

# CHARACTERISTICS OF 150 PATIENTS WITH COVID 19 INFECTION IN SAMARA GENERAL HOSPITAL, SALAHADDIN GOVERNORATE, IRAQ.

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## **Abstract:**

**Background:** World Health Organization declared the COVID 19 epidemic as a public health emergency of international concern. COVID 19 pandemic strain health systems worldwide.

**Objective:** to show the characteristics of COVID 19 infection in in Samara General Hospital, Salahaddin Province, Iraq.

**Patients and Methods:** this study includes 150 symptomatic patients who attend Samara General Hospital during the period from August to October 2020. COVID 19 infection was confirmed by PCR testing.

**Results:** The mean age of patients was 42.4±14.3 years. The disease commonly affected male patients (66%). The most common symptom at the time of presentation of patients with COVID19 infection in this study were fever (90%), cough (86.7%), fatigue (81.3%), hyposmia (80%), sweating (78.7%), Hypogeusia (76.7%), chills (65.3%), sputum (59.3%), headache (54.7%), anorexia (52%), and dyspnea (39.3%). Moreover, there were significant differences among mild, moderate and severe cases regarding oxygen saturation, ESR and alanine aminotransferase level.

**Conclusion:** COVID 19 infection is higher among young adults' patients. Hyposmia and hypogeusia are important associated symptoms. The risk factors of severe illness include age of patients over 40 years, hypoxemia, and elevated ESR and ALT levels.

**Key words:** COVID19 infection, Samara, Tikrit University,

**Iraq**

## **Introduction:**

Coronaviruses belong to the Coronaviridae family. Coronaviridae is an enveloped, singly stranded RNA virus. The termed "Corona" because of it is crown like appearance under electron microscope. They are zoonotic, and can be transmitted from animal to animal, animal to human, and human to human. The virus is capable of recognizing the

angiotensin converting enzyme 2 (ACE2) receptors of human and various animals, including bat, mouse and raccoon, allowing interspecies transmission.<sup>(1)</sup>

Cytokine storm of uncontrolled overproduction of inflammatory markers can leads to an aberrant systemic inflammatory response resulting in variety of clinical manifestations and if untreated, can progress to multiple organ failure.<sup>(2,3)</sup>

The first reported case of COVID 19 infection in Iraq from an Iranian student in Najaf city, Iraq on 22 February 2020, followed by four members of one family from Kirkuk governorate, Iraq who recently returned from Iran. Case reporting escalated to include almost all Iraqi governorates.<sup>(4, 5)</sup> Moreover, World Health Organization on 30 January 2020 officially declared the COVID 19 epidemic as a public health emergency of international concern.<sup>(6)</sup> In April 2020, there have been 1,279,722 confirmed cases of COVID 19 documented globally, and 72,614 reported deaths.<sup>(7)</sup>

Furthermore, COVID 19 pandemic make a strain to health systems worldwide. The rapidly increasing request on health-facilities and health-care workers threatens to make some health systems exhausted and unable to work efficaciously.<sup>(8)</sup> Therefore, strategies are wanted to diminish the stress on the health-care system in order to preserve its operations at the best attainable level. These strategies involve the use of telephone and internet assessment and advice, initiation of self-care and self-isolation where appropriate.<sup>(9)</sup>

The aim of this study is to show the characteristics of COVID 19 infection in in Samara General Hospital, Salahaddin Province, Iraq.

### **Patients and Methods:**

A prospective cross sectional study includes 150 symptomatic patients who attend Samara General Hospital during the period from August to October 2020. COVID 19 infection was confirmed by PCR testing (from nasopharyngeal or oropharyngeal swabs). The demographic characteristics, clinical features and results of investigations were documented in data collection sheet for each patient.

This study was approved by ethical committee of College of Medicine, Tikrit University and Salahaddin directorate of health. All patients were informed about the study and their agreements were taken.

Mild disease showed mild clinical symptoms, without signs of pneumonia. Moderate disease presented with features of pneumonia either clinically or by imaging and who have oxygen saturation (SpO<sub>2</sub>) >93%. Severe disease defined by any of the following criteria: Respiratory distress with respiratory rate  $\geq 30$  breaths/ min, Oxygen saturation  $\leq 93\%$  at rest, Chest CT scan reveals lung lesions of more than 50%.<sup>(7,10)</sup>

Statistical analysis: The data analysis done using SPSS version 23 and Excel, the data presented using tables and Bar chart. The comparison between two independent groups with qualitative data was done by using Chi-square test. The comparison between two independent groups with quantitative data and parametric distribution was done by using Independent t-test. The p value was considered significant as the following: P > 0.05: Non-significant. P < 0.05: Significant.

