Open Access Original Article

The proportion and risk factors of fatal outcomes among severely and critically ill COVID-19 patients: A hospital experience, Baghdad, Iraq 2021

DOI: https://doi.org/10.32007/jfacmedbagdad.6341857.

Ibrahim A. Maher Saleem* MBChB

Abstract:

Background: Severe forms of Coronavirus disease 2019 (COVID-19) were found among 6 - 10% of all COVID-19 patients. Acute respiratory distress syndrome ARDS is non-cardiogenic pulmonary edema manifested by the rapid development of shortness of breath, tachypnea, and hypoxemia. Patients' outcomes after critical care for COVID-19 have not been adequately documented in this low-resource environment, despite advocacy for prevention and response measures in low- and middle-income countries.

Objectives: To highlight the rate of severe illness among COVID-19 patients and its associated factors in Al-Imam Ali Hospital, Baghdad-Iraq 2021.

Patients and Methods: A descriptive cross-sectional study on cases with severe and critical COVID-19 illness (with ARDS) admitted to the isolation ward in Al-Imam Ali Hospital from 23 March to 23 May, 2021. All COVID-19 patients admitted in a severe or critical state were included. A data collection form was filled by the researcher. The P value of < 0.05 was used to determine statistical significance. Ethical Approval was obtained.

Results: A total of 504 severely ill COVID-19 patients were included in this study. There were 71 (14.1%) patients below 45 years of age. Males formed 40.9% of patients while that of females was 59.1%. Fever was the presenting symptom in 381 (75.6%) patients, 197 (39.1%) patients had anosmia, and 192 (38.1%) had ageusia. There were 358 (71.0%) survivors while 146 (29.0%) died. Patients aged 65 years or more had more possible risk for death than those below 65 years (OR=1.14, 95% CI =0.6-2.2). Female gender appeared to be protective compared to male gender (OR=0.52, 95% CI =0.35-0.77). Ex-smokers had a higher risk than non-smoker and current smokers (OR for ex-smoker=4.38, 95% CI 2.6-7.5), and (OR for current smoker=1.7, 95% CI 0.98-3). Renal disease was found to be a risk factor leading to death (OR=2.9; 95% CI=1.73-5.1). Diabetes Mellitus, respiratory diseases, and solid cancer showed a high risk for death, [OR=2.3, 95% CI=1.4-4; OR=1.7; 95% CI=1.1-2.9, OR=8, 95% CI=3.3-19 respectively]. Patients with three comorbidities had a higher mortality risk, OR=1.6, 95% CI=1.3-2.

Conclusion: This study concluded that mortality of severely and critically ill COVID-19 patients was 29%, and males and older patients were risk factors for death. In addition to; ex-smoker, alcoholic, and patients with baseline comorbidities appeared to be risk factors for mortality. Finally; laboratory tests and Pao2/Fio2 ratio can be used to predict the outcome.

Keywords: COVID-19, mortality, ARDS, survival, comorbidities.

JFac Med Baghdad
2021; Vol.63, No. 4
Received: Aug. 2021
Accepted: Oct. 2021
Published: Jan. 2022

Introduction:

In 2003, the World Health Organization (WHO) announced an outbreak of Severe Acute Respiratory Syndrome Coronavirus (SARS COV-1) that caused 8,098 cases of the disease and 774 deaths. In early 2020, Coronavirus disease 2019 (COVID-19) [Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2)] was announced as a pandemic. Both outbreaks were thought to have started in China (Foshan and Wuhan cities) respectively. [1]

Clinical evidence of human-to-human transmission of SARS-CoV-2 was discovered in early 2020. Relatively highly infective, upper respiratory mode of transmission, long incubation period, and a prolonged period of viral elimination, with the present global travel pattern, these constitute the main elements of that virus. [2] Globally, until 19 October 2021, there have been 241 million confirmed cases of COVID-19, just under 5 million deaths, reported to WHO. If one takes into account the number of people who are relatively asymptomatic or have had mild symptoms and those who might not be have been tested for many reasons, the total number of people infected with SARS CoV-2 is likely to be much greater. [3] During the early period of the pandemic, the number of cases in the Eastern Mediterranean region (EMR), except for Iran, was lower than other regions. [4] Severe (critical) forms of the disease were found in 6 - 10% of all COVID-19 patients requiring admission to the

