

Appendix 1. Hospital complications and outcome of in-patient COVID-19 patients	
Variable	Frequency (percent)
ICU admission	31 (18.7 [95% CI: 12.7, 24.7] ¹)
Need invasive mechanical ventilation	28 (16.9 [95% CI: 11.4, 22.3])
Complication during hospital stay	
<i>Acute respiratory distress syndrome</i>	6 (3.6 [95% CI: 1.2, 6.6])
<i>Superimposed bacterial pneumonia</i>	9 (5.4 [95% CI: 2.4, 9.0])
<i>Sepsis</i>	6 (3.6 [95% CI: 1.2, 6.6])
<i>Venous thromboembolism</i>	8 (4.8 [95% CI: 1.8, 8.4])
<i>Pulmonary thromboembolism</i>	5 (3.0 [95% CI: 0.6, 6.0])
<i>Acute kidney injury</i>	6 (3.6 [95% CI: 1.2, 6.6])
<i>Gastrointestinal bleeding</i>	7 (4.2 [95% CI: 1.2, 7.8])
<i>Myocardial infarction</i>	9 (5.4 [95% CI: 2.4, 9.0])
<i>Any</i>	48 (28.9 [95% CI: 22.3, 36.1])
Hospital Length of stay (LoS)	7 [4, 10] ³
Outcome	
<i>Poor prognosis</i> ²	49 (29.5 [95% CI: 22.3, 36.7])
<i>Expired</i>	31 (18.8 [95% CI: 12.7, 25.4])
¹ Calculated 95% confidence interval (CI) using bootstrap method. ² Poor prognosis was defined as ICU admission, need for invasive mechanical ventilation, developing ARDS, or death. ³ Median [interquartile range (IQR)]	

Appendix 2. Comparison of demographic and underlying conditions between COVID-19 patients with and without poor prognosis ¹

Variable	Total (n = 166)	Negative (n = 117)	Positive (n = 49)	p ³
Sex				
<i>Male</i>	98 (59.0) ²	68 (58.1)	30 (61.2)	0.711
<i>Female</i>	68 (41.0)	49 (41.9)	19 (38.8)	
Age	61.26 ± 16.12 ⁴	60.33 ± 15.34	63.40 ± 17.78	0.322, 0.276 ⁵
Diabetes				
<i>Positive</i>	51 (30.7)	31 (26.5)	20 (40.8)	0.068
<i>Negative</i>	115 (69.3)	86 (73.5)	29 (59.2)	
Hypertension				
<i>Positive</i>	77 (46.4)	52 (44.4)	25 (51.0)	0.438
<i>Negative</i>	89 (53.6)	65 (55.6)	24 (49.0)	
COPD				
<i>Positive</i>	5 (3.0)	5 (4.3)	0 (0)	0.323 [†]
<i>Negative</i>	160 (97.0)	111 (95.7)	49 (100)	
Neoplasm				
<i>Positive</i>	4 (2.4)	3 (2.6)	1 (2.0)	1.000 [†]
<i>Negative</i>	162 (97.6)	114 (97.4)	48 (98.0)	
CVD				
<i>Positive</i>	33 (19.9)	19 (16.2)	14 (28.6)	0.069
<i>Negative</i>	133 (80.1)	98 (83.8)	35 (71.4)	
CKD				
<i>Positive</i>	10 (6.0)	8 (6.8)	2 (4.1)	0.496
<i>Negative</i>	156 (94.0)	109 (93.2)	47 (95.9)	
Obesity				
<i>Positive</i>	1 (0.6)	0 (0)	1 (2.0)	0.295 [†]
<i>Negative</i>	165 (99.4)	117 (100)	48 (98.0)	
Immunodeficiency				
<i>Positive</i>	5 (3.0)	2 (1.7)	3 (6.1)	0.153 [†]
<i>Negative</i>	161 (97.0)	115 (98.3)	46 (93.9)	
Asthma				
<i>Positive</i>	6 (3.6)	5 (4.3)	1 (2.0)	0.671 [†]
<i>Negative</i>	160 (96.4)	112 (95.7)	48 (98.0)	
Hypothyroidism				
<i>Positive</i>	10 (6.0)	7 (6.0)	3 (6.1)	1.000
<i>Negative</i>	156 (94.0)	110 (94.0)	46 (93.9)	
RA				
<i>Positive</i>	6 (3.6)	4 (3.4)	2 (4.1)	1.000 [†]
<i>Negative</i>	160 (96.4)	113 (96.6)	47 (95.9)	

Hospital LoS	7 [4, 10] ⁶	7 [4, 8]	9 [5, 16]	0.005, 0.005 ⁷
--------------	-------------------------------	-----------------	------------------	----------------------------------

Abbreviations: COPD, chronic obstructive pulmonary disease; CVD, cardiovascular disease; CKD, chronic kidney disease; RA, rheumatoid arthritis; LoS, length of stay.

¹ Poor prognosis was defined as ICU admission, need for invasive mechanical ventilation, developing ARDS, or death.

² Frequency (percent)

³ Chi-square test

⁴ Mean \pm standard deviation

⁵ **P** Kolmogorov-Smirnov, **P** independent t test

⁶ **Median [interquartile range (IQR)]**

⁷ **P** Kolmogorov-Smirnov, **P** Mann-Whitney test

[†] Underpowered analysis

Bold variables represent that they selected for the multivariable analysis.