### **Results:**

A total of 150 patients with symptomatic COVID 19 infection were included in this study. Their mean age was  $42.4 \pm 14.3$  years ranged from 16 to 83 year and their mean BMI was  $27.7 \pm 5.1$  kg/m<sup>2</sup>. The most affected age groups were (21- 40) and (41-60) years as 45.3% and 39.3%. There were 99 (66%) male patients and 51 (34%) female

patients. Moreover, 46 (30.7%) patients with mild disease, 66 (44%) patients with moderate disease and 38 (25.3%) patients with severe disease.

Unfortunately, four patients died (2.7%). Daily wage workers, housewives, and employees were commonly infected patients as 38%, 29.3% and 22.6% respectively.

The common underlying chronic disease associated with COVID 19 were hypertension and diabetes mellitus as 22.7% and 13.3% respectively. Furthermore 53.3% of patients present with chest CT findings of COVID 19 pneumonia, as shown in (Table 1) and (Figure 1).

Table 1. The general characteristics of the patients in this study.

		Frequency	Percent
Age (year)	<20	5	3.3
	21-40	68	45.3
	41-60	59	39.3
	>60	18	12
Sex	Male	99	66
	Female	51	34
Severity	Mild	46	30.7
	Moderate	66	44
	Severe	38	25.3
Duration (days)		7.6	
Job	Daily wage worker	57	38
	Employee	34	22.6
	housewife	44	29.3
	Medical staff	5	3.3
	Military	4	2.7
	Retired	6	4
Chronic illness with COVID19	Hypertension	34	22.7
	Diabetes mellitus	20	13.3
	Respiratory disease	3	2
	CNS disease	4	2.7
	Renal disease	3	2
Chest CT scan/ Pneumonia		80	53.3
Death		4	2.7

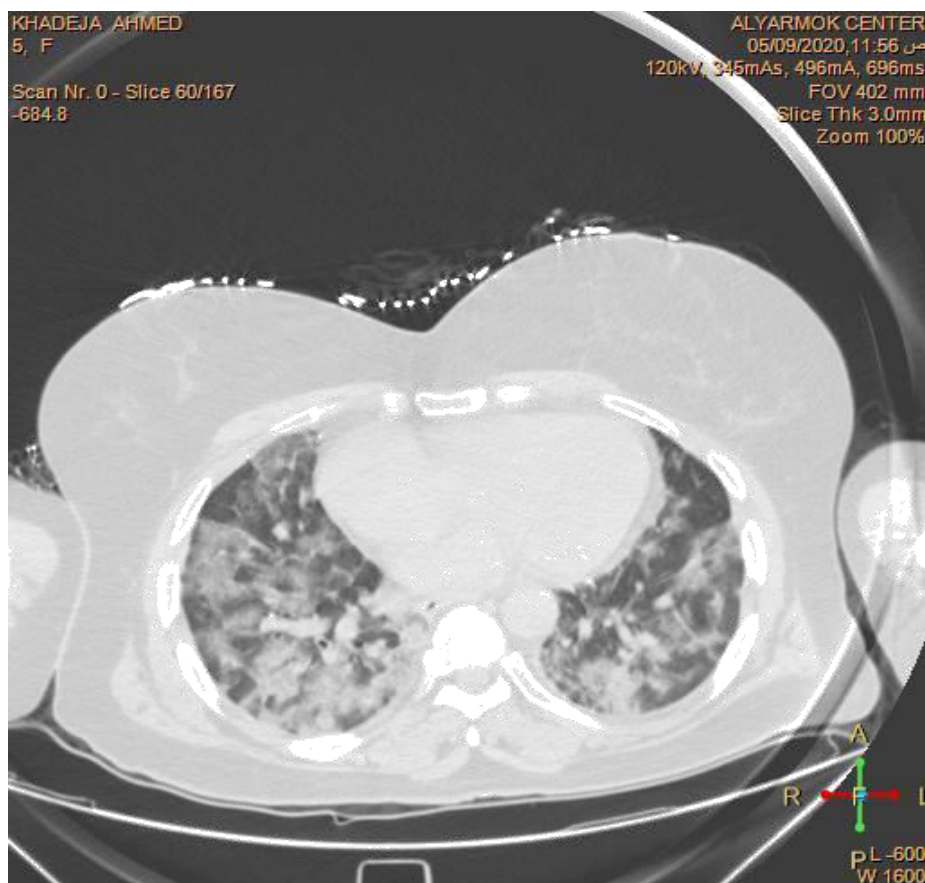


Figure 1. A 50 years old female patient with bilateral, multifocal ground glass opacities and consolidations picture consist with COVID 19 pneumonia.