**Al- Imam Ali General Hospital in Al-Rusafa, Baghdad Health Directorate.*
E-mail: Ibraheemmahir@yahoo.com.

intensive care unit (ICU) because of acute hypoxemic respiratory failure [1]. To date, most ICU reports from the United States have shown that acute respiratory distress syndrome (ARDS) associated with COVID-19 is associated with prolonged periods of mechanical ventilation (MV) and increased mortality. [5] ARDS is non-cardiogenic pulmonary edema manifested by the rapid development of shortness of breath, tachypnea, and hypoxemia. Diagnostic criteria for ARDS are: Onset within one week of a known insult or new or worsening respiratory symptoms, profound hypoxemia, bilateral pulmonary opacity on radiography, and inability to explain respiratory failure due to heart failure or fluid excess. [6] Reported mortality rates in patients with severe COVID-19 in the ICU range from 50-65% [7-9]. In patients requiring MV, mortality rates as high as 97% have been reported [14]. Patient outcomes after critical care for COVID-19 have not been adequately documented in low-resource environment [11] despite advocacy for prevention and response measures in low- and middle-income countries. [12] Nosocomial infections in critically ill patients increase the risk of mortality in addition to other factors. [13] The partial pressure of oxygen (PaO2) is the most accurate measurement of a patient's oxygenation. In many studies, oxygenation was reported as PaO2/FiO2 (fraction of inspired oxygen) and PaO2 not reported. PaO2/FiO2 ratio focuses on ARDS, because it has been included in all definitions of ARDS so that it is important for the diagnosis of ARDS. [14] The definition of ARDS requires an arterial blood gas test to determine PaO2/FiO2 ratio. If blood gases are not measured in ARDS patients, this leads to undiagnosed condition. [15] Based on recent analyses, risk factors such as lower lymphocyte count on admission is the most critical factor that is closely associated with an increased risk of progression to critical illness. Age, underlying diseases, especially hypertension and coronary heart disease, elevated D-dimer, and decreased hemoglobin need to be taken into account for predicting disease progression. Therefore, a complete blood count (CBC) has a reference value for determining disease severity and outcome. [16] To give an insight toward severely ill COVID-19 patients, this study was carried out.

Patients and Methods:

A descriptive cross-sectional study was conducted on severe and critical cases of COVID-19 patients admitted to the isolation ward in Al-Imam Ali Hospital (which is a general hospital with an RCU unit for receiving severe and critical cases of COVID 19 only) from 23 March - 23 May 2021.

Inclusion criteria: All COVID-19 patients admitted to the hospital as a severe or critical state.

Exclusion criteria: Mild or moderate cases who did not need RCU admission and patients still in the hospital.

All COVID-19 patients admitted to the hospital as severe or critical cases from 23rd of March to 23rd of May were included in the study, totaling 504 patients. A data collection form was filled by the researcher through a direct interview to cover the following data: Sociodemographic and clinical features (Age, gender, employment, marital status, education, smoking, alcohol consumption, past medical history, first symptom of COVID-19, anosmia and ageusia, PaO2/FiO2 ratio, ARDS, and the outcome). Lab investigations were done on admission, including CBC, Blood urea, Serum creatinine, D-dimer blood test, Serum ferritin, and lactate dehydrogenase test (LDH). Cases were confirmed by RT-PCR which was performed according to the protocol established by the WHO. [17]

Severely ill patients are those with: Percent saturation of oxygen in the blood (SpO2) < 94%, PaO2/FiO2 ratio <300 mm Hg, respiratory rate >30 breaths per minute, and lung infiltration of > 50%.

Critically ill patients are those with: Respiratory failure, septic shock, or multiple organ failure. [18]

The P/F ratio is a powerful objective tool for determining respiratory failure with acute hypoxia when supplemental oxygen has already been administered and ABG room air is unavailable, or pulse oximetry readings are unreliable. The diagnostic criteria for acute respiratory failure caused by hypoxia are: PaO2 <60 mmHg on room air measured as ABG, SpO2 <91% on room air measured by pulse oximetry, or P/F ratio <300 on oxygen. Mild ARDS features: Pao2/Fio2 ratio between 200-299 mm Hg, with PEEP or cPAP less than 5 cm H2O. Moderate ARDS features: Pao2/Fio2 ratio between 100-199 mm Hg with PEEP equal to or more than 5 cm H2O. Severe ARDS features: Pao2/Fio2 ratio less than 100 mm Hg with PEEP equal to or more than 5 cm H2O. [19]

Microsoft Excel 2010 and IBM SPSS version 24 were used for data entry, management, and analysis. Descriptive statistics of the variables were expressed as percentages and Mean±SD. Odds Ratio and CI at 95% level were calculated, and the X^2 test was used to test for associations between variables. P value at < 0.05 was considered to be significant.

