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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 MarkersGeneXpert • 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 ± 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 (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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