The data was entered in Microsoft excel then cleaned and statistical analysis was done by statistical software STATA 15.1. We calculated descriptive statistical parameters; frequency, percentage, mean, median, interquartile range, and standard deviation.

RESULTS

Our record review suggested that mean age of the people who died of COVID-19 was 60.12 ± 15.97 years. Number of men (n=163) dying of COVID-19 during both first and second wave was almost twice the number of females (n=77) dying with the same cause (Male: Female = 67.92%:32.08%). After the onset of the symptoms of COVID-19, median number of days' people lived for, were eight and received treatment for almost four days in hospital before they died (Table 1).

Table 2 shows medical treatment provided during the hospital stay before death due to COVID-19. Oxygen was provided to more than 97% of the people at both the centres along with steroids and antibiotics use in 95% of the people. Ventilator was used at 24.6% patient in Bharatpur hospital compare to 7% in GMC.

Table1. Frequency (%) distribution of demographic features. (n=240)

Variables	Bharatpur Hospital (n=120) Frequency (%)	Gandaki Medical College (n=120) Frequency (%)	Total (n=240) Frequency (%)
Age (years)*	60.2 (17.35)	60.05 (14.52)	60.12 (15.97)
Sex			
Male	88 (36.67)	75(31.25)	163 (67.92)
Female	32 (13.33)	45 (18.75)	77 (32.08)
District			
Chitwan	120 (50)	0	120 (50)
Kaski	0	120 (50)	120 (50)
Travel			
Yes	3 (1.25)	1 (.42)	4 (1.67)
No	9 (3.75)	1 (.42)	10 (4.17)
Not known	108 (45)	118 (49.17)	226 (94.17)
Pre-hospitalisation (Days)**	2 (2-3)	5 (3-7)	3 (2-5)
Symptoms to death (days)**	6 (4-10)	9 (5.5-15)	8 (5-12)
Treatment before death (days)**	4 (2-7)	5 (2-10)	4 (2-8)

*Mean (standard deviation) calculated for age. **Median (Inter-quartile range)

Use of Remdesivir was more frequent in Bharatpur than in GMC.

Table 2. Frequency distribution (%) of covid treatment offered in deceased COVID-19 patients across study sites. (n=240)

Variables	Bharatpur Hospital (n=120) Frequency (%)	Gandaki Medical College (n=120) Frequency (%)	Total (n=240) Frequency (%)
Oxygen			
Yes	114 (47.5)	119 (49.58)	233 (97.08)
No	6 (2.5)	1 (0.42)	7 (2.92)
Ventilation			
Yes	59 (24.58)	17 (7.08)	76 (31.67)
No	61 (25.42)	103 (42.92)	164 (68.33)
Steroid			
Yes	114 (47.5)	113 (47.08)	227 (94.58)
No	6 (2.5)	7 (2.92)	13 (5.42)
Remdesivir			
Yes	25 (10.42)	15 (6.25)	40 (16.67)
No	95 (39.58)	105 (43.75)	200 (83.33)
Antibiotic			
Yes	115 (47.92)	117 (48.75)	232 (96.67)
No	5 (2.08)	3 (1.25)	8 (3.33)
Tocilizuma			
Yes	2 (0.83)	3 (1.25)	5 (2.08)
No	118 (49.17)	117 (48.75)	235 (97.92)
Proning			
Yes	62 (25.83)	78 (32.5)	140 (58.33)
No	58 (24.17)	42 (17.5)	100 (41.67)
Inotrope			
Yes	1 (0.42)	8 (3.35)	9 (3.77)
No	118 (49.37)	112 (46.86)	230 (96.23)

Before death, those patients had acute respiratory infection among 82% people, myalgia in 12.5%, loss of taste in in 5.42% and loss of smell also in 5.2% respectively. In addition to COVID-19, other comorbidities like chronic lung diseases, hypertension, diabetes, and chronic liver diseases were diagnosed 35%, 24.58%, 15.83%, and 10.4% people respectively.