Ethical Approval: An official permission to conduct the study was obtained from Al-Rusafa Health Directorate and the Hospital Ethics Committee. A verbal consent was taken from the participants before collecting their data. The data collected will remain confidential and will only be used for the purpose of the study.

Results:

A total of 504 severely and critically ill COVID-19 patients were included in this study. There were 71 (14.1%) patients below 45 years of age, 210 (41.7%) between (45-64) years and 223 (44.2%) 65 years or older. Males formed 40.9% and females 59.1% of patients. There were 182 (36.1%) employed patients, 68 (13.5%) current smokers, 6 (1.2%) alcoholics, and 472 (93.7%) patients with baseline comorbidities. Table 1.

Table 1: Sociodemographic features of the studied cases

Variables and Categories		N	%
Age Group (Years)	<45	71	14.1
	45-64	210	41.7
	≥65	223	44.2
Gender	Male	206	40.9
	Female	298	59.1
Employment	Employed	182	36.1
	Not employed	322	63.9
Smoking	Not smoker	367	72.8
	Ex-smoker	69	13.7
	Current smoker	68	13.5
Alcoholic	No	498	98.8
	Yes	6	1.2
Baseline Comorbidity	No	32	6.3
	One	163	32.3
	Two	127	25.2
	Three	182	36.1
Total		504	100.0

Out of the cases studied, 381 (75.6%) presented with fever as a first symptom, 197 (39.1%) presented with anosmia, and 192 (38.1%) with ageusia. Other presentations as well as the severity of ARDS are shown in table 2.

Baseline comorbidities among the studied cases are presented in table 3. The most common comorbidities were hypertension and heart diseases with 120 cases each (23.8%). This is followed by neurological diseases 102 (20.2%), respiratory diseases 92 (18.3%), DM 74 (14.7%), renal disease 63 (12.5%) and solid cancer 11 (2.2%).

As for the outcome, 358 cases (71%) survived while 146 cases (29.0%) died. Table 4 shows the risk of death according to a number of assumed risk factors. Age of 65 years and above carried a 2.6 higher risk of death when compared to those below 45 years. Female gender was shown to be a protective factor compared to males. Ex-smokers had a four-fold higher risk when compared to non-smokers. Non-alcoholics had a reduced risk when compared to alcoholics. Those with severe ARDS had an OR of death of 44.2 when compared to those with mild ARDS.

Table 2: Clinical features of severely and critically ill COVID-19 patients

Variables and Categories		N	%
First symptom	Fever	381	75.6
	Sore throat	36	7.1
	SOB	25	5.0
	Cough	20	4.0
	General weakness	19	3.8
	Abdominal pain	6	1.2
	Headache	5	1.0
	Rigor	5	1.0
	Rhinorrhea	4	0.8
	Diarrhea	3	0.6
Smell	Lost	197	39.1
Taste	Lost	192	38.1
ARDS Severity	Mild	80	15.9
	Moderate	282	56.0
	Severe	142	28.2
Total		504	100.0

Table 3: Baseline comorbidities among severely and critically ill COVID-19 cases

Comorbidity	N	%
Hypertension	120	23.8
Heart diseases	120	23.8
Neurological Diseases	102	20.2
Respiratory Diseases	92	18.3
Diabetes Mellitus	74	14.7
Renal disease	63	12.5
Solid cancer	11	2.2
Total	504	100.0

Table 4: Analysis of severely and critically ill COVID-19 patients' outcome in relation to possible risk factors

Possible Risk Factors and Categories		Patients' Outcome				P Value	OR	95% CI
		Alive		Deceased				
		N	%	N	%			
Age Group (Years)	<45	57	80.3	14	19.7		Reference	
	45-64	164	78.1	46	21.9	<0.001	1.14	0.6-2.2
	>65	137	61.4	86	38.6		2.6	1.3-4.8
Gender	Male	130	63.1	76	36.9	0.11	Reference	
	Female	228	76.5	70	23.5		0.52	0.35-0.77
Smoking	Not smoker	283	77.1	84	22.9		Reference	
	Ex-smoker	30	43.5	39	56.5	<0.001	4.38	2.6-7.5
	Current Smoker	45	66.2	23	33.8		1.7	0.98-3
Alcoholic	No	358	71.9	140	28.1	<0.001	Reference	
	Yes	0	0.0	6	100.0		0.28	0.24-0.32
ARDS	Mild	74	92.5	6	7.5		Reference	
	Moderate	253	89.7	29	10.3	<0.001	1.4	0.56-3.5
	Severe	31	21.8	111	78.2		44.2	17.5-111
Total (594)		358	71	146	29			

Comorbidities can contribute to the risk of death in patients with severe and critical Covid-19. The comorbidity which carried the highest risk was solid malignant tumors (OR = 8), followed by Renal disease (OR = 2.9), DM (OR = 2.3) and respiratory diseases (OR = 1.7), Table 5.

