SHORT COMMUNICATION

Factors Associated With Covid-19 Deaths in Karnataka- Results of Secondary Data Analysis From a South Indian State

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ABSTRACT

Understanding the causes of deaths in Corona Virus Disease of 2019 (COVID-19) patients can help epidemiologists and policy makers to develop effective prevention strategies. This study was planned with aim of studying trend of COVID-19 deaths in state of Karnataka and analysing associated factors. The data was extracted from media bulletins released by Government of Karnataka which was published in its official website and entered in Microsoft excel and analysed using SPSS version 15.0. The mean age (±SD) of individuals who died due to COVID-19 was 60 years (±14.7). Two third of the individuals who died were males and had one or more morbidity. Almost half of those who died (45.5%) were found to have diabetes. There was a linear increasing trend in proportion of individuals having morbidity with advancing age among those who died due to COVID-19. Higher age, male gender and presence of co-morbidity was associated with mortality. *Malaysian Journal of Medicine and Health Sciences (*2024) 20(4): 385-388. doi:10.47836/mjmhs20.4.46

Keywords: COVID-19, Comorbidity, Mortality, Death, India, Pandemic

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INTRODUCTION

COVID-19 (coronavirus disease 2019) is an infectious disease caused by the SARS-CoV-2 virus. The first case of COVID-19 was reported on 31st December 2019 from Wuhan (China), but it was declared an outbreak of public health emergency of international concern on 30th January 2020 and a pandemic only on 11th March 2020 (1). Globally, 6,948,764 deaths have been reported so far (2). Being the most populous country in the world, India has reported 44,994,351 confirmed cases of COVID-19 with 531,908 deaths (2).

According to medical literature, COVID-19 infection can have asymptomatic to severe forms of illness (3). Factors such as demographic characteristics, presence of pre-existing morbidities can influence patient outcome. Elderly, and those with chronic diseases namely cardiovascular disease, hypertension, diabetes, and pulmonary disease, are at a higher risk of severe disease and poor outcomes including death (4,5).

The present study was planned with the objective of analysing state specific trend of COVID-19 deaths in the state of Karnataka, a south Indian state and report the factors associated with deaths due to COVID-19. Understanding these factors can be valuable in better management of future pandemics and reduce the COVID-19 related deaths.

MATERIAL AND METHOD

The media bulletins released by the Government of Karnataka were used for compiling the information on deaths reported from the state of Karnataka, which is located in southern part of India which is one among the 28 states and is the sixth largest state in the country. The data available in the daily media bulletins from months of June 2020 to May 2021 was entered in Microsoft excel. The data was then extracted into Statistical Package for Social Sciences Version 15.0 (SPSS 15.0) and analysed. Details such as age, gender, symptoms, morbidity, place of death, duration of hospitalization were noted down.

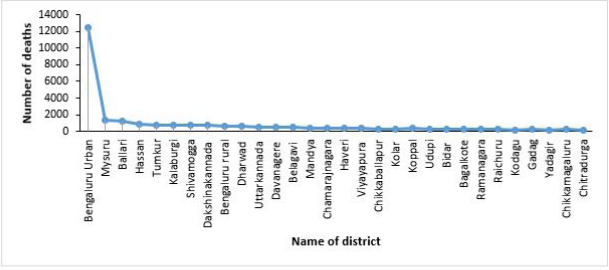
Results have been expressed as number and percentage. Mean (SD)/Median (IQR) have been presented for continuous variables.

Ethical clearance

As this study was secondary data analysis of information available in public domain which consisted of data on COVID-19 deaths without any identifiers of human participants, ethical approval was not essential.

RESULT

The secondary analysis showed that there were a total of 26,525 deaths during June 2020-May 2021 that were reported from the state of Karnataka. Figure 1a depicts the district wise distribution of COVID-19 deaths during this period with Bengaluru urban representing the maximum deaths. This trend broadly correlates to the size of the population and the level of density of the population areas. In addition to the record of deaths by geography, the number of deaths is plotted (figure 1b) in chronological sequence. From this we can also see that the highest number of deaths was observed in the month of May 2021 over the period of analysis (June 2020-May 2021).



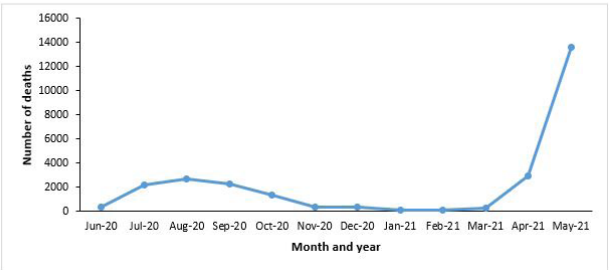


Figure 1a: District wise distribution of deaths in Karnataka from June 2020-May 2021 (n=26,525)
Figure 1b: COVID-19 mortality trend in Karnataka between June 2020-May 2021

The demographic and clinical characteristics of the patients who died due to COVID-19 has shown in Table I. The mean age (±SD) of individuals who died due to COVID-19 was 60 years (±14.7). About 51.4% of the individuals were aged over 60 years of age. Two third of the individuals who died were males and had one or more morbidity. Almost half of those who died (45.5%) were found to have diabetes. According to this analysis, the median (IQR) duration of hospitalization was 3 days (1-7). On further stratification of the study population based on five-year interval of age from 0-100 years, highest number of deaths were seen in the age group of 61-65 years 3805 (14.3%).

