Covid-19 cases in Diyala province/Iraq, from 3rd March 2020 - 1st March 2021

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Abstract

The study included Covid 19 cases in Divala governorate according to sectors, with the incidence rate per 100,000 people for the period from 3/3/2020 to 1/3/2021. With the appearance and distribution of coronavirus (2019-CoV) and the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), a new public health problem appeared that threatened the world. In the city of Wuhan, Hubei province in china, in December 2019, this virus appeared in bats and transmitted to human-beings through intermediary animals. The Covid-19 infection is caused by SARS-CoV-2. It is considered a new emergency disease of the Coronavirus strain, which has witnessed several mutations and mutations since its first appearance in the Chinese state of Wuhan in late 2019, and continued as a global pandemic throughout the year 2020, and is still within 2021 through waves Vehicle and regression unaffected by any natural, environmental or seasonal factors. Within the global data and facts, the Covid 19 pandemic is the most dangerous, powerful and comprehensive pandemic for the world after the 1918-1920 Spanish influenza pandemic. The number of confirmed cases recorded globally reached 135 million and 660 thousand cases, of which 109 million cases (80%) were cured and 2 million and 930 thousand (2%) deaths until 4/10/2021. As for Iraq, the number of confirmed registered cases reached 918 thousand and 155 cases, of which 809 thousand and 663 cases (88%) were cured and 14 thousand and 678 (1.6%) deaths. This study aimed to present an overview on the epidemiology and characteristics of COVID-19 disease in Diyala governorate. This study was conducted for the period from 3/3/2020 - 1/3/2021 in Diyala governorate according to sectors, with the incidence rate per 100,000 people. The age group ranged from less than 1 year to more than 60 years. The obtained results showed that the first confirmed case of Covid 19 in Diyala Governorate was recorded on 3/4/2020. The first recovery case of Covid 19 case in Diyala Governorate was recorded on 3/11/2020, while the first death of Covid 19 in Diyala Governorate occurred on 3/22/2020. In addition, the total number of swabs amounted to 19,597 thousand cases, of which 24,991(12.6%) were positive and confirmed. Note: The number of isolation wards for confirmed and suspected Covid 19 cases is 18 wards with 490 bed capacity. The total number of recorded cases was 24,991, and the number of recoveries was 24,246 (97%) cases, while the number of deaths was 278 (1.1%) for the period from 3/3/2020 to 1/3/2021 in Divala governorate.

Key Words: COVID-19, respiratory, viruses, Diyala

Introduction

In the last months of 2019, the novel coronavirus, known as 2019-nCoV, appeared in the Chinese city Wuhan. The enveloped coronaviruses have non-segmented, single-stranded, and positive sense RNA genome. Apart of causing infections to different economically essential vertebrates like (chickens and swine), six coronaviruses were found to cause respiratory

infections to humans. Among these viruses are the severe acute respiratory syndrome coronavirus (SARS-CoV) and Middle East respiratory syndrome coronavirus (MERS-CoV) which are zoonotic and severely pathogenic viruses that can result in international and regional outbreak. The coronaviruses have specific morphology, the name derived from the outer margin or corona of embedded envelope proteins. (Wangetal., 2020) A wide range of human and animal infections are caused by the Coronaviride family members. In a Unique manner, the RNA genome replications progress through a generation of nested sets of molecules of viral mRNA. Mild to serious outcomes occur due to respiratory diseases caused by human coronavirus (HCoV). In accordance with the world health organization guidelines, a large family of viruses is made up that is able to cause mammalian, avian and human infections. Such viruses were shown to be responsible for many global outbreaks, such as severe acute respiratory syndrome (SARS) pandemic in 2002 & the outbreak of Middle East respiratory syndrome (MERS) of South Korea in 2015. Recently, the novel (SARS-CoV-2) virus, also called COVID-19) initiated a Chinese outbreak in the last months of 2019, exciting the international concern. Although some coronaviruses cause destroying epidemic diseases, others can only cause mild to moderate respiratory diseases, such as the common colds (Unhale etal., 2020).