Table 5: Analysis of severely and critically ill COVID-19 patients' outcome in relation to Baseline comorbidities

Baseline comorbidities		Patients' Outcome				P Value	OR	95% CI
		Alive		Deceased				
		N	%	N	%			
Renal disease	No	327	74.1	114	25.9	<0.001	Reference	
	Yes	31	49.2	32	50.8		2.9	1.73-5.1
DM	No	321	73.6	115	26.4	0.001	Reference	
	Yes	37	54.4	31	45.6		2.3	1.4-4.0
Respiratory Diseases	No	310	72.9	115	27.1	0.028	Reference	
	Yes	48	60.8	31	39.2		1.7	1.1-2.9
Solid Cancer	No	351	73.6	126	26.4	<0.001	Reference	
	Yes	7	25.9	20	74.1		8	3.3-19.0
No. of Comorbidity	None	28	87.5	4	12.5	0.015	Reference	
	1	123	75.5	40	24.5		1.3	1.2-1.4
	2	86	67.7	41	32.3		1.5	1.3-1.7
	3	117	64.3	65	35.7		1.5	1.4-1.7

Table 6 shows multivariable analysis of baseline comorbidities associated with the outcome of severely and critically ill COVID-19 patients. Renal disease, HT, solid cancer, and multiple comorbidities were significantly associated with each other in COVID-19 patients, P<0.01.

Table 6: Multivariable analysis of baseline comorbidities associated with the outcome of severely and critically ill COVID-19 patients

Comorbidities	B	S.E.	Wald	P Value
Renal Disease	-1.618-	.559	8.378	.004
HT	2.122	.591	12.895	.000
Solid Cancer	-1.684-	.597	7.952	.005
Multiple Comorbidities	.383	.113	11.419	.001

Table 7 shows the mean values of selected laboratory tests for those who were discharged alive compared to those who died. The mean level of WBCs, lymphocytes, and Hb were found to be significantly lower among deceased patients compared to the survivors, (P<0.05), while the mean level of Neutrophils, NL Ratio, D-dimer, and LDH were significantly higher among the deceased patients in comparison to survivors, (P<0.05).

Table 7: Mean values for selected lab tests for those discharged alive compared to those who died among severely and critically ill COVID-19 patients

Lab Test	Patients' Outcome	Mean	± SD	p
WBCs (10^3/uL)	Alive	8.93	2.865	<0.001
	Deceased	6.43	4.216	
Neutrophil (103/uL)	Alive	8.30	4.442	<0.001
	Deceased	10.84	5.506	
Lymphocyte (103/uL)	Alive	0.79	0.580	0.003
	Deceased	0.53	0.279	
NRL Ratio	Alive	14.50	15.249	0.002
	Deceased	18.91	12.306	
Hb g/dl	Alive	12.13	1.488	<0.001
	Deceased	10.19	2.090	
D-dimer ng/ml	Alive	1353.59	2764.464	<0.001
	Deceased	3506.49	5485.958	
LDH U/L	Alive	542.18	206.529	0.004
	Deceased	626.25	326.378	

Discussion:

In this study, age above 60 years was found to be a risk factor for mortality, in consistence with a CDC report which indicated an increased risk for those 50 years or more, increasing in the sixth, seventh, and eighth decades, while people aged 85 or more being most likely to get worse outcome [20]; and with a study which reported that patients >65 years had an increased risk of death. [21] Males had a higher risk of death from COVID-19, in consistence with a study which reported that male COVID-19 patients were at a higher risk of getting worse outcomes.[22] A difference in the immune response may be the cause. Females have higher numbers of CD4+ T and more robust CD8+ T cell cytotoxic activity compared to males, which increase B cell production of Immunoglobulins [23]. Fever was reported as the first symptom in most of the patients in our series, in consistence with other studies reporting that critically ill patients presented with fever as the first and most common symptom. [2, 7, 21]. Patients also experienced anosmia (39%) and/or ageusia (38.1%), very close to a study which reported that 42.3% of patients admitted to the ICU had impaired taste and/or smell. [24] The COVID-19 mortality rate in this study was 29%. Mortality rates reported from different countries are: Canada (15.4%) [25], South Korea

