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Epidemiological and clinical characteristics of COVID-19 patients in Kurdistan region/Iraq

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Abstract

World Health Organization declared new coronavirus (COVID-19) outbreak a pandemic disease. The number of infected increased rapidly all over the world. The information regarding epidemiological and clinical characteristics of COVID-19 is lacking in Kurdistan Region of Iraq. Data were collected from the records of ministry of health. A total 521 confirmed cases enrolled to this study. The mean age was 30 years old, men and women are likely to acquire COVID-19. Highest number of cases were found in Erbil city. Majority of the patients were asymptomatic, however, the most common signs and symptoms were: fever, coughing, breathing difficulties, sore throat, muscle pain and headache, whereas, majority of the patients who passed away were asymptomatic. Mortality rate was highest (8%) among people aged 36-51 years old. In addition, Erbil had highest mortality rate (10%) in comparison to Sulaimaniyah and Halabjah. Determining the epidemiological and clinical characteristics of COVID-19 and detecting the infection source and investing the behaviour of novel coronavirus is essential to understand the pandemic.

Keywords: COVID-19, Epidemiology, Clinical Characteristics, Iraq.

Introduction

New corona virusbelongs toorthocoronavirinae family, which may lead to many symptoms such as fever, coughing, shortness of breath, chest infection [1]. There was some unexplained cases of pneumonia and lower respiratory infection reported in December 2019, lately it was discovered the reason was Coronavirus, thus World Health Organization (WHO) named new Coronavirus as COVID-19 [2]. The scientific name of this virus is Sever Acute Respiratory Syndrome Corona virus type 2 (SARS CoV-2). It has been stated that those pneumonia cases were linked to seafood in Wuhan, Hubei province, China [3].

Center of Disease Control and prevention of China and authorities of Wuhan city responded rapidly to carryout epidemiological investigation in response to the outbreak of the virus. WHO stated that the Coronavirus was associated with seafood, however, WHO did not identify the specific animal related to the virus, also Wuhan city identified as epic center of the outbreak [4].Scientists and epidemiologists tried to find out the source of Coronavirus, Professor Yong-Zheng Zhang recognised the first genome of Coronavirus (COVID-19) on January 2020 [5]. Coronavirus spread very quickly from Hubei province to other cities of China in one month. Moreover, high number of cases reported in the country. Chinese government tried to stop spreading the virus, whereas the virus spread quicker, thus more than 50000 people infected in two months. It was not easy to predict specific population. The patterns of the virus revealed some trends as Sever Acute Respiratory Syndrome (SARS) and Middle East Coronavirus. Susceptibilityto get infected with virus might be linked to gender, age and health status of people [6].

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COVID-19 can be defined as infectious disease that is transmitted from human to human, it can be fatal because of Acute Respiratory Distress Syndrome (ARDS) that lead to organ failure and several complications [7]. SARS- CoV2 was ranked as 7th highly infectious disease in human capacity, high mortality rate reported among in elderly particularly those who have chronic diseases such Diabetes Mellitus, Hypertension, Renal Failure andLung diseases, furthermore, high risk population of new Coronavirus is the same as Middle East Respiratory Syndrome and SARS. According to themedical reports high fatality rate of SARS-CoV-2 has been shown amongpatients age over 60 years old [8]. The aim of this paper is to provide epidemiological and clinical features of SARS-CoV-2 among patients in Kurdistan region-Iraq.

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and severe acute respiratory syndrome coronavirus (SARS-CoV)
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Methods

Sources of data:

Data were collected from records of ministry of Health of Kurdistan Regional Government of Iraq from March to May 2020. COVID-19 patients were diagnosed by using PCR. All patients were assigned to a special hospital for treatment based on government's rule, also in order to avoid spreading the disease. Diagnosis of patients was according to WHO guidance, in addition, data were shared using specific software of ministry of health of KRG [9].

Ethical approval

Formal paper submitted to ministry of Health of Iraqi Kurdistan Regional Government to obtain ethical approval, confidentiality and privacy of patient details was assured by recording name, gender, date of birth, occupation and chronic diseases. The aim of the research was explained to the ministry staff and formal consent was gained from them.

Diagnosis of COVID-19

Real time polymerase chain reaction (RT-PCR) was used for suspected patients based on WHO guidelines [WHO]. Nasopharyngeal swap was taken from patients for SARS-CoV-2

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test. Furthermore, chest CT scan was performed as another diagnostic procedure for COVID-19, this method has been given a value in diagnosis process.

