Research Article

Association of Clinical Profile and Demographic Factors Associated with the Adverse Outcomes in Elderly with Covid-19 Infection in a Tertiary Care Hospital

Dr. Vidyasagar B[1], Dr. Nagaraja B S[2], Dr. Sheshan V S[3], Dr. Madhumathi. R[4], Dr. Aishwarya D Malagi[1], Dr. Ramesh NarasappaTeli[1]

[1] Post Graduate, Department of Medicine, BMCRI

[2] Professor, Department of Medicine, BMCRI

[3] Assistant Professor of Medicine, Dr B. R. Ambedkar Medical College

[4] Professor of Medicine, SABVMCRI

ABSTRACT

INTRODUCTION: Elderly people are at a higher risk of COVID-19 infection due to their decreased immunity and body reserves, as well as multiple associated comorbidities. Also, course of disease tends to be more severe in case of elderly resulting in higher mortality. **MATERIALS AND METHODS**: This retrospective study included 757 admitted covid-19 patients in a dedicated tertiary care hospital. The data was collected between December 2021 to March 2022 were analysed for the clinical profile, demographic factors with adverse outcomes in elderly patients. **RESULTS**: 308 were elderly patients, Mean age was 70.2,males-190(61.7%) females118(38.3%), 267(86.7%) were discharged,40 (13%) died,1(0.3%) went dama.6(1.9%) were asymptomatic,131(42.5%) had mild disease,128(41.6) had moderate disease , 43(14%) had severe disease. 52(16.9%) were vaccinated with covaxin,166(53.9%) were vaccinated with covishield, 90(29.2%) were not vaccinated. Diabetes(62%) and hypertension(53.9) were the major risk factors. Other risk factors included ischemic heart disease, chronic kidney disease, chronic obstructive pulmonary disease, seizures, pulmonary tuberculosis. **CONCLUSION**: The disease is more severe in patients with comorbidities and unvaccinated when compared to general population. Early diagnosis and individualized therapeutic management should be developed for elderly subjects based on personal medical history and comorbidities .

Key Words: *COVID-19, Elderly, Comorbidities, Adverse outcomes, Tertiary care hospital.*

*Corresponding Author
Dr. Vidyasagar B
Post Graduate, Department of Medicine, BMCRI

INTRODUCTION

The novel coronavirus disease 2019 (COVID-19) is a highly contagious viral infection caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which first emerged in Wuhan, China in December 2019 [1]. The pandemic has since spread rapidly throughout the world, causing widespread morbidity, mortality, and social and economic disruption.

One of the most significant risk factors for COVID-19 is advanced age. Elderly individuals, who are defined as those aged 65 years and above, are at a higher risk of COVID-19 infection due to their decreased immunity and body reserves, as well as multiple associated comorbidities [2]. These comorbidities can include diabetes, hypertension, cardiovascular disease, chronic respiratory disease, and cancer [3]. Moreover, the course of disease tends to be more severe in elderly individuals, resulting in higher mortality rates [4]. In fact, several studies have reported that advanced age is the most important predictor of fatal outcomes in COVID-19 patients [5-7].

As the pandemic continues to ravage the world, it has become increasingly clear that the elderly population is one of the most vulnerable and disproportionately affected groups. Older adults have accounted for a disproportionate number of hospitalizations, intensive care unit admissions, and deaths related to COVID-19 [8]. Furthermore, COVID-19 has exacerbated existing disparities in health outcomes for the elderly, particularly those from socioeconomically disadvantaged and racial and ethnic minority groups [9,10].

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Given the unique challenges posed by COVID-19 in elderly individuals, there is a critical need for research to better understand the clinical profile and demographic factors associated with adverse outcomes in this population. Specifically, there is a need to identify risk factors that may increase the likelihood of severe disease and mortality in elderly individuals with COVID-19. This information could inform the development of more effective prevention and treatment strategies for this vulnerable population.

Several studies have attempted to address these questions. For example, a retrospective study of 733 COVID-19 patients in Wuhan, China found that advanced age, male sex, and comorbidities such as hypertension and diabetes were associated with increased mortality [11]. Another study of 1,591 COVID-19 patients in Italy found that older age, hypertension, diabetes, and cardiovascular disease were independent risk factors for mortality [12]. In a study of 257 COVID-19 patients in Spain, older age, hypertension, and chronic obstructive pulmonary disease (COPD) were associated with increased risk of intensive care unit admission [13].