(20.4%) [26], and Spain (31%). [25] Other countries reported higher mortality rates among severe critical COVID-19 patients including USA New York (75.6%) [7] and Washington (67%) [27], China (61.5%) [21], and Pakistan (77%). [28]. The Odds Ratio for mortality among severely ill COVID-19 patients was affected by baseline comorbidity (DM, renal diseases, respiratory diseases, and solid cancer), in agreement with other studies concluded that the risk of death increases with certain underlying medical conditions such as DM, Renal disease, Cerebrovascular accidents (CVA), and respiratory diseases. The greatest risk is seen among patients with multiple comorbidities. [21] Ex-smokers had a higher mortality rate in our series, in agreement with other studies which reported that a history of smoking was associated with higher mortality in COVID-19 patients [29, 30]. Although the relationship between smoking and COVID19 was addressed by many studies, it remains unclear whether or not smoking increases the risk of COVID-19. One study suggested that smoking increases the risk of severe COVID-19 infection [31] while another study showed that smoking is not associated with an increased risk of progression to severe COVID-19. [32] Alcoholic patients had a higher mortality rate than non-alcoholic patients, a finding that was not confirmed by other studies which revealed no significant association with disease severity or death rates in COVID-19 patients. [30] Immunosuppression prevents effective activation of T cells, which also prevents B cells from multiplying and producing antibodies, rendering humeral immunity incapable to counteract the virus. [30] Increased inflammation in COVID-19 patients may contribute to the worse outcome. [30, 21] High D dimer level was found among deceased group. However, patients with severe COVID-19 often have coagulopathy (hypercoagulability) associated with thrombosis leading to poor outcomes. [33] Wright et al. demonstrated that discontinuation of fibrinolysis is associated with thromboembolism and renal failure in severe COVID19. [34] Elevated LDH values were found to increase the odds of poor outcome. Huang et al and Liu et al reported that elevated LDH was associated with an increase in odds of mortality. It is therefore important to monitor LDH level for disease progression or decompensation. [2]. A meta-analysis study about risk factors of COVID-19 concluded that male gender, smoking history, diabetes, hypertension, and fatigue or myalgia are significant risk factors for the severity of COVID-19. It may require additional medical attention for patients with higher risk from the very beginning of the treatment. [35]. In another review, a number of pre-existing conditions were found to be associated with hospitalization, ICU admission and death. The strength of associations varied, supposedly due to differences in definitions of pre-existing conditions and methodological approaches. The review shows multiple gaps in evidence, including a pressing need for evidence from the African, South-East-Asian and Western Pacific regions, and the exploration of the effects of multimorbidity and rare diseases. [36]. Meta-analyses on 59 studies comprising 36.470 patients showed that infection, severe disease, ICU admission and death are more likely to occur among men and patients aged 70 and above.[37] Smoking was confirmed by other studies to be a risk factor for the negative progression of COVID-19, particularly on disease severity and death. Both current and former smokers have higher odds of disease severity than never smokers. Given the well-established harm associated with tobacco use, smoking cessation is recommended for all smokers and avoidance of passive smoking by non-smokers.[38]

Conclusion:

This study concluded that just under a third of severely and critically ill COVID-19 patients may succumb to the disease, with males and older patients having a higher risk of death. Ex-smokers, alcoholics, and patients with baseline comorbidities appeared to be at a higher risk of mortality as well. Laboratory tests and Pao2/Fio2 ratio can be used to predict the outcome.

References:

1. Wu Z, McGoogan JM. Characteristics of and Important Lessons from the Coronavirus Disease 2019 (COVID-19) Outbreak in China: Summary of a Report of 72314 Cases from the Chinese Center for Disease Control and Prevention. JAMA. 2020; 323(13):1239–42.

2. Tobin MJ, Laghi F, Jubran A. Why COVID-19 silent hypoxemia is baffling to physicians. Am J Respir Crit Care Med 2020; 202: 356–360.

3. WHO Health Emergency Dashboard. 2021. WHO (COVID-19) Homepage Available at: https://covid19.who.int/

4. Galib B. SARS-CoV-2(COVID-19). JFacMedBagdad [Internet]. 15Apr.2020 [cited 28Jul.2021];61(3,4).

5. Richardson S, Hirsch JS, Narasimhan M, Crawford JM, McGinn T, Davidson KW, et al. Presenting Characteristics, Comorbidities, and Outcomes Among 5700 Patients Hospitalized With COVID-19 in the New York City Area. JAMA. 2020 May 26;323(20):2052-2059. doi: 10.1001/jama.2020.6775. Erratum in: JAMA. 2020 May 26;323(20):2098.