The most common symptom at the time of presentation of patients with COVID19 infection in this study were fever (90%), cough (86.7%), fatigue (81.3%), hyposmia (80%), sweating (78.7%), Hypogeusia (76.7%), chills (65.3%), sputum (59.3%), headache (54.7%), anorexia (52%), and dyspnea (39.3%), as present in (Table 2).

Table 2. Clinical features of COVID-19 patients in this study

presentation	Frequency	Percent
Fever	135	90
Sweating	114	78.7
Chills	98	65.3
Cough	130	86.7
Sputum	89	59.3
Headache	82	54.7
Myalgia	105	70
Pleuritic chest pain	25	16.7
Dyspnea	59	39.3
Hyposmia	120	80
Hypogeusia	115	76.7
Sore throat	36	24
Rhinorrhea	29	19.3
Fatigue	122	81.3

Dizziness	32	21.3
Abdominal pain	50	33.3
Diarrhea	33	22
Nausea	22	14.6
Anorexia	78	52
Hemoptysis	14	9.3
Vomiting	13	8.7
Confusion	10	6.7

Regarding the severity of COVID 19 infection in the present study there was no gender differences, but the most severely affected patients were noted in (41-60) year age group represented as 63.20% , which was statistically significant (p value<0.05 S) as shown (Table 3).

Table 3. The relation of severity and sex and age of patient.

		severity			Total No. 150 (100%)	p value
		Mild No. 46 (100%)	Moderate No. 66 (100%)	Severe No. 38 (100%)		
Sex	Male	30 (65.20%)	40 (60.60%)	29 (76.30%)	99 (66.00%)	>0.05 NS
	Female	16 (34.80%)	26 (39.40%)	9 (23.70%)		
Age (years)	≤20	5 (10.90%)	0 (0.00%)	0 (0.00%)	5 (3.30%)	<0.05 S
	21-40	32 (69.60%)	30 (45.50%)	6 (15.80%)	68 (45.30%)	
	41-60	7 (15.20%)	28 (42.40%)	24 (63.20%)	59 (39.30%)	
	>60	2 (4.30%)	8 (12.10%)	8 (21.10%)	18 (12.00%)	

(Table 4) indicates significant differences among mild, moderate and severe cases regarding oxygen saturation, ESR and alanine aminotransferase level, but there was no significant relation between total WBC, neutrophil and lymphocyte counts and the severity of the disease.

Table 4. The relation of severity COVID 19 to variable parameters.

	Mild	Moderate	Severe	P value
Oxygen saturation	98.0	96.0	81.9	0.001
WBC ( $\times 10^9$ per L)	13.2	12.4	11.3	0.95
Neutrophil ( $\times 10^9$ per L)	11.1	11.2	10.6	0.7
Lymphocyte ( $\times 10^9$ per L)	1.7	1.5	0.9	0.091
ESR (mm/h)	28.0	57.6	66.3	0.04
Alanine aminotransferase (U/L)	30	48	52	0.039
BMI ( $\text{kg/m}^2$ )	28.03	28.4	25.99	0.057

## Discussion:

COVID 19 can infects people of all ages. In this study young adult patients are more likely to be infected than other age groups. Similar observations have been reported by Centers for Disease Control and Prevention (CDC) that COVID 19 incidence was

highest in younger adults and those patients group contributed to community transmission of COVID 19 to older adults. Younger adults are the main workers in the community (Daily wage worker, farmers and employees). Furthermore younger adults might also be less likely to follow preventive measures, such as keeping a social distance and wearing a face mask and younger adults are more likely to have mild or no symptoms.<sup>(11)</sup> However, further studies suggests that two groups of people are at a higher risk of getting severe COVID 19 disease. These are older people and those with underlying medical conditions (such as cardiovascular disease, diabetes, chronic respiratory disease, and cancer). The risk of severity of the disease gradually increases above the age 40 years. Therefore, it's important that adults in this age range protect themselves.<sup>(12)</sup>

In this study COVID 19 was more common in males than females, this was similar to previous WHO reports and Shabrawishi M et al study as 53% and 61% of male patients respectively.<sup>(13,14)</sup> The possible aspects responsible for higher males affection including smoking, genetic factors, frequent travel and contacts, indeed biological factors that may provide better immune protection for women, such as the estrogen and X chromosome.<sup>(15,16)</sup>

