Table 1 Baseline characteristics of the COVID-19 cases based on their reported outcomes

Characteristic	Total Patients (N=648)	Critical (N=77)	Non-critical (N=571)	P-value*
*Sex**				0.006
Male	342 (52.8%)	52 (67.5%)	290 (50.8%)	
Female	306 (47.2%)	25 (32.5%)	281 (49.2%)	
Age (MD, IQR) -years*	34 (19)	37 (27)	33 (18)	0.001
Age Categories -years*				0.001
1-20	69 (10.6%)	5 (6.5%)	64 (11.2%)	
21-40	359 (55.4%)	38 (49.4%)	321 (56.2%)	
41-60	170 (26.2%)	22 (28.6%)	148 (25.9%)	
>60	50 (7.7%)	12 (15.6%)	38 (6.7%)	
Age (binary) -years*				0.001
<65	616 (95.1%)	68 (88.3%)	548 (96.0%)	
≥65	32 (4.9%)	9 (11.7%)	23 (4.0%)	
Smoking Status (N=647)				0.943
Yes	104 (16.1%)	12 (15.8%)	92 (16.1%)	
No	543 (83.9%)	64 (84.2%)	479 (83.9%)	
Occupation				0.443
Working in health care facilities ˟	101 (15.6%)	14 (18.2%)	87 (15.2%)	
Military	21 (3.2%)	4 (5.2%)	17 (3.0%)	
Others	526 (81.2%)	59 (76.6%)	467 (81.8%)	
Comorbidities				
Diabetes Mellitus*	73 (11.3%)	16 (20.8%)	57 (10.0%)	0.005
Hypertension*	75 (11.6%)	16 (20.8%)	59 (10.3%)	0.007
Chronic kidney disease	12 (1.9%)	2 (2.6%)	10 (1.8%)	0.605
Chronic respiratory diseases*‡	81 (12.5%)	17 (22.1%)	64 (11.2%)	0.007
Cancer/Immunodeficiency*	18 (2.8%)	5 (6.5%)	13 (2.3%)	0.035
Cardiac diseases* †	23 (3.5%)	8 (10.4%)	15 (2.6%)	0.001
No comorbidity	382 (59.0%)	23 (29.8%)	359 (62.9%)	0.001
1 or more Comorbidity*	188 (29.0%)	33 (42.9%)	155 (27.1%)	0.004
2 or more Comorbidity*	78 (12.0%)	21 (27.3%)	57 (10.0%)	0.001
Length of stay (MD, IQR) -days*	5 (14)	11.5 (11)	4 (12)	0.001
Symptoms				
Fever (N=191)	163 (85.3%)	36 (94.7%)	127 (83.0%)	0.067
Cough* (N=228)	203 (89.0%)	41 (97.6%)	162 (87.1%)	0.049
Sore Throat (N=145)	115 (79.3%)	18 (85.7%)	97 (78.2%)	0.433
Runny Nose (N=98)	73 (74.5%)	7 (63.6%)	66 (75.9%)	0.381
Headache (N=504)	140 (27.8%)	10 (18.2%)	130 (29.0%)	0.092
GI Symptoms ‡ (N=504)	71 (14.1%)	11 (20.0%)	60 (13.4%)	0.182
Myalgia (N=504)	145 (28.8%)	17 (30.9%)	128 (28.5%)	0.710
Vital Signs				
Temperature (N=268) -°C				0.132
<38	219 (81.7%)	34 (73.9%)	185 (83.3%)	
≥38	49 (18.3%)	12 (26.1%)	37 (16.7%)	
Heart rate (N=115) -beats/min				0.133
<100	88 (76.5%)	12 (63.2%)	76 (79.2%)	
≥100	27 (23.5%)	7 (36.8%)	20 (20.8%)	
Respiratory rate (MD, IQR) - breaths/min	20 (2.0)	20 (4.0)	20 (2.0)	0.260
Respiratory rate (N=106)				0.187
≤24	101 (95.3%)	17 (89.5%)	84 (96.6%)	
> 24	5 (4.7%)	2 (10.5%)	3 (3.4%)	

Table 1 Baseline characteristics of the COVID-19 cases based on their reported outcomes *(concluded)*