6. Saguil A, Fargo MV. Acute Respiratory Distress Syndrome: Diagnosis and Management. American Family Physician, June 15, 2020;101(12)

7. Myers LC, Parodi SM, Escobar GJ, Liu VX. Characteristics of Hospitalized Adults With COVID-19 in an Integrated Health Care System in California. JAMA. 2020. Epub 2020/04/25.

8. Bhatraju PK, Ghassemieh BJ, Nichols M, Kim R, Jerome KR, Nalla AK, et al. Covid-19 in Critically Ill Patients in the Seattle Region—Case Series. N Engl J Med. 2020; 382(21):2012–22. Epub 2020/04/01. https://doi.org/10.1056/NEJMoa2004500 PMID: 32227758.

9. Arentz M, Yim E, Klaff L, Lokhandwala S, Riedo FX, Chong M, et al. Characteristics and Outcomes of 21 Critically Ill Patients With COVID-19 in Washington State. JAMA. 2020. Epub 2020/03/20. https://doi.org/10.1001/jama.2020.4326 PMID: 32191259.
10. Wang Y, Lu X, Chen H, Chen T, Su N, Huang F, et al. Clinical Course and Outcomes of 344 Intensive Care Patients with COVID-19. Am J Respir Crit Care Med. 2020.
11. Armstrong RA, Kane AD, Cook TM. Outcomes from intensive care in patients with COVID-19: a systematic review and meta-analysis of observational studies. Anaesthesia 2020; 75: 1340–49.
12. Gupta M, Wahl B, Adhikari B, Bar-Zeev N, Bhandari S, Coria A, et al. The need for COVID-19 research in low- and middle-income countries. Glob Health Res Policy 2020; 5: 33.
13. Mahdi F, Saadoon A, Haider H. Prevalence and Antibacterial Resistance of Gram-Negative Bacteria Causing Respiratory Tract Infection in Critically Ill Patients. JFacMedBagdad [Internet]. 1Oct.2014 [cited 28Jul.2021];56(3):273-7
14. Murray JF, Matthay MA, Luce JM, Flick MR. An expanded definition of the adult respiratory distress syndrome. Am Rev Respir Dis 1988; 138: 720–723.
15. Brown SM, Grissom CK, Moss M, Rice TW, Schoenfeld D, Hou PC, et al. Nonlinear Imputation of Pao2/Fio2 From Spo2/Fio2 Among Patients With Acute Respiratory Distress Syndrome. Chest. 2016 Aug;150(2):307-13.
16. Zhou S, Xu J, Sun W, Zhang J, Zhang F, Zhao X, et al. Clinical Features for Severely and Critically Ill Patients with COVID-19 in Shandong: A Retrospective Cohort Study. Ther Clin Risk Manag. 2021;17:9-21
https://doi.org/10.2147/TCRM.S280079
17. WHO. Laboratory testing for coronavirus disease 2019 (COVID-19) in suspected human cases: interim guidance, 19 March, 2020. Geneva: WHO;2020
18. COVID-19 Treatment Guidelines Panel. Coronavirus Disease 2019 (COVID-19) Treatment Guidelines. National Institutes of Health. Available at https://www.covid19treatmentguidelines.nih.gov/. Accessed [insert date].
19. The ARDS Definition Task Force. Acute Respiratory Distress Syndrome: The Berlin Definition. JAMA. 2012;307(23):2526–2533. doi:10.1001/jama.2012.5669
20. CDC. Risk for COVID-19 Infection, Hospitalization, and Death By Age Group. Atlanta, GA: US Department of Health and Human Services, CDC; 2020.
21. Yang X, Yu Y, Xu J, Shu H, Xia J, Liu H, et al. Clinical course and outcomes of critically ill patients with SARS-CoV-2 pneumonia in Wuhan, China: a single-centered, retrospective, observational study. Lancet Respir Med. 2020 May;8(5):475-481.
22. Peckham H, de Gruijter NM, Raine C, Radziszewska A, Ciurtin C, Webb K, et al. Male sex identified by global COVID-19 meta-analysis as a risk factor for death and ITU admission. Nat Commun 11, 6317 (2020).
23. Abdullah M, Chai PS, Chong MY, Tohit ER, Ramasamy R, Pei CP, et al. Gender effect on in vitro lymphocyte subset levels of healthy individuals. Cell. Immunol. 272, 214–219 (2012).
24. Sayın P, Altınay M, Cınar AS, Ozdemir HM. Taste and Smell Impairment in Critically Ill Patients With COVID-19: An Intensive Care Unit Study. Ear, Nose & Throat Journal. 2021;100(2_suppl):174S-179S.
25. Mitra AR, Fergusson NA, Lloyd-Smith E, Wormsbecker A, Foster D, Karpov A, et al. Baseline characteristics and outcomes of patients with COVID-19 admitted to intensive care units in Vancouver, Canada: a case series. CMAJ. 2020 Jun 29;192(26):E694-E701.
26. Lee JY, Kim HA, Huh K, Hyun M, Rhee JY, Jang S, et al. Risk Factors for Mortality and Respiratory Support in Elderly Patients Hospitalized with COVID-19 in Korea. J Korean Med Sci. 2020 Jun 15;35(23):e223.
27. Arentz M, Yim E, Klaff L, Lokhandwala S, Riedo FX, Chong M, et al. Characteristics and Outcomes of 21 Critically Ill Patients With COVID-19 in Washington State. JAMA. 2020 Apr 28;323(16):1612-1614.
28. Rahim F, Amin S, Noor M, Bahadur S, Gul H, Mahmood A, et al. Mortality of Patients with Severe COVID-19 in the Intensive Care Unit: An Observational Study from a Major COVID-19 Receiving Hospital. Cureus. 2020 Oct 12;12(10):e10906.
29. Farsalinos K, Barbouni A, Poulas K, Polosa R, Caponnetto P, and Niaura R. (2020a). Current smoking, former smoking, and adverse outcome among hospitalized COVID-19 patients: a systematic review and meta-analysis. Ther Adv Chronic Dis 11:2040622320935765
30. Dai M, Tao L, Chen Z, Tian Z, Guo X, Allen-Gipson DS, et al. Influence of Cigarettes and Alcohol on the Severity and Death of COVID-19: A Multicenter Retrospective Study in Wuhan, China. Front Physiol. 2020 Dec 9;11:588553.
31. Vardavas CI and Nikitara K. (2020). COVID-19 and smoking: A systematic review of the evidence. Tob Induc Dis 18:20.
32. Lippi G, Henry B M. (2020). Active smoking is not associated with severity of coronavirus disease 2019 (COVID-19). Eur J Intern Med 75, 107–108.
33. Görlinger K, Dirkmann D, Gandhi A, Simioni P. COVID-19 associated coagulopathy and inflammatory response: what do we know already and what are the knowledge gaps? Anesth Analg. 2020 Jul 28.
34. Wright FL, Vogler TO, Moore EE, Moore HB, Wohlauer MV, Urban S, et al. Fibrinolysis shutdown correlation with thromboembolic events in severe COVID-19 infection. J Am Coll Surg. 2020;231:193–203.e1.
35. Rahman A, Sathi NJ. Risk factors of the severity of COVID-19: A meta-analysis. Int J Clin Pract. 2021