DISCUSSION

Demographic characteristics have shown that the old aged people were at higher risk of death due to the pandemic because mean age of people dying was 60 years. We achieved results similar to the studies conducted Korea and in China.[11-12] New York City Health of May 13,2020 had reported that 22% people were of age above 45years and 24% were above 65years who shared death due to COVID-19.

Table3. Frequency distribution of clinical features of COVID-19. (n=240)

Variables	Bharatpur Hospital (n=120) Frequency (%)	Gandaki Medical College (n=120) Frequency (%)	Total (n=240) Frequency (%)
Acute Respiratory Infection			
Yes	86 (35.83)	111 (46.25)	197 (82.08)
No	2 (.83)	6 (2.5)	8 (3.33)
Not known	32 (13.33)	3 (1.25)	35 (14.58)
Loss of Taste			
Yes	6 (2.5)	7 (2.92)	13 (5.42)
No	11 (4.58)	80 (33.33)	91 (37.92)
Not known	103 (42.92)	33 (13.75)	136 (56.67)
Loss of smell			
Yes	3 (1.25)	10 (4.17)	13 (5.42)
No	13 (5.42)	77 (32.08)	90 (37.50)
Not known	104 (43.33)	33 (13.75)	137 (57.08)
Diarrhoea			
Yes	4 (1.67)	5 (2.08)	9 (3.75)
No	12 (5)	82 (34.17)	94 (39.17)
Not known	104 (43.33)	33 (13.75)	137 (57.08)
Vomit			
Yes	3 (1.25)	2 (0.83)	5 (2.08)
No	11 (4.58)	85 (35.42)	96 (40)
Not known	106 (44.17)	33 (13.75)	139 (57.92)
Skin rash			
Yes	2 (.83)	0	2 (.83)
No	12 (5)	87 (36.25)	99 (41.25)
Not known	106 (44.17)	33 (13.75)	139 (57.92)
Myalgia			
Yes	11 (4.58)	19 (7.92)	30 (12.5)
No	8 (3.33)	68 (28.33)	76 (31.67)
Not known	101 (42.08)	33 (13.75)	134 (55.83)
Others			
Yes	2 (.83)	18 (7.5)	20 (8.33)
No	13 (5.42)	69 (28.75)	82 (34.17)
Not known	105 (43.75)	33 (13.75)	138 (57.5)

In contrast, only 3.9% died who were below 44 years.[13] The primary cause of elderly having greater risk of death may be lack of care and economic suffering because they are the group who suffered most economically as per "2021 International Health Policy Survey of Older Adults".[14] We also found that percent of males dying of COVID-19 in hospital was almost twice the percent of females which is similar to the report of previous study which reported 100% higher risk of death among males compared to females.[15] We claim that our results are valid because males have higher chances of being exposed to the

Table 4. Distribution of Comorbidities among COVID-19 deaths (n=240)			
Variables	Bharatpur Hospital (n=120) Frequency (%)	Gandaki Medical College (n=120) Frequency (%)	Total (n=240) Frequency (%)
Obesity			
Yes	4 (1.68)	3 (1.26)	7 (2.94)
No	51 (21.43)	103 (43.28)	154 (64.71)
Not known	63 (26.47)	14 (5.88)	77 (32.35)
Cardiovascular diseases			
Yes	1 (.42)	6 (2.5)	7 (2.92)
No	56 (23.33)	100 (41.67)	156 (65)
Not known	63 (26.25)	14 (5.83)	77 (32.08)
Malignancy			
Yes	3 (1.26)	1 (.42)	4 (1.67)
No	54 (22.59)	105 (43.93)	159 (66.53)
Not known	62 (25.94)	14 (5.83)	76 (31.8)
Diabetes			
Yes	22 (9.17)	16 (6.67)	38 (15.83)
No	46 (19.17)	90 (37.5)	136 (56.67)
Not known	52 (21.67)	14 (5.83)	66 (27.5)
Hypertension			
Yes	28 (11.67)	31 (12.92)	59 (24.58)
No	49 (20.42)	89 (37.08)	138 (57.5)
Not known	43 (17.92)	0	43 (17.92)
Chronic lung disease			
Yes	75 (31.25)	9 (3.75)	84 (35)
No	25 (10.42)	111 (46.25)	136 (56.67)
Not known	20 (8.33)	0	20 (8.33)
Chronic liver disease			
Yes	25 (10.42)	0	25 (10.42)
No	48 (20)	106 (44.17)	154 (64.17)
Not known	47 (19.58)	14 (5.83)	61 (25.42)
Chronic kidney disease			
Yes	21 (8.79)	1 (.42)	22 (9.21)
No	48 (20.08)	105 (43.93)	153 (64.78)
Not known	50 (20.92)	14 (5.86)	64 (26.78)