Appendix 3. Comparison of signs between COVID-19 patients with and without poor prognosis ¹

Variable	Total (n = 166)	Negative (n = 117)	Positive (n = 49)	p ³
PR	91.95 ± 13.37 ²	91.60 ± 12.62	92.81 ± 15.16	0.955, 0.603
RR	20.99 ± 4.18	20.55 ± 3.79	22.06 ± 4.89	0.174, 0.036
Temperature	36.82 ± 1.08	36.85 ± 1.07	36.74 ± 1.11	0.992, 0.568
Oxygen saturation	86.5 [80, 91]⁴	88 [82, 92]	82 [72.25, 87]	<0.0001, <0.0001⁵
SBP	125.56 ± 19.57	125.7 ± 18.56	125.23 ± 22.03	0.754, 0.889
DBP	78.30 ± 12.36	78.02 ± 11.25	79.00 ± 14.81	0.999, 0.645

Abbreviations: PR, pulse rate; RR, respiratory rate, SBP, systolic blood pressure; DBP, diastolic blood pressure; MD, mean difference [95% CI].

¹ Poor prognosis was defined as ICU admission, need for invasive mechanical ventilation, developing ARDS, or death.

² Mean ± standard deviation

³ P Kolmogorov-Smirnov, P independent t test

⁴ Median [interquartile range (IQR)]

⁵ P Kolmogorov-Smirnov, P Mann-Whitney test

Bold variables represent that they selected for the multivariable analysis.

Appendix 4. Comparison of laboratory data between COVID-19 patients with and without poor prognosis ¹

Variable	Total	Negative	Positive	p ²
WBC	7.1 [5.27, 9.7] ³	6.6 [4.8, 9.1]	8.2 [6.55, 10.8]	0.029, 0.005 ⁵
PMN proportion	78.85 [69, 85]	76.2 [68, 82]	85 [79.25, 88]	<0.0001, <0.0001 ⁵
Lymph. proportion	14.9 [9.15, 23]	17.85 [11.27, 24.6]	10.75 [7.1, 14]	<0.0001, <0.0001 ⁵
Hb	12.73 ± 2.09 ⁴	12.69 ± 2.00	12.82 ± 2.33	0.975, 0.706
Plt	217.54 ± 91.61	217.70 ± 92.23	217.15 ± 91.09	0.919, 0.972
PaCO2	39.46 ± 8.45	38.75 ± 7.31	41.05 ± 10.48	0.086, 0.117
PH	7.37 ± 0.10	7.39 ± 0.07	7.34 ± 0.11	0.092, 0.001
HCO3	24.19 ± 4.28	24.2 [21.62, 26.47]	23.85 [22, 26]	0.912, 0.412
D-dimer	1700.5 [678.2, 3699.7]	1296 [560, 2023.7]	3015 [1570, 9486]	0.034, 0.013 ⁵⁺
LDH	692 [539, 875]	623 [498, 786]	864.5 [724.5, 1130]	<0.0001, <0.0001 ⁵⁺
CRP	66.95 ± 24.60	64.98 ± 26.78	71.64 ± 17.76	0.402, 0.078 [†]
ESR	53 [30, 81]	47 [27.5, 77]	60 [40.75, 98.25]	0.030, 0.030 ⁵⁺
Bilirubin	0.80 [0.61, 1.00]	0.82 ± 0.33	0.94 ± 0.36	0.026, 0.053 ⁵⁺
Troponin				
<i>Positive</i>	37 (37.00) ⁶	21 (30.4)	16 (51.6)	0.042 ⁷⁺
<i>Negative</i>	63 (63.00)	48 (69.6)	15 (48.4)	
Na	139.32 ± 3.76	139.41 ± 3.60	139.10 ± 4.14	0.844, 0.631
K	4.44 ± 0.54	4.41 ± 0.51	4.50 ± 0.59	0.467, 0.336
Creatinine	1.29 ± 0.56	1.22 ± 0.47	1.45 ± 0.71	0.199, 0.047

Abbreviations: WBC, white blood cells; PMN, polymorphonuclear cells; Lymph., lymphocytes; Hb, hemoglobin; Plt, platelets; LDH, lactate dehydrogenase; CRP, C-reactive protein; ESR, erythrocyte sedimentation rate; MD, mean difference [95% CI].

¹ Poor prognosis was defined as ICU admission, need for invasive mechanical ventilation, developing ARDS, or death.

² P Kolmogorov-Smirnov, P independent t test

³ Median [interquartile range (IQR)]

⁴ Mean ± standard deviation

⁵ P Kolmogorov-Smirnov, P Mann-Whitney test

⁶ Frequency (percent)

⁷ Chi-square test

[†] Due to significant number of missing values, excluded from the multivariable analysis.

Bold variables represent that they selected for the multivariable analysis.

Appendix 5. Sensitivity and specificity of the visual lung involvement score at various cut-off values for in-patient COVID-19 poor prognosis

Cut-off value	Sensitivity	Specificity	PPV	NPV
13.5	77.6%	56.4%	42.7%	85.71%
14.5	71.4%	62.4%	44.3%	83.9%
15.5	71.4%	66.7%	47.3%	84.8%
16.5	67.3%	71.8%	50.0%	84.0%
17.5	67.3%	76.1%	54.1%	84.8%
18.5	67.3%	78.6%	56.9%	85.2%
19.5	61.2%	80.3%	56.6%	83.2%

Abbreviations: PPV, positive predictive value; NPV, negative predictive value.