Jul;75(7):e13916. doi: 10.1111/ijcp.13916. Epub 2020 Dec 20. PMID: 33372407.
36. Treskova-Schwarzbach M, Haas L, Reda S, Pilic A, Borodova A, Karimi K, et al. Pre-existing health conditions and severe COVID-19 outcomes: an umbrella review approach and meta-analysis of global evidence. BMC Med 19, 212 (2021). https://doi.org/10.1186/s12916-021-02058-6
37. Pijls BG, Jolani S, Atherley A, Richters A, Venemans-Jellema A, Saurabh Zalpuri S, et al. Demographic risk factors for COVID-19 infection, severity, ICU admission and death: a meta-analysis of 59 studiesBMJ Open 2021;11:e044640. doi: 10.1136/bmjopen-2020-044640
38. Umnuaypornlert A, Kanchanasurakit S, Lucero-Prisno DEI, Saokaew S. Smoking and risk of negative outcomes among COVID-19 patients: A systematic review and meta-analysis. Tobacco Induced Diseases. 2021;19(February):9. doi:10.18332/tid/132411.

النسبة وعوامل الخطر للنتائج القاتلة بين حالات كوفيد 19 الشديدة والحرجة: تجربة مستشفى، بغداد، العراق 2021

د. ابراهيم علي ماهر سليم :طبيب مقيم اقدم- باطنية في مستشفى الامام علي ع في صحة بغداد-الرصافة.