diseases. This is because number of males are greater in active workforce of Nepal than number of females and thus get exposed to the diseases. The claim is supported by the report of Nepal Labour Force Survey 2017/18 which reported that 59 females were employed after every 100 employed males in Nepal.[16] We also explored presence of comorbidities ad found that majority had one or other form of Comorbidities. Chronic lung disease was found in greatest percent of people in around 35%. The reason of people dying of COVID-19 having other comorbidities might be the compromised immunity although further research is needed. Previous study has also reported that people with other chronic non-communicable diseases had higher chances of mortality.[17] Similar to other previous studies, wide range of symptoms from mild to severe illness were recorded. [18-20] We recorded acute respiratory infection, myalgia, loss of smell, loss of taste, diarrhoea, vomiting and others. We also explored the treatment provided to the patients of COVID-19. We found that more than 95% patients were treated with corticosteroids in supplement with oxygen support, and antibiotics before death in hospital. Use of corticosteroid therapy was equivocal because evidences suggested no benefit was there if used without respiratory support [21-22] while other evidence produced by Matthay et al.[23] concluded that corticosteroids use in supplement with oxygen therapy decreased 28-day mortality in patients with COVID-19 infection. In our study, we found the use of Remdesivir among 16.67% people rationale for which was inconclusive. This is because WHO does not recommend use of the remedesivir[24] while other study concluded that Remdesivir when used on low-flow oxygen may increase chances of clinical improvement.

CONCLUSIONS

Old-aged people and males are at greater risk of death due to COVID-19. People with respiratory diseases and other comorbidities have higher chances of mortality due to the global pandemic. People with COVID-19 loose taste, smell and have myalgia with vomiting tendency.

Limitations: This is a comprehensive review of all the COVID-19 death cases across two major hospitals providing treatment to COVID-19 patients in Pokhara and Bharatpur, which is the strength of this study. As there is no established provision of electronic database in Nepal and the study sites maintain paper-based records mostly, all the data could not be retrieved properly. The travel history also could not be retrieved as this information was not properly mentioned in the records, which are the limitations.

ACKNOWLEDGEMENTS

A sincere gratitude to Ms. Mina Bhusal and Ms. Kamala Regmi, nursing faculty of Bharatpur Hospital

for supporting in data collection. We also offer Karuna Adhikari, college of Medical Sciences for her contribution in data entry. We acknowledge support of administration of both Gandaki Medical College and Bharatpur Hospital for facilitating in data collection.

