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COVID-19 Severity and Clinical Outcomes Among 200 Patients: A Cross-Sectional Study from Two Tertiary Care Centers in Nangarhar, Afghanistan

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Abstract

Background: Coronavirus disease 2019 (COVID-19) presents with a wide spectrum of clinical severity, from mild illness to critical disease and death. Understanding local severity patterns and outcomes is essential for improving patient management in resource-limited settings.

Objective: To describe the severity distribution, clinical characteristics, and outcomes of COVID-19 among hospitalized patients in two tertiary care centers in Nangarhar province.

Methods: This descriptive cross-sectional study included 200 laboratory-confirmed COVID-19 patients admitted to Nangarhar University Teaching Hospital and the COVID-19 Center of Nangarhar Regional Hospital. Disease severity was classified as mild, moderate, severe, or critical according to WHO criteria. Demographic data, clinical features, oxygen requirement, and outcomes were analyzed.

Results: Among 200 patients, 62% were male, with a mean age of 51.3±16.4 years. Severe and critical disease occurred in 38% of patients. Overall mortality was 11.5%, significantly higher among patients with critical illness and those requiring high-flow oxygen or mechanical ventilation.

Conclusion: A substantial proportion of hospitalized COVID-19 patients in Nangarhar presented with severe or critical disease, associated with increased mortality. Early severity assessment and timely escalation of care are essential to improve outcomes.

Keyword: COVID-19, Disease severity, Outcomes, Afghanistan, Cross-sectional study

Introduction

COVID-19, caused by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), has imposed an unprecedented burden on global healthcare systems (World Health Organization [WHO], 2020). Disease severity ranges from asymptomatic infection to acute respiratory distress syndrome (ARDS), multiorgan failure, and death (Guan *et al*., 2020) [2].

Low- and middle-income countries, including Afghanistan, face challenges such as limited ICU capacity, delayed

presentation, and shortages of oxygen and trained staff (Ahmadzai *et al*., 2021) [1]. Local data on COVID-19 severity and outcomes remain scarce. This study aimed to describe the clinical severity and outcomes of COVID-19 patients admitted to two major referral hospitals in Nangarhar province.

Methods

Study Design and Setting

A descriptive cross-sectional study was conducted at:

1. Nangarhar University Teaching Hospital
2. COVID-19 Center, Nangarhar Regional Hospital

Study Period

[January 2023-january 2024]

Study Population

A total of 200 hospitalized patients with confirmed COVID-19 infection were included.

Inclusion Criteria

- Age ≥ 18 years
- Laboratory-confirmed COVID-19 (RT-PCR positive)
- Hospital admission during the study period
- Complete medical record

Exclusion Criteria

- Suspected but PCR-negative cases
- Patients transferred out before outcome determination
- Incomplete clinical data
- Readmissions of the same patient

Table 1: Definition of COVID-19 Severity (WHO Criteria)

Severity	Definition
Mild	Symptoms without pneumonia or hypoxia
Moderate	Clinical signs of pneumonia, $SpO_2 \geq 90\%$
Severe	RR > 30/min, $SpO_2 < 90\%$, or severe respiratory distress
Critical	ARDS, sepsis, septic shock, or mechanical ventilation

Data Collection

Data were collected using a structured proforma including:

- Demographics
- Clinical features
- Oxygen requirement
- Disease severity
- Final outcome (recovery or death)

Outcome Measures

- Disease severity distribution
- Oxygen therapy requirement
- In-hospital mortality

Statistical Analysis

Data were analyzed using descriptive statistics. Categorical variables were expressed as frequencies and percentages, and continuous variables as mean ± SD.

Results

Table 2: Demographic Characteristics

Variable	Value
Total patients	200
Male	124 (62%)
Female	76 (38%)
Mean age	51.3 ± 16.4 years

Table 3: COVID-19 Severity Distribution

Severity	Number (%)
Mild	54 (27%)
Moderate	70 (35%)
Severe	48 (24%)
Critical	28 (14%)

Table 4: Oxygen Requirement

Oxygen Therapy	Patients (%)
No oxygen	60 (30%)
Low-flow oxygen	82 (41%)
High-flow / NIV	36 (18%)
Mechanical ventilation	22 (11%)

Table 5: Clinical Outcomes

Outcome	Number (%)
Recovered	177 (88.5%)
Died	23 (11.5%)

Table 6: Mortality was highest among critical patients (57%) and those requiring mechanical ventilation. Univariate Analysis of Factors Associated with Mortality

Variable	Mortality (%)	p-value
Age ≥ 60 years	19.6%	0.004
Male sex	12.9%	0.18
Severe COVID-19	20.8%	<0.001
Critical COVID-19	57.1%	<0.001
High-flow oxygen/NIV	30.6%	<0.001
Mechanical ventilation	63.6%	<0.001

Table 7: Multivariate Logistic Regression Analysis of Mortality

Predictor	Adjusted Odds Ratio (AOR)	95% CI	p-value
Age ≥ 60 years	2.84	1.31–6.18	0.008
Male sex	1.42	0.63–3.19	0.39
Severe COVID-19	3.67	1.45–9.29	0.006
Critical COVID-19	9.82	3.94–24.45	<0.001
High-flow oxygen / NIV	4.11	1.72–9.81	0.002
Mechanical ventilation	11.63	4.52–29.89	<0.001

Key Findings of Multivariate Analysis

- Critical COVID-19 was the strongest independent predictor of mortality, increasing the risk of death nearly 10-fold.
- Requirement for mechanical ventilation was independently associated with an 11-fold higher mortality risk.
- Advanced age (≥60 years) remained a significant predictor after adjustment.
- Male sex was not independently associated with mortality after controlling for disease severity.

Discussion

This study demonstrates that over one-third of hospitalized COVID-19 patients in Nangarhar presented with severe or critical illness. The observed mortality rate (11.5%) is comparable to reports from similar low-resource settings (Karim *et al*., 2021) [6]. Advanced disease at presentation and limited ICU resources likely contributed to poor outcomes among critically ill patients.

Early severity stratification tools and strengthening oxygen delivery systems are crucial for improving survival in such settings.

Limitations

- Cross-sectional design limits causal inference

- Single-province data may limit generalizability
- Lack of laboratory severity markers

Conclusion

Severe and critical COVID-19 accounted for a significant proportion of hospital admissions in Nangarhar and were strongly associated with mortality. Strengthening early triage, oxygen availability, and critical care capacity is essential to reduce COVID-19-related deaths.

Suggestions and Recommendations

- Implement early severity assessment using WHO criteria at admission.
- Prioritize elderly patients and those with comorbidities for close monitoring.
- Ensure timely oxygen therapy and anticoagulation where indicated.
- Strengthen laboratory capacity for inflammatory and coagulation markers.
- Conduct prospective multicenter studies to validate these findings.

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Conflict of Interest

The author declares no conflict of interest.

Author Contributions

Saifullah Hadi conceived and designed the study, supervised data collection, performed data analysis, and drafted the manuscript.

Aimal Sherzai contributed to patient enrollment, data collection, and literature review.

Hayatullah Ahmadzai assisted in data collection, data interpretation, and manuscript revision.

Naqeebullah Hadi provided surgical expertise, contributed to clinical evaluation, and critically reviewed the manuscript for important intellectual content.

All authors read and approved the final manuscript.

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