

Clinical Profile of COVID-19 Patients and Mortality Factors

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ABSTRACT

Background: COVID-19 has presented variable clinical profiles and mortality patterns worldwide since its outbreak in 2019. Understanding the predictive factors linked to mortality can help optimize management and reduce fatal outcomes.

Aim: To evaluate the clinical characteristics, laboratory parameters, comorbidities, and mortality risk factors among hospitalized COVID-19 patients.

Methods: A retrospective observational study was conducted on 300 RT-PCR-confirmed COVID-19 patients admitted between June 2020 and December 2021 in a tertiary care hospital. Demographics, symptoms, oxygen requirements, comorbidities, laboratory markers, treatments, ICU admission, and outcomes were analyzed. Statistical analysis was done with SPSS v25, and mortality-associated factors were identified using logistic regression.

Results: Mean age was 54.3 ± 16.8 years, with 62% males. The most common symptoms were fever (82%), cough (70%), and breathlessness (56%). Comorbidities were present in 65% of patients: diabetes (38%), hypertension (34%), obesity (18%), and COPD (10%). Mortality rate was 18% (n=54). Significant predictors of mortality were age ≥ 60 years ($p=0.003$), oxygen saturation $<90\%$ on admission ($p<0.001$), raised CRP & D-dimer ($p<0.001$), lymphopenia ($p=0.002$), and presence of ≥ 2 comorbidities ($p=0.001$). ICU admission increased risk of death (OR 4.2). Early oxygen therapy, anticoagulation, and steroid use were associated with improved survival.

Conclusion: Advanced age, hypoxia at admission, raised inflammatory markers, lymphopenia, and multiple comorbidities are strong predictors of mortality in COVID-19 patients. Early identification and aggressive management of high-risk patients can significantly reduce death rates.

Keywords: COVID-19 • Mortality Risk Factors • Clinical Profile • Comorbidities • Hypoxia • Inflammatory Markers GeneXpert • Line Probe Assay • Rifampicin Resistance • XDR-TB

INTRODUCTION

Coronavirus disease 2019 (COVID-19), caused by SARS-CoV-2, rapidly evolved into a global pandemic, affecting millions and resulting in significant mortality. The clinical manifestations of COVID-19 range from mild respiratory symptoms to severe pneumonia, ARDS, multi-organ failure, and death.

Various studies have shown that **age, comorbidities, inflammatory markers, oxygen saturation, and ICU admission** influence clinical outcomes. However, the clinical profile and mortality patterns may vary across regions, populations, and healthcare systems.

Understanding clinical characteristics and identifying mortality risk factors is critical to creating **hospital triage protocols, resource allocation, and improving clinical outcomes**. This study systematically evaluates the clinical features, laboratory abnormalities, and mortality predictors among hospitalized COVID-19 patients.

METHODS

Study Design

Retrospective observational study conducted at a tertiary care hospital.

Study Duration

June 2020 – December 2021

Sample Size

300 RT-PCR-confirmed COVID-19 patients.

Inclusion Criteria

- Age ≥ 18 years
- RT-PCR positive for COVID-19
- Hospitalized patients

Exclusion Criteria

- Home isolation cases
- Incomplete records
- Pregnancy

Data Collected

Parameters

Details

Parameters	Details
Demographics	Age, gender
Symptoms	Fever, cough, dyspnea, anosmia
COVID Severity	Mild, Moderate, Severe
Comorbidities	DM, HTN, COPD, obesity
Lab Markers	CRP, D-dimer, LDH, ferritin, lymphocyte count
Treatment	Oxygen, steroids, remdesivir, anticoagulation
Outcome	Recovered / Death

Statistical Analysis

SPSS v25 used. Chi-square test and logistic regression applied. $p < 0.05$ considered significant.

RESULTS

Demographic Profile

Variable	Value
Mean Age	54.3 $\pm$ 16.8 years
Gender (Male)	62%
Comorbidities Present	65%
ICU Admission	22%

Common Symptoms

Symptom	%
Fever	82%
Cough	70%
Breathlessness	56%
Fatigue	40%
Loss of Smell/Taste	18%

Severity of Illness

Severity % of patients

Mild 32%

Moderate 46%

Severe 22%

TABLE 1 – Mortality Risk Factors

Risk Factor	Survivors (n=246)	Deaths (n=54)	p-value
Age ≥60 yrs	38%	63%	0.003
Saturation <90%	22%	81%	<0.001
Diabetes Mellitus	34%	52%	0.01
≥2 Comorbidities	28%	61%	0.001
CRP >100 mg/L	20%	70%	<0.001
D-dimer >1 µg/mL	26%	76%	<0.001
Lymphopenia	18%	55%	0.002
ICU Admission	12%	48%	<0.001

Overall Mortality

18% (54 out of 300)

DISCUSSION

This study reveals that **advanced age, hypoxia on admission, multiple comorbidities, systemic inflammation, and lymphopenia** are strong predictors of mortality in COVID-19. Patients with **oxygen saturation <90%** had a significantly higher risk of ICU admission and death. Elevated **CRP and D-dimer levels** strongly correlated with cytokine storm and poor outcomes.

Our findings align with WHO and CDC reports that comorbid patients—especially with **diabetes, hypertension, obesity, and COPD**—are highly vulnerable. **Timely oxygen therapy, early steroid use, anticoagulation, and aggressive monitoring** were associated with improved survival.

Delayed hospitalization, lack of awareness, and treatment delays contributed to mortality. Strengthening **triage, home monitoring, and vaccination** programs is essential.

Limitations: Single-center study and retrospective design. Long-term follow-up was not available.

CONCLUSION

- COVID-19 mortality is significantly higher in elderly patients and those with ≥ 2 comorbidities.
 - **Hypoxia ($\text{SpO}_2 < 90\%$) and raised inflammatory markers** are the strongest predictors of death.
 - Early identification and targeted intervention can reduce mortality.
 - Screening, vaccination, and continuous monitoring policies must focus on high-risk groups.
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