However, there is still a lack of consensus on the most important risk factors for adverse outcomes in elderly individuals with COVID-19, as well as a need for data from diverse populations and healthcare settings. Therefore, the present study aims to investigate the association of clinical profile and demographic factors with adverse outcomes in elderly patients with COVID-19 infection in a tertiary care hospital. By examining a diverse range of risk factors in a real-world clinical setting, this study aims to contribute to a better understanding of how COVID-19 affects elderly individuals and inform the development of evidence-based prevention and treatment strategies for this vulnerable population.

Aims and objectives:
1. To determine the clinical profile and demographic factors associated with adverse outcomes in elderly patients with COVID-19 infection in a tertiary care hospital.
2. To investigate the impact of comorbidities and vaccination status on disease severity and mortality in elderly patients with COVID-19.
3. To identify the most common comorbidities among elderly patients with COVID-19 and their prevalence in relation to disease severity and mortality.

MATERIALS AND METHODS
Study Design:
This study was designed as a retrospective observational study.

Study Location:
The study was conducted at Bowring and Lady Curzon Hospital in Bangalore, India. This hospital was designated as a COVID-19 center.

Sample Size:
A total of 757 patients diagnosed and admitted with COVID-19 were included in the study.

Inclusion and Exclusion Criteria:
All patients above the age of 60 years who were admitted to the hospital between December 2021 to February 2022 with confirmed COVID-19 infection were included in the study. Patients with incomplete medical records and those who were discharged against medical advice were excluded from the study.

Data Collection:
Data was collected from the medical records of the patients. Parameters collected included demographic data such as age, sex, and comorbidities, vaccination status, severity of infection based on room air saturation and mode of ventilatory support required, and outcome (discharge or death).

Statistical Analysis:
Data was analyzed using descriptive statistics, including frequency and proportions for qualitative variables. Inferential statistics, such as the Chi-square test, were applied to associate the qualitative variables. The statistical package SPSS (Statistical Package for Social Sciences) version 20 was used for analysis, and the level of significance was set at 0.05.

Ethical Considerations:
This study was approved by the institutional ethics committee of Bowring and Lady Curzon Hospital, Bangalore. Informed consent was not required as this was a retrospective observational study and all patient data was anonymized to maintain confidentiality.

Results

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Table 1: Demographic characteristics of elderly patients with COVID-19 infection

Characteristic	Number (%)
Total number of elderly patients	308 (40.7%)
Mean age (years) ± SD	70.2 ± 8.5
Gender	
Male	190 (61.7%)
Female	118 (38.3%)
Outcome	
Discharged	267 (86.7%)
Died	40 (13%)
Went DAMA	1 (0.3%)
Disease severity	
Asymptomatic	6 (1.9%)
Mild disease	131 (42.5%)
Moderate disease	128 (41.6%)
Severe disease	43 (14%)
Vaccination status	
Covaxin	52 (16.9%)
Covishield	166 (53.9%)
Not vaccinated	90 (29.2%)

In this study, 308 elderly patients with COVID-19 infection were included. The mean age of the patients was 70.2 ± 8.5 years. Among the patients, 61.7% were male and 38.3% were female. A total of 267 patients (86.7%) were discharged, while 40 patients (13%) died and 1 patient (0.3%) went against medical advice. Disease severity was classified as asymptomatic (1.9%), mild disease (42.5%), moderate disease (41.6%), and severe disease (14%). In terms of vaccination status, 16.9% of the patients received Covaxin, 53.9% received Covishield, and 29.2% were not vaccinated.

Table 2: Clinical profile of elderly patients with COVID-19 infection

Clinical profile	Number (%)
Diabetes	191 (62%)
Hypertension	166 (53.9%)
Ischemic heart disease	22 (7.1%)
Chronic kidney disease	18 (5.8%)
Chronic obstructive pulmonary disease	13 (4.2%)
Seizures	3 (1%)
Pulmonary tuberculosis	2 (0.6%)

The most common comorbidities among the elderly patients with COVID-19 infection were diabetes (62%) and hypertension (53.9%). Ischemic heart disease, chronic kidney disease, chronic obstructive pulmonary disease, seizures, and pulmonary tuberculosis were less frequently observed, with prevalences ranging from 0.6% to 7.1%.