Furthermore, the symptoms, in this study were similar to the previous published by Huang et al which included fever, cough, dyspnea, myalgia, fatigue and sputum production in addition to gastrointestinal symptoms.<sup>(17)</sup> In some studies in hospitalized patients, occurrence of dyspnea is suggestive of worsening disease.<sup>(18)</sup> Hyposmia and hypogeusia also common presenting symptoms in this study. Altin F et al reported hyposmia and hypogeusia are strongly associated with COVID 19 infection and they potentially reliable indicator of COVID 19.<sup>(19)</sup>

The chest CT is a sensitive diagnostic test of COVID 19 pneumonia. In this study was present in 53.3% of patients. This result is in agreement with the studies of Jiang M et al and Fadhil AA et al. These findings include ground glass opacities, patchy

consolidations, alveolar exudates and interlobular involvement.<sup>(20,21)</sup> Moreover, extensive lung lesions by CT scan associated with predicting poor outcome.<sup>(22)</sup>

However, the mortality ratio in this study was 2.7%. This result is consistent with Habib OS et al as the case fatality ratio for all COVID 19 patients in Basrah province, Iraq is 2.4% and it seems within the range at the global situation.<sup>(23)</sup> Moreover, Onder G et al, observed COVID-19 deaths are mainly occurred among older, male patients who also have multiple comorbidities.<sup>(24)</sup>

The clinical spectrum of COVID 19 infection ranges from asymptomatic infection to critical illness. The present study reveals a significant association between hypoxemia and sever COVID 19, which indicates sever pulmonary injury. Xie J et al reported SpO2 values of 90% or less as a predictor of mortality in PCR confirmed COVID 19 patients.<sup>(25)</sup> Moreover, elevation of ALT and ESR are associated with severe disease, which reflects the severity of systemic inflammatory response. Velavan TP et al observed an increase in ALT and aspartate aminotransferase (AST) in patients with severe COVID 19 than those with milder disease.<sup>(26)</sup> Additionally Khraise WN et al in Jordanian study showed significantly higher ESR results in severely ill COVID 19 infected patients.<sup>(27)</sup>

Conclusion: This study concluded that COVID 19 infection is more common in males. The frequency is higher among young adults' patients. Hyposmia and hypogeusia are important associated symptoms. The risk factors of severe illness include age of patients over 40 years, hypoxemia, and elevated ESR and ALT levels.

**References:**

1. Ye Z, Yuan S, Yuen K, Fung S, Chan C, Jin D. Zoonotic origins of human coronaviruses. *International Journal of Biological Sciences* 2020;16:1686-1697.
2. Coperchia F, Chiovato L, Crocea L, Magria F, Rotondia M. The cytokine storm in COVID-19: An overview of the involvement of the chemokine/chemokine-receptor system. *Cytokine and Growth Factor Reviews* 2020;53:25-32.
3. Gao YM, Xu G, Wang B, Liu BC. Cytokine storm syndrome in coronavirus disease 2019: A narrative review. *Journal of Internal Medicine* 2020;1-15. doi: 10.1111/joim.13144
4. United Nations Office for the Coordination of Humanitarian Affairs (OCHA). IRAQ: COVID-19 Situation Report No.1. 27 February 2020.
5. Ghalib BA. SARS-CoV-2(COVID-19). *J Fac Med Baghdad* 2019;61:91-93.
6. Zanke AA, Thenge RR, Adhao VS. COVID-19: A pandemic declare by world health organization. *IP International Journal of Comprehensive and Advanced Pharmacology* 2020;5:49-57.
7. AL-Shareef AH, Al-Mudhaffer SA, Mohammed SJ. Epidemiology and clinical characteristics of the domestic and repatriated (Covid-19) Infections in Al Najaf governorate, Iraq. *J Fac Med Baghdad* 2020;62:13-18. DOI: doi.org/10.32007/jfacmedbagdad.621,21738
8. World Health Organization (WHO). Strengthening the Health Systems Response to COVID-19. Version April 2020.
9. World Health Organization (WHO). Maintaining essential health services: operational guidance for the COVID-19 context. Interim guidance 1 June 2020.
10. Zhang SY, Lian JS, Hu JH, Zhang XL, Lu YF, Cai H, et al. Clinical characteristics of different subtypes and risk factors for the severity of illness in patients with COVID-19 in Zhejiang, China. *Infectious Diseases of Poverty* 2020;9:1-10. <https://doi.org/10.1186/s40249-020-00710-6>
11. Boehmer TK, DeVies J, Caruso E, Van Santen KL, Tang S, Black CL, et al. Changing Age Distribution of the COVID-19 Pandemic- United States, May- August 2020. *CDC- Morbidity and Mortality Weekly Report (MMWR)*. September 23, 2020.
12. World Health Organization (WHO). Coronavirus disease 2019 (COVID-19). Situation Report- 51.
13. World Health Organization (WHO). Gender and COVID-19. Advocacy brief 14 May 2020.
14. Shabrawishi M, Al-Gethamy MM, Naser AY, Ghazawi MA, Alsharif GF, Obaid EF, et al. Clinical, radiological and therapeutic characteristics of patients with COVID-19 in Saudi Arabia. *PLoS ONE* 2020;15:1-11. <https://doi.org/10.1371/journal.pone.0237130>
15. Agrawal H, Das N, Nathani S, Saha S, Saini S, Kakar SS, et al. An Assessment on Impact of COVID-19 Infection in a Gender Specific Manner. *Stem Cell Reviews and Reports* 2020. <https://doi.org/10.1007/s12015-020-10048-z>
16. Iyer SP, Ensor J, Anand K, Hwu P, Subbiah V, Flowers C, et al. Higher mortality in men from COVID19 infection-understanding the factors that drive the