All ages are vulnerable to be infected, and it is transmitted via big droplets during sneezes and coughs of symptomatic individuals, but it may be also transmitted from asymptomatic persons prior to symptom onsets (Rothe etal., 2020). Some studies detected high viral loads in the nasal cavities in comparison with the throats with no variation in viral burdens between asymptomatic and symptomatic persons (Zou etal., 2020). Patients are able to transmit infection as long as the symptoms exist and even in time of clinical recoveries. Some individuals can function as super spreaders. A British citizen attended a conference in Singapore and could infect 11 other persons during his stay in a French Alps resort and on his returning to the United Kingdom (WHO,2020). The infected droplets are able to spread 1 to 2 meters and be deposited on surfaces. In good atmospheric circumstances, the virus can persist viable for many days on the surfaces, but it is destroyed in less than one minute by disinfectants e.g. sodium hypochlorites, hydrogen peroxides e.t.c.(Kamp fetal., 2020). The infection can be transmitted either by droplet inhalation or contaminated surface touching and then touching the mouths, noses or eyes. The virus may also be found in the feces and water supply contamination and transmission through aerosolization / oro-fecal route is also suggested (WHO,2020).

The first case of COVID-19 (commonly called "Coronavirus") was reported in Iraq- Al-Najaf province, on 24 February/2020. After that, 12 further cases were confirmed, 6 in Baghdad, 5 in Kirkuk, and 1 case in Babil. There was no any death in Iraq related to COVID-19, and there was no any case recorded in Kurdistan region. Only 4 suspected cases in Mosul and Najaf showed negative results and they were released from quarantine. Suspected cases were reported constantly on social media, but OCHA reported only those cases confirmed by the WHO, who worked in close collaborations with health personnel in the Iraqi government and in Kurdistan region. All the earliest confirmed COVID-19 cases were correlated to those individuals who recently visited or came back from Iran. The infection source of most confirmed cases were not conclusively recorded, however, infections with COVID-19 in Iran were rising (OCHA, 2020).

The ministry of interior in Iraq ordered a temporary suspension of work in many governmental ministries, committees and departments as a reducing measure to stop viral spread. Workers in foreign oil companies who have left Iraq are currently forbidden from reentering the country. Passenger screening is ongoing in all airports and also in many neighboring states. The border-crossing point (Semelka) between Kurdistan region and Syria was closed except for emergency

conditions. On 29th February, 2020, The Turkish ministry of health announced that air flights originating from Turkey would be temporarily postponed to China, Iraq, Iran, Italy and South Korea. TheTurkish airlines perform a large number of international travels into/out of Iraq and Kurdistan region. Saudi Arabia temporarily stopped Umrah pilgrimages and stated that travelers from countries affected with COVID-19 will be not allowed to enter through the borders (INPHS,2019).

The officials of WHO continue communications inside the country with all relevant authorities, such as UN agencies, NGO leaderships, governmental authorities and religious references. Universities and schools remain closed inside Iraq and Kurdistan region, and the Iraqi government issued instructions on closing certain public facilities such as cafes and malls. The fear and stress from COVID-19 have also their impacts on the continuous political demonstrations against the government in Baghdad and other cities, which have entered their 6th month. The COVID-19 emergency cell was enacted by the humanitarian coordinator, and a COVID-19 working group was founded by the United Nations Assistance Mission in Iraq (UNAMI). Increased efforts at coordination are underway (WHO,2019). Specific molecular tests are carried out on respiratory samples (throat swabs, nasopharyngeal swabs, sputum, bronchoalveolar lavages and endotracheal aspirates) to diagnose the disease. The detection of the virus may also be achieved in the feces and in severe cases, in the blood. The real time (RT) PCR is now becoming the method of choice to diagnose human CoV. The multiplex real time PCR assays were developed to detect all the 4 respiratory HCoVs and could be also adapted to novel CoVs. Serologic methods are necessary in cases when isolation of RNA is difficult, is not present and in epidemiological researches. Chest X-rays often show bilateral infiltrates but can be normal in earlier cases. The CT scanning has more specificity and sensitivity. CT imaging usually shows infiltrate, ground glass opacity as well as sub-segmental consolidations. It is also abnormal in asymptomatics/ patients not clinically proven to have lower respiratory system involvements. In fact, the CT scans are used for diagnosis of COVID-19 in suspect cases with negative molecular results; many of such patients showed positive molecular results on repeated examination (Huang etal., 2020).