Table I. Demographic and clinical characteristics of the patients who died due to COVID-19 n=26,525

Variable	Frequency (%)
Age (years)	
≤30	728(2.7)
31-40	1919 (7.2)
41-50	3944 (14.9)
51-60	6316 (23.8)
61-70	7089 (26.7)
>70	6546 (24.7)
Gender	
Male	17106(64.5)
Female	9418(35.5)
Symptoms	
Breathlessness	19539 (73.6)
Fever	15462 (58.3)
Cough	12844 (48.4)
Morbidities	
Diabetes mellitus	12077 (45.5)
Hypertension	11365 (42.8)
Cardiovascular disease	1256 (4.7)
Renal disease	717 (2.7)
Respiratory disease	580 (2.2)
Liver disease	221 (0.8)
Neurological illness	217 (0.8)
Cancer	96 (0.4)
Others*	55 (0.2)
Number of morbidities	
Zero	8976(33.8)
One or more	17549(66.2)
Duration of hospitalization n= 24406#	
≤2 days	6942 (28.4)
>2 days	17464(71.6)
Place of death	
Hospital	24406 (92.0)
Home	1479(5.6)
Brought dead/Details not available	640(2.4)

Footnote: *Others included Benign prostatic hyperplasia=1, Deep Vein Thrombosis=1, Anemia=2, Hepatitis B=1, Filariasis=1, Rheumatoid arthritis =2, Thyroid disorder=38, Human immune deficiency virus infection/Acquired Immuno Deficiency Syndrome =9
#Duration of hospitalisation was reported was available for only 24406 deaths.

Figure 2 shows that there was a linear increasing trend in the proportion of individuals having morbidity with advancing age among those who died due to COVID-19.

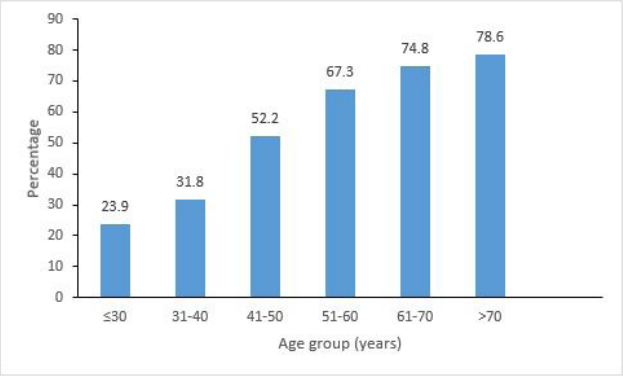


Figure 2. Age stratified morbidity prevalence among the reported COVID-19 deaths (n=26,525)

DISCUSSION

The current study analysed the factors associated with COVID-19 deaths in the state of Karnataka, a south Indian state.

The present study found that mortality due to COVID-19 increased with higher age and male gender was predominantly affected compared to females. Our findings are akin to a study which compared the factors associated with mortality during first and second wave in a single centre in India which found that male gender predominated and diabetes to be the most common morbidity (6). A study conducted in Austria, also found similar results with mortality being highest among those aged over 85 years with higher proportion of males being affected (5). The results of a study done across six European countries were also found akin to present study findings which found that there was a high proportion of deaths in the older age groups (7). Several studies done across the different regions of the world have highlighted the role of male gender, higher age and morbidities in COVID-19 associated mortality (8-13). These findings are like our analysis which further emphasise the role of factors namely age, gender and co-morbidity in COVID-19 deaths. A study from Brazil found that older age and presence of shortness of breath increased the risk of mortality with about 50.4% of them having the symptom of breathlessness (14). However, our study results report a much larger proportion people having breathlessness (73.6%).

Another hospital based multi-centre cross-sectional study conducted on deceased patients in Ethiopia found that, on arrival 60.5% had hypoxia, 32% of patients having fever with three fourth of the patients having at least one comorbidity (15). A higher proportion (58.3%) of cases were found to have fever in our study. With two third of cases having at least one or more morbidity with diabetes being the most common morbidity, our study further supports the findings of results from Ethiopia. A prospective hospital-based study from Spain showed that presence of fever, pneumonia, acute respiratory distress syndrome, diabetes mellitus and cancer were significantly associated with mortality (16). Further, results from a study done in southwest Georgia found that immunosuppression, hypertension, age ≥ 65 years were associated with mortality (17). Another study from Mexico also found that the highest risk for mortality was observed among patients with chronic kidney disease and diabetes(18). These results support our study findings.

The findings of this study can help the policymakers as well as hospital administrators to strategize and focus on high-risk groups for death in COVID-19 cases. These approaches may be useful in development of effective interventions towards of management of COVID-19 or deal with other pandemics of similar nature. As per the present analysis, higher age, male gender, presence of co-morbidity appears to be associated with COVID-19 mortality.

As this was secondary data analysis, limited information was available with respect to demographic and disease related characteristics. The quality and completeness of the reported information may have affected this analysis. The data on duration of hospitalization was not available for all cases. Under reporting of the existing morbidities may have occurred.

Multicentre hospital-based studies can be carried out to identify further details of factors associated with COVID-19 deaths. Community based verbal autopsy could be conducted to understand the factors contributing to COVID-19 deaths. Future studies including data from other sources such as hospital records and district COVID death audit committees can be insightful for understanding COVID deaths.

CONCLUSION

Analysis of factors contributing to COVID-19 mortality is important from public health perspective. Identifying the factors associated with death can help us identify high risk individuals, modify testing and treatment strategies. Elderly, males and those with co-morbidity should be the focus of preventive and treatment strategies in COVID-19 to reduce the related morbidity and mortality. Identifying high risk population and undertaking appropriate measures to reduce transmission, providing timely diagnosis, treatment and supportive therapy can help to prevent COVID deaths.

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