differences between the biological sexes. medRxiv 2020.

<https://doi.org/10.1101/2020.04.19.20062174>

17. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet* 2020;395:497-506. [https://doi.org/10.1016/S0140-6736\(20\)30183-5](https://doi.org/10.1016/S0140-6736(20)30183-5)

18. Gandhi RT, Lynch JB, Rio C. Mild or Moderate Covid-19. *N Engl J Med* 2020;383:1757-66. DOI: 10.1056/NEJMcp2009249

19. Altin F, Cingi C, Uzun T, Bal C. Olfactory and gustatory abnormalities in COVID-19 cases. *European Archives of Oto-Rhino-Laryngology* 2020. <https://doi.org/10.1007/s00405-020-06155-9>

20. Jiang M, Chen P, Li T, Tang Y, Chen X, Chen X, et al. Chest CT imaging features and clinical outcome of coronavirus disease 2019 (COVID-19): A single-center case study in Ningbo, China. *Clinical Imaging* 2020;69:27-32. <https://doi.org/10.1016/j.clinimag.2020.05.028>

21. Fadhil AA, Joori SM, Hammoodi ZH, Ghayad H, Ibrahim A. Spectrum of Chest Computed Tomography Findings of Novel Coronavirus Disease 2019 in Medical City in Baghdad. *J Fac Med Baghdad* 2020;62:6-12. <https://doi.org/10.32007/jfacmedbagdad.621,21744>

22. Guillo E, Gomez IB, Dangeard S, Bennani S, Saab I, Tordjman M, et al. COVID-19 pneumonia: Diagnostic and prognostic role of CT based on a retrospective analysis of 214 consecutive patients from Paris, France. *European Journal of Radiology* 2020;131:1-5. <https://doi.org/10.1016/j.ejrad.2020.109209>

23. Habib OS, Jassim HA, Alshihaby WJ, Mohammed MA. The Dynamics of COVID-19 Epidemic in Basrah-Second Report. *The Medical Journal of Basrah University* 2020;38:19-28. <http://dx.doi.org/10.33762/mjbu.2020.127210.10198>

24. Onder G, Rezza G, Brusaferro S. Case-Fatality Rate and Characteristics of Patients Dying in Relation to COVID-19 in Italy. *JAMA* May 2020;323:1775-1776.

25. Xie J, Covassin N, Fan Z, Singh P, Gao W, Li G, et al. Association Between Hypoxemia and Mortality in Patients With COVID-19. *Mayo Clin Proc* 2020;95:1138-1147 <https://doi.org/10.1016/j.mayocp.2020.04.006>

26. Velavana TP, Meyera CG. Mild versus severe COVID-19: Laboratory markers. *International Journal of Infectious Diseases* 2020;95:304-307. <https://doi.org/10.1016/j.ijid.2020.04.061>

27. Khraise WN, Khraise TW, Starling Emerald B, Allouh MZ. Epidemiologic and Clinical Characteristics of COVID-19 Patients from a Quarantine Center in a Developing Community: A Retrospective Study. *International Journal of General Medicine* 2020;13:937-944.