Conflict of interest: None

Funding: None

REFERENCES

1. Hui DS, I Azhar E, Madani TA, Ntoumi F, Kock R, Dar O, et al. The continuing 2019-nCoV epidemic threat of novel coronaviruses to global health - The latest 2019 novel coronavirus outbreak in Wuhan, China. Int J Infect Dis. 2020;91:264-6. PMID: 31953166 PMCID: PMC7128332 [DOI]
2. Naming the coronavirus disease (COVID-19) and the virus that causes it [Internet]. [cited 2020 Jun 16]. [Link]
3. Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, et al. A novel coronavirus from patients with pneumonia in China, 2019. N Engl J Med. 2020 Feb 20;382(8):727-33. PMID:31978945 PMCID: PMC7092803 [DOI]
4. [The epidemiological characteristics of an outbreak of 2019 novel coronavirus diseases (COVID-19) in China]. Zhonghua Liu Xing Bing Xue Za Zhi. 2020 Feb;41(2):145-51
5. Onder G, Rezza G, Brusaferro S. Case-Fatality Rate and Characteristics of Patients Dying in Relation to COVID-19 in Italy. JAMA - J Am Med Assoc. 2020;2019:2019-20. PMID:32203977 [DOI]
6. Nikpouraghdam M, Jalali A, Alishiri G. Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company ' s public news and information. 2020;(January).[Google Scholar]
7. 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 - J Am Med Assoc. 2020;323(11):1061-9. PMID:32031570 PMCID:PMC7042881 [DOI]
8. Wang Y, Wang Y, Chen Y, Qin Q. Unique epidemiological and clinical features of the emerging 2019 novel coronavirus pneumonia (COVID-19) implicate special control measures. J Med Virol. 2020;92(6):568-76. PMID:32134116 PMCID:PMC7228347 [DOI]
9. Wu Z, McGoogan JM. Characteristics of and Important Lessons from the Coronavirus Disease 2019 (COVID-19) Outbreak in China: Summary of a Report of 72314 Cases from the Chinese Center for Disease Control and Prevention. JAMA - J Am Med Assoc. 2020;323(13):1239-42. PMid:32091533 [DOI]
10. Li X, Wang L, Yan S, Yang F, Xiang L, Zhu J, et al. Clinical characteristics of 25 death cases with COVID-19: A retrospective review of medical records in a single medical center, Wuhan, China. Int J Infect Dis [Internet]. 2020;94:128-32. PMID:32251805 PMCID:PMC7128884 [DOI]
11. Kim T, Park O, Yoo H, Ahn S, Jo J, Kim JW, et al. Epidemiological and Clinical Characteristics of Early 101 Deceased Patients in the Coronavirus Disease-19 (COVID-19) Outbreak in Republic of Korea. SSRN Electron J. 2020;19. [DOI]
12. Leung C. Clinical features of deaths in the novel coronavirus epidemic in China. Rev Med Virol. 2020;30(3):5-8. PMID:32175637 PMCID:PMC7228265 [DOI]
13. Age, Sex, Existing Conditions of COVID-19 Cases and Deaths: Worldometer; [Link]
14. Reginald D. Williams II et al., The Impact of COVID-19 on Older Adults: Findings from the 2021 International Health Policy Survey of Older Adults (Commonwealth Fund, Sept. 2021). [DOI]
15. Semenzato L, Botton J, Drouin J, Cuenot F, Dray-Spira R, Weill A, Zureik M. Chronic diseases, health conditions and risk of COVID-19-related hospitalization and in-hospital mortality during the first wave of the epidemic in France: a

cohort study of 66 million people. The Lancet Regional Health-Europe. 2021 Sep 1;8:100158. PMID:34308411 PMCID:PMC8282330 [DOI]
16. Report on the Nepal Labour Force Survey, 2017/18/ Nepal; 2017/18. [Link]
17. People with Certain Medical Conditions: Centers for Disease Control and Prevention; 2022 [Link]
18. Symptoms of COVID-19: Centers for Disease Control and Prevention; 2022 [Link]
19. Coronavirus (COVID-19) symptoms in adults UK: NHS; 14 April 2022 [Link]
20. Coronavirus disease (COVID-19) Geneva: World Health Organization; 2022 [Link]
21. Group TR. Dexamethasone in hospitalized patients with Covid-19-preliminary report. The New England journal of medicine. 2020 Jul 17.
22. Gyanshankar P Mishra JM. Corticosteroids for COVID-19: the search for an optimum duration of therapy. The Lancet Respiratory Medicine. January 01, 2021;9(1):e8 [DOI]
23. Matthay MA, Thompson BT. Dexamethasone in hospitalised patients with COVID-19: addressing uncertainties. The Lancet Respiratory Medicine. 2020 Dec 1;8(12):1170-2. [DOI]
24. WHO recommends against the use of remdesivir in COVID-19 patients: World Health Organization; 20 November 2020. [Link]

Citation: Adhikari BR, Mallik M, Subedi N, Wasti H, Ghimire B, Paudel S. Epidemiological and Clinical Characteristics of Deceased Patients with COVID-19 in Chitwan and Pokhara: A Multicentric Study. JCMS Nepal. 2024; 20(4): 316-021.