Statistical analysis:

To summarise the collected data mean, standard deviation was used. For some variables, the proportion of patients in the groups was calculated. Chi-square test was used to compare the characteristics of COVID-19 patients. P value of less than 0.05 was indicated as statistical significant of the results. Statistical Package for Social Science (SPSS) version 23 was used to perform all statistical analyses.

Results

The epidemiological characteristics of 521 were available, some of characteristics are mentioned below:

Age and sex: Age and gender distribution of COVID-19 patients in Kurdistan region is reported in (Table 1). The median age was 30 years. Furthermore, eight cases were reported among infants aged less than one years old, also many cases (126) of children and adolescences were reported aged between 2-18 years old. Cases among all age groups werestated as shown below. Highest number of cases (184) were aged 19-35 years old. Males and females were similarly at risk of the disease.

Occupation: Highest number (148) of the cases were housewives, followed by second largest number of cases (131) were self-employed people, also third highest number of patients (112) were students. Whereas, few number of cases (6) were reported among unemployed and retired people (table1).

Residency: Highest proportion of cases (77%) were reported in Erbil city, however lowest percentage of cases (3%)were found in Halabjah city.

Table 1: Demographic characteristics of the participants.

Age	**Frequency**	**Percent**
<= 1	8	1.5
2 - 18	126	24.2
19 - 35	184	35.3
36 - 51	133	25.5
52 - 68	52	10.0
69+	18	3.5
Total	521	100.0
Sex		
Female	250	48.0
Male	271	52.0
Total	521	100.0

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Occupation		
Housewife	148	28.4
Retired	6	1.2
Government employee	39	7.5
Private sector employee	15	2.9
Healthcare worker	22	4.2
Self-employed	131	25.1
Student	112	21.5
Unemployed	6	1.2
Child	42	8.1
Total	521	100.0
Residency		
Erbil	401	77.0
Sulaimaniyah	102	19.6
Halabjah	18	3.5
Total	521	100.0

Outcomes and clinical characteristics of the cases:

Based on the hospital records, highest percentage of patients (86%) (89) had fever and coughing among recovered groups in comparison to those who died, the association between fever and outcome is statistically significant (P value < 0.05). Also, greatest proportion of patients (95%) (96%) (95%) (95%) did not have breathing difficulties, muscle pain, sore throat and headache among recovered group compared to deaths, the association between those clinical characteristics and outcomes were statistically not significant (P value > 0.05) (table 2).

Table 2: Distribution of outcomes of COVID-19 cases based on the signs and symptoms:

Signs & symptoms	**Outcome**		**P value**
	recovered n (%)	**dead n (%)**	
Fever			
Yes	64 (12.3)	3 (0.6)	0.036
No	449 (86.2)	5 (1)	
Coughing			
Yes	49 (9.4)	3 (0.6)	0.009
No	464	5 (1)	

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	(89.1)		
Breathing Difficulty			
Yes	16 (3.1)	1 (0.2)	0.138
No	497 (95.4)	7 (1.3)	
Muscle Pain			
Yes	13 (2.5)	1 (0.2)	0.084
No	500 (96)	7 (1.3)	
Sore Throat			
Yes	18 (3.5)	1 (0.2)	0.178
No	495 (95)	7 (1.3)	
Headache			
Yes	18 (3.5)	1 (0.2)	0.178
No	495 (95)	7 (1.3)	

Demographic and clinical characteristics of COVID-19 patients in Kurdistan region-Iraq:

According to the results, highest percentage of cases (5%) had symptoms of COID-19 aged 19-35 years old, also patients aged between 36-51 years old were at high risk of death by 8% compared to the other age groups. Furthermore, male patients were more likely to develop the signs and symptoms by 8%, however, females had the signs and symptoms by 4%. Moreover, mortality rate was equal in both genders by 8%. Highest percentage (4%) of slef-employed people reported having symptoms, however, highest mortality rate (8%) of dying with new coronavirus found among government employees. In addition, greatest proportion of people (9%) described having symptoms and death rate by 1% in Erbil city. Many people (10%) who did not have travelling history developed the signs and symptoms of the disease, also maximum ratio (1%) among those died because of the virus. Regarding contact history and clinical characteristics, greatest percentage (11%) of cases who had contact history with patients were symptomatic to the virus and death rate was 1% among of them. The associations between clinical features, outcome and age, sex (just for clinical features), occupation and contact history were statistically significant ($P < 0.05$) (table 4).