The transmission of COVID-19 to the health care staff is the greatest risk. In the outbreak of SARS in 2002, 21% of the infected people were health care workers. Protection of health care workers is necessary for ensuring care continuity and prevention of infection transmission to other people (Chang etal., 2020). In the majority of viral diseases, the immune response is important part of the pathogenesis. Macrophage and lymphocyte infiltrations as well as cytokine secretion and inflammatory mediators are regular features of viral diseases that aid in recovery from infection. However, such processes may also become main causes for tissue and cellular damages in certain infections, and several common viral disease symptoms such as (fever, oedema, erythema and lymph node enlargement) have immunologic basis. On improvement of pathological changes through immunosuppression, it can be suggested that the underlying immunopathology is importantly contributing to the disease processes. The immunologic mechanisms may be the major cause of disease, particularly among non-cytolytic viruses. In the majority of cases, such immunologic mechanisms include the activated T lymphocytes, in spite of the presence of some examples of antibodies or innate immunological responses. However, the cell-mediated immunologic response is also essentially participates in the recovery from viral diseases as it has been proven that when they are terminated by a cytotoxic drug, or are absent as in some immunodeficiency disorders. The antibody-dependent cell-mediated cytotoxicity (ADCC) can be sensitized when antibodies combine with viral antigens on the infected cell

surfaces, and thus, the Fc-receptor-carrying killer cells, together with PMN leukocytes and/or macrophages, cause damage (Fenner etal.,2012).

Materials and methods:

Samples collection: The data collection was taken from surveillance unit in Diyala public health care Department database of the people with the incidence rate per 100,000 people for the period from 3/3/2020 - 1/3/2021.

Results and discussion:

The first confirmed case of Covid-19 in Diyala Governorate was on 3/4/2020. The first recovery case of a Covid 19 case in Diyala Governorate was on 3/11/2020, while the first death of Covid 19 in Diyala Governorate was on 3/22/2020. In addition, the total number of swabs amounted to 19,597 thousand cases, of which 24,991 (12.6%) were positive and confirmed. Note: The number of isolation wards for confirmed and suspected Covid 19 cases is 18 wards, with a bed capacity of 490 beds. The total number of cases was 24,991, number of recoveries was 24,246 (97%) cases. The number of deaths was 278 (1.1%) during the period from 3/3/2020 to 1/3/2021 in Diyala governorate.

There are biological variations between men and women in regard to immune systems which may affect human's capacity for fighting infections such as SARS-2-CoV-2. In general, females can resist infections more than men, and this may be mediated by many factors such as sexual hormones and high expressions of viral receptors (ACE-2) in males but life styles, e.g. high levels of smoking and drinking among males in comparison with females. Moreover , women have more responsible attitudes towards corona pandemic than men. This can have reversible influence on the preventive measures like frequent hand-washing, face mask wearing and stay home instructions, but a large part of these variations are also driven by gender behaviors (life styles), like high drinking and smoking levels among males in comparison with women (Shim etal.,2020). Furthermore, a recent study performed in Spain (one of the hardest hit countries in Europe) stated that women have more responsibility attitudes towards Covid-19 pandemic than men (De La etal.,2020). This can have reversible influence on the preventive measures like frequent study performed in Spain (one of the preventive measures like frequent hand-washing, face mask wearing and stay home instructions.