Characteristic	Total Patients (N=648)	Critical (N=77)	Non-critical (N=571)	P-value*
SBP (MD, IQR) -mmHg	125 (22.0)	121 (20.0)	125 (21.0)	0.336
DBP (MD, IQR) -mmHg	74 (12.0)	74 (10.0)	74.5 (14.0)	0.450
Oxygen saturation (MD, IQR) -%	98 (3.0)	98 (3.3)	98 (3.0)	0.659
Oxygen saturation (N=259)				0.610
< 94	28 (10.8%)	4 (8.7%)	24 (11.3%)	
≥94	231 (89.2%)	42 (91.3%)	189 (88.7%)	
Blood Laboratory testing				
WBC means (MD, IQR) -10³ /µL	5.5 (3.3)	6.5 (7.8)	5.5 (3.0)	0.460
WBC (N=34)				0.906
<4	5 (14.7%)	1 (12.5%)	4 (15.4%)	
4-12	26 (76.5%)	6 (75.0%)	20 (76.9%)	
>12	3 (8.8%)	1 (12.5%)	2 (7.7%)	
Neutrophils (MD, IQR) -%	62.1 (67.9)	68 (47.3)	60.2 (67.3)	0.405
Neutrophils (N=28)				0.777
<55	10 (35.7%)	2 (28.6%)	8 (38.1%)	
55-70	9 (32.1%)	2 (28.6%)	7 (33.3%)	
>70	9 (32.1%)	3 (42.9%)	6 (28.6%)	
Lymphocytes (MD, IQR) -%	21.8 (13.7)	22.4 (31.2)	21.8 (13.0)	0.919
Lymphocytes (N=23)				0.923
<20	10 (43.5%)	3 (50.0%)	7 (41.2%)	
20-40	10 (43.5%)	2 (33.3%)	8 (47.1%)	
>40	3 (13.0%)	1 (16.7%)	2 (11.8%)	

MD=median; IQR=interquartile range; GI=gastrointestinal; SBP=systolic blood pressure; DBP=diastolic blood pressure; WBC=white blood cells
* Significant result at a=0.05
× Involves physicians, nurses, pharmacists, lab technicians, cleaners, and other workers in health care facilities
‡ Includes asthma, COPD, interstitial lung disease, bronchiectasis, lung cancer, and others
† Includes Ischemic heart diseases and heart failure
∐ Involves abdominal pain, vomiting, or diarrhoea

4.25). Cancer/immunodeficient patients had a significant crude OR=2.98 (1.03–8.61) that became non-significant when adjusted with OR=2.24 (0.73–6.87). Finally, cardiac patients showed the highest OR=4.30 (1.76–10.50) that remained significant even after adjusting for age and sex with an OR=3.05 (1.16–8.02). None of the symptoms showed a significant association with the outcomes even after adjusting for age and sex (Table 2).

Discussion

To the best of our knowledge, this is one of the first studies in the Eastern Mediterranean Region to assess the association between common comorbidities, clinical manifestations and laboratory results for critical COVID-19 patients. We found an association between gender, age, diabetes, HTN, chronic respiratory diseases, cardiac diseases, cancer patients/immunodeficiency with the outcomes of clinical interest. There was no significant association among tobacco smokers or patients presenting with specific signs and symptoms.

The gender distribution of our patients was 53% males and 47% females. In addition, males were seen more in the critical group 67.5% versus 32.5% in females. These findings are consistent with previous evidence that suggests male patients have a higher severity and mortality (6,16).

The median age of our sample was 34 years; this could be attributed to the young population of Saudi Arabia (17). When age was analyzed as a continuous variable, it showed a significant association with increased risk by almost 3% each year. Consistent with the literature, cases aged 65 years or older had an increased risk of being admitted to ICU or dying from COVID-19 (18,19). The results were also significant in patients older than 60 years of age with an increase in risk by 3.65 times (95% CI: 1.18–11.27) in relation to those 1–20 years-old cases. Remarkably, 15.6% of the critical cases were over the age of 60. These findings confirmed the previous evidence reporting age as a risk factor for poor outcomes (5,20). However, with a lower cutoff age of 60 years when compared with recent studies (2,18). This might be related to comorbidities appearing at an early age in our population (21). Age-related responses with weak immune systems are probable contributing factors for adverse outcomes of the disease (18).