Table 4: Association between clinical features, outcome of covid-19 and demographic of the patients in Kurdistan region of Iraq.

	Clinical features		**P value**	**Outcome**		**P value**
	Asymptomatic N (%)	**symptomatic N (%)**		**recovered N (%)**	**dead N (%)**	
Age						
<= 1	8 (1.5)	0 (0)	0.001	8 (1.5)	0 (0)	0.001
2 - 18	123 (23.6)	3 (0.6)		126 (24.2)	0 (0)	
19 - 35	156(29.9)	28 (5.4)		184 (35.3)	0 (0)	

36 - 51	113 (21.7)	20 (3.8)		129 (24.8)	4 (0.8)	
52 - 68	41 (7.9)	11 (2.1)		50 (9.6)	2 (0.4)	
69+	10 (1.9)	8 (1.5)		16 (3.1)	2 (0.4)	
Sex						
Female	225 (43.2)	25 (4.8)	0.027	246 (47.2)	4 (0.8)	0.908
Male	226 (43.4)	45 (8.6)		267 (51.2)	4 (0.8)	
Occupation						
Housewife	126 (24.2)	18 (3.5)	0.001	142 (27.3)	2 (0.4)	0.001
Retired	3(0.6)	4 (0.8)		6 (1.2)	1 (0.2)	
Government employee	31 (6)	11 (2.1)		38 (7.3)	4 (0.8)	
Private sector employee	13 (2.5)	2 (0.4)		1 (2.9)5	0 (0)	
Healthcare worker	16 (3.1)	6 (1.2)		22 (4.2)	0 (0)	
Self-employed	108 (20.7)	23 (4.4)		130 (25)	1 (0.2)	
Student	107 (20.5)	5 (1)		112 (21.5)	0 (0)	
Unemployed	5 (1)	1 (0.2)		6 (1.2)	0 (0)	
Child	42 (8.1)	0 (0)		42 (8.1)	0 (0)	
Address						
Erbil	351 (67.4)	50 (9.6)	0.497	395 (75.8)	6 (1.2)	0.816
Sulaimaniyah	85 (16.3)	17 (3.3)		100 (19.2)	2 (0.4)	
Halabjah	15 (2.9)	3 (0.6)		18 (3.5)	0 (0)	
History of travelling						
Yes	49 (9.4)	14 (2.7)	0.076	60 (11.5)	3 (0.6)	0.084
No	399 (76.6)	56 (10.7)		450 (86.4)	5 (1)	
Unknown	3 (0.6)	0 (0)		3 (0.6)	0 (0)	
Contact history						
Yes	419 (80.6)	57 (11)	0.005	471 (90.6)	5 (1)	0.000
No	10 (1.9)	4 (0.8)		12 (2.3)	2 (0.4)	

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Not sure	21 (4)	9 (1.7)		29 (5.6)	1 (0.2)	

Discussion

This research showed the epidemiological and clinical characteristics of COVID-19 in Kurdistan region of Iraqup to 3rd March 2020, total 521 patient admitted to the hospitals, then the patients were diagnosed to COVID-19. The mean age of this study was 30 years old, in contrast the mean age of COVID-19 patients in Iraq was 45 years old [10]. Furthermore, eight cases were reported among children aged <10 years old with mild symptoms, these findings were similar to the views that new coronavirus represents mild illness among children. These characteristics were found among COVID-19 cases in China and south-eastern Asian countries [11, 12].Both gender were at risk of COVID-19 infection, recent study confirm that both sex have same chance to get the virus [10].

While the epidemic pattern was investigated in all provinces of Iraqi Kurdistan region, a highvariation was noticed in incidence rate. The greatest incidence rate was in Erbil. It has maximum number of patients, in fact Erbil has highest population rate in comparison with other cities in the region.

The study reported association between risk of infection and existence of airports. Erbil and Sulaimaniyah have international airports, but Halabjah does not have even local airport, the infection rate was highest in those to cities in comparison to Halabjah city.

The findings showed increasing incidence rate because of close contacting with infected people and disobeying social distancing, similar studies stated that the infection rate can not be eliminated due to difficultiesin keeping the low cases because of breaking social distance low, which has been made by policy makers[13].