The first confirmed case of Covid 19 in Diyala Governorate on 3/4/2020	Diyala Governorate Population 172,438 people	Diyala Governorate The area is approximately18000 sq km	
The total number of cases is 24,991 Number of recoveries: 24,246 cases (97%)cThe number of	The first death of Covid 19 in Diyala Governorate, on 3/22/2020	The first recovery case of a Covid 19 case in Diyala Governorate on 3/11/2020	
deaths is 278 (1.1%) For the period from 3/ 3/2020 - 1/3/2021 in Diyala Governorate.	the total number of swabs amounted to 19,597 thousand cases, of which 24,991 were positive and confirmed, or 12.6%. Note: The number of isolation wards for confirmed and suspected Covid 19 cases is 18 wards and with a bed capacity of 490 beds.		

Figure (2): The total number of cases and their percentages in Diyala governorate for the period from 3/3/2020 - 1/3/2021

Table (1) : The number of Covid 19 cases in Diyala governorate according to sectors, with
the incidence rate per 100,000 people for the period from 3/3/2020 to 1/3/2021

SECTORS	POPULATION	NO. OF CASES	INCIDENCE
			RATE \ 100000
1 st Baqubah	398755	7424	1862\ 100000
2 nd Baqubah	286365	3137	1095\100000
Al-khalis	273037	3325	1218\ 100000
Almuqdadia	246380	3133	1272\ 100000
Baladroz	169700	2476	1459\100000
Khanaken	226264	4163	1840\ 100000
Almansoriya	123737	829	670\100000



Figure (3): Percentage of COVID-19 cases in regard to sectors in Diyala province from 3\3\2020 to 1\3\2021

Table (2) : Number of Covid 19 cases and their percentages by gender in Diyalagovernorate for the period from 3/3/2020 to 1/3/2021

Percentage	No. confirmed	Tital
%	case	
Gender		
35%	8648	Female
65%	16343	Male



Figure (4): Number and percentage of cases by gender in Diyala governorate for the period from 3/3/2020 to1/3/2021

Table (3): The number and percentage of Covid 19 cases according to age groups in Diyalagovernorate for the period from 3/3/2020 to 1/3/2021.

Percentage %	No. confirmed case	Tital
Age group		
1.2%	303	Below 10 year
7%	1737	10 – 19 year
21.4%	5347	20 – 29 year
24.5%	6120	30 – 39 year
19.2%	4823	40 – 49 year
13.6%	3411	50 – 59 year
13%	3250	Above 60 year



Figure (5): Percentage of COVID-19 cases in regard to age groups in Diyala province from 3\3\2020 to 1\3\2021

Table (4): Demographic table (Case type, Severity degree of cases, Type of cases, Type of residential area)

Percentage	No. confirmed	Tital	
%	case		
Case type			
2%	467	Active case	
97%	24246	Recovery case	
1%	278	Dead case	
Severity degree	of case		
73%	18230	Mild	
17.6%	4411	Moderate	
9.4%	2350	Sever /Critical	
Type of case			

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70.7%	17669	Suspected case
22.8%	5698	Contact case
6.5%	1624	Surveillance cases
Type of resident	tial area	
73.6%	18393	Urban area
26.4%	6598	Rural area
100%	24991	Total



Figure (6): Percentage of active cases, recovery cases and dead cases in Diyala province from 3\3\2020 to 1\3\2021

Conclusions

The current new outbreaks of the virus challenged the medical, economic and public health infrastructures in Iraq and other countries particularly its neighbors. Time alone will tell how did this virus affect our lives in Diyala province. Moreover, future viral and pathogens outbreaks of zoonotic origins may continue. Therefore, apart from inhibiting such outbreak, efforts must be done to plan comprehensive measures for preventing future viral outbreaks of zoonotic origins.

Acknowledgments

Since the beginning of global pandemic of COVID-19, scientists and clinician researcher hurried for understanding and mitigating its threats, sharing their view with others. In this series, we academician have took the step to collect the recent information and have submitted a manuscript for publication.

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