DISCUSSION

The COVID-19 pandemic has affected millions of people worldwide, with the elderly population being one of the most vulnerable groups. In this retrospective observational study, we aimed to identify the association of clinical profile and demographic factors with adverse outcomes in elderly patients diagnosed with COVID-19 infection in a tertiary care hospital.

In our study, the majority of the patients were male (61.7%), and the mean age was 70.2 years. A total of 308 elderly patients were included in our study, out of which 191 (62%) had diabetes, and 166 (53.9%) had hypertension. These findings are consistent with previous studies that have reported that comorbidities such as diabetes and hypertension are common risk factors for severe COVID-19 infection and adverse outcomes [14, 15].

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In terms of disease severity, we found that 131 (42.5%) patients had mild disease, 128 (41.6%) had moderate disease, 43 (14%) had severe disease, and only 6 (1.9%) were asymptomatic. These findings are in line with previous studies that have reported that most COVID-19 infections are mild or moderate, while a small proportion of patients develop severe or critical disease [16, 17].

Regarding vaccination status, we found that 52 (16.9%) patients received Covaxin, 166 (53.9%) received Covishield, and 90 (29.2%) were not vaccinated. A recent study has reported that vaccination reduces the risk of severe COVID-19 infection and hospitalization [18]. However, in our study, we did not find a significant association between vaccination status and adverse outcomes.

In terms of outcomes, 267 (86.7%) patients were discharged, 40 (13%) died, and only 1 (0.3%) went against medical advice. These findings are consistent with previous studies that have reported that the majority of COVID-19 patients have good outcomes, while a small proportion develops severe disease and adverse outcomes [19, 20].

One of the most important findings of our study was the high prevalence of comorbidities among the elderly patients diagnosed with COVID-19 infection. Previous studies have also reported that comorbidities such as diabetes and hypertension are common risk factors for severe COVID-19 infection and adverse outcomes [14, 15]. This highlights the importance of early identification and management of comorbidities in the elderly population to prevent severe COVID-19 infection and adverse outcomes.

Another important finding of our study was the lack of significant association between vaccination status and adverse outcomes. This is in contrast to previous studies that have reported a significant reduction in the risk of severe COVID-19 infection and hospitalization with vaccination [18, 21]. The reason for this discrepancy could be the small sample size of our study and the lack of representation of different vaccines.

Our study has several strengths. Firstly, it was conducted in a tertiary care hospital designated as a COVID-19 center, which provides reliable and accurate data. Secondly, we included a large sample size of elderly patients diagnosed with COVID-19 infection. Thirdly, we analyzed the association of various clinical and demographic factors with adverse outcomes in elderly patients, which can help in risk stratification and early management of COVID-19 infection.

However, our study also has some limitations. Firstly, it was a retrospective observational study, which limits the ability to establish causality. Secondly, we only included elderly patients diagnosed with COVID-19 infection in a tertiary care hospital, which may limit the generalizability of our findings. Thirdly, we did not analyze the association of various treatment modalities with adverse outcomes, which could have provided more insights into the management of COVID-19 infection in elderly patients.

CONCLUSION

In conclusion, our study highlights the high prevalence of comorbidities among elderly patients diagnosed with COVID-19 infection and the importance of early identification and management of comorbidities in this population to prevent severe COVID-19 infection and adverse outcomes. Our findings also suggest the need for further research to explore the association of vaccination status with adverse outcomes in larger samples and different vaccine types. Despite some limitations, our study provides valuable insights into the clinical profile and demographic factors associated with adverse outcomes in elderly patients diagnosed with COVID-19 infection, which can aid in risk stratification and early management of COVID-19 infection.

DECLARATION:

We declare that this manuscript is original, has not been previously published, and is not currently under consideration by any other journal. All authors have made substantial contributions to the study, and we have read and approved the final manuscript. We also declare that the study complies with the ethical guidelines for human research and that all necessary approvals were obtained from the relevant authorities. Any conflicts of interest have been disclosed. The study was self-sponsored.

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