Regarding the signs and symptoms of the disease, highest number of the patients were asymptomatic, mortality rate was higher among asymptomatic cases. Furthermore, recent researches have reported having asymptomatic cases and normal findings [14]. Regarding the few number of the cases had typical symptoms such as fever, coughing, breathing difficulties, soar throat and headache. In contrast recent study in Iran revealed the some more symptoms of COVID-19 case such as chest pain, chills, myalgia, dizziness, fatigue, abdominal pain and Gastroenterological disorders such as nausea, vomiting, diarrhea and anorexia. In addition, COVID-19 symptoms were different in European countries, the most common symptoms were alteration in smelling, Rhinorrhea, Nasal obstruction [15].

About the association of demographic and clinical characteristics, Based on the results 156 (30%) of the cases aged 19-35 years old and they were asymptomatic, in addition a study in China reported that 29% of the patients were young and radiological findings were normal [5]. Whereas, mortality rate was highest (8%) among people aged 35-51 years old in comparison to the other age groups. Furthermore, regarding occupation and clinical features, highest number of patients (124) were housewives and asymptomatic, but mortality rate was greatest (8%) among government employee. On the other hand, some studies stated some occupations that at risk of COVID-19 such as taxi drivers, cleaner and domestic workers and safety workers [16].

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References:

1. Nanshan Chen MZ, Xuan Dong, JiemingQu, Fengyun Gong, Yang Han, Yang Qiu, Jingli Wang, Ying Liu, Yuan Wei, Jia'an Xia, Ting Yu, Xinxin Zhang, Li Zhang. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. Lancet (London, England) 2020; S0140-6736(20): 7.
2. Huang C, Wang Y, Li X, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet (London, England) 2020.
3. Li Q, Guan X, Wu P, et al. Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus-Infected Pneumonia. 2020
4. Huang C,Wang Y, Li X, Ren L, Zhao J, Hu Yet al (2020) Clinical eatures of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet (London, England) 395:497–506
5. Ahmadzadeh J, Mobaraki K, Mousavi SJ, Aghazadeh-Attari J, Mirza-Aghazadeh-Attari M, Mohebbi I. The risk factors associated with MERS-CoV patient fatality: A global survey. Diagnostic microbiology and infectious disease 2020; 96(3): 114876.
6. Chan TY, Miu KY, Tsui CK, Yee KS, Chan MH. A comparative study of clinical features and outcomes in young and older adults with severe acute respiratory syndrome. J Am GeriatrSoc 2004; 52(8): 1321-5.
7. World Health Organization. Novel coronavirus situation report -2. January 22, 2020. https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200122-sitrep-2-2019-ncov. pdf (Accessed on September, 2020).
8. Jia N, Feng D, Fang LQ, et al. Case fatality of SARS in mainland China and associated risk factors. Trop Med Int Health 2009; 14 Suppl 1: 21-7.
9. Kurdistan Regional Government/ Ministry of Health Dashboard. Available at: http://health.krd/.
10. Omer S., Alaa A. (2020). Epidemiological Features of COVID-19 Epidemic in Basrah-Southern Iraq-First Report. The Medical Journal of Basrah University. 38(1): pp 6-17.
11. Guan W, Ni Z, Hu Y, Liang W, Ou C, He J et al. Clinical Characteristics of Coronavirus Disease 2019 in China. N Engl J Med. 2020 Feb 28.
12. Wu Z, McGoogan JM. Characteristics of and important lessons from the coronavirus disease 2019 (COVID-19) outbreak in China: summary of a report of 72 314 cases from the Chinese Center for Disease Control and Prevention. JAMA. Published online February 24, 2020.
13. Al-Hussein AA, Tahir FR. Epidemiological Characteristics of COVID-19 Ongoing Epidemic in Iraq. Published online: 6 April 2020 Available from: https://www.who.int/bulletin/online_first/20-257907.pdf Accessed April 22, 2020.
14. Tian S, Hu N, Lou J, Chen K, Kang X, Xiang Z, Chen H, Wang D, Liu N, Liu DJJI. Characteristics of COVID-19 infection in Beijing. J InfSecur. 2020;80(4): 401–6.
15. W-j G, Z-y N, Hu Y, Liang W-H, Ou C-Q, He J-X, Liu L, Shan H, Lei C-L, Hui DS. Clinical characteristics of Coronavirus disease 2019 in China. N Engl J Med. 2020;382(18):1708–20.
16. Lan FY, Wei CF, Hsu YT, Christiani DC, Kales SN. Work-related Covid-19 transmission. medRxiv. 2020 https://doi.org/10.1101/2020.04.08.20058297.