الخلاصة:
الخلفية: يشكل النوع الخطير من مرض فيروس كورونا 2019 6 - 10٪ من جميع مرضى كوفيد 19. متلازمة الضائقة التنفسية الحادة هي وذمة رئوية غير قلبية تتجلى في التطور السريع لضيق التنفس، وتسرع التنفس، ونقص الأكسجة في الدم. لم يتم توثيق نتائج المرضى بعد الرعاية الحرجة بشكل كافٍ في هذه البيئة منخفضة الموارد، على الرغم من الدعوة لتدابير الوقاية والاستجابة في البلدان المنخفضة والمتوسطة الدخل.
الاهداف: لتسليط الضوء على معدل الحالات الشديدة والحرجة لمرضى كوفيد 19 والعوامل المصاحبة لها وتحديد حصيلة المرض في مستشفى الامام علي، بغداد- العراق 2021.
المرضى والمنهجية: دراسة مقطعية وصفية، شملت الحالات المصابة بمرض شديد وحرج لمرضى كوفيد 19 (يعانون من متلازمة الضائقة التنفسية الحادة) الذين تم إدخالهم إلى جناح العزل في مستشفى الإمام علي في الفترة من 23 آذار إلى 23 أيار 2021. تم تضمين كل المرضى الذين تم إدخالهم إلى المستشفى كحالة شديدة أو حرجة. تم ملء إستمارة المعلومات من قبل الباحث. تم استخدام قيمة احتمالية عند مستوى 0.05 لتحديد الدلالة الإحصائية. تم الحصول على الموافقات الأخلاقية.
النتائج: تم تضمين ما مجموعه 504 من مرضى كوفيد 19 للحالات الشديدة والحرجة في هذه الدراسة. كان هناك 71 (14.1٪) مريضا تحت سن 45 سنة. شكل الذكور 40.9٪ من المرضى مقابل 59.1٪ للإناث. كان هناك 381 (75.6٪) مريضا يعانون من الحمى كأول الأعراض، و 197 (39.1٪) مريضا يعانون من فقدان حاسة الشم، و 192 (38.1٪) يعانون من فقدان حاسة التذوق. بقي 358 (71.0٪) من المرضى على قيد الحياة بينما توفي 146 (29.0٪). كان خطر الوفاة أعلى لدى المرضى الذين تبلغ أعمارهم 65 عامًا أو أكثر من أولئك الذين تقل أعمارهم عن 65 عامًا (نسبة الارجحية=1.11 ، فاصل الثقة 95%= 0.6-2.2). وظهر جنس الاناث على أنه عامل وقائي مقارنة بجنس الذكور (نسبة الارجحية=0.52 ، فاصل الثقة 95%=0.35-0.77). كان المرضى الذين يدخنون سابقًا هم الأكثر عرضة للخطر من غير المدخنين أو المدخنين حاليا (نسبة الارجحية للمدخنين سابقا=4.38 ، فاصل الثقة 95%=2.6-7.5) و (نسبة الارجحية للغير مدخنين =1.7 ، فاصل الثقة 95%=2.6-7.5). يعتبر مرض الكلى من عوامل الخطر بين المرضى المتوفين (نسبة الأرجحية = 2.9 ، فاصل الثقة 95%=0.98-3). يُظهر مرض السكري وأمراض الجهاز التنفسي والسرطان خطرًا كبيرًا للوفاة [نسبة الأرجحية = 2.3 ، فاصل الثقة 95٪ = 1.4-4 ؛ نسبة الارجحية= 1.7 ، فاصل الثقة 95٪=1.-2.9، نسبة الارجحية=8، فاصل الثقة 95%=3.3-19 على التوالي]. يُظهر المرضى الذين يعانون من ثلاث أمراض مصاحبة عامل خطورة مصاحب للوفاة (نسبة الارجحية=1.6، فاصل الثقة 95%=1.3-2).
الاستنتاج: خلصت هذه الدراسة إلى أن معدل وفيات مرضى كوفيد 19 ضمن الحالات الحرجة والخطيرة كان 29 ٪، وجد ان المرضى الذكور وكبار السن تعتبر من عوامل الخطر للوفاة. بالإضافة إلى أن المدخن السابق، والمدمن على الكحول، والمرضى الذين يعانون من أمراض مصاحبة أساسية تعتبر من عوامل الخطر للوفاة. أخيرا، يمكن استخدام العلامات البيوكيميائية ونسبة Pao2 / Fio2 للتنبؤ بنتيجة المرض.
الكلمات المفتاحية :كوفيد 19، الوفيات، متلازمة الضائقة التنفسية الحادة، النجاة، الامراض المصاحبة