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Extent of Covid-19 Pandemic in the First Year

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Abstract: Background: Coronavirus is one of the major viruses which primarily affecting the respiratory system in human. However, Coronaviruses have been also diagnosed in animals and can cause a range of severe diseases such as gastroenteritis and pneumonia. Coronaviruses are a group of related RNA viruses that cause diseases in mammals and birds. The novel coronavirus causing COVID-19, subsequently named SARS-CoV-2 were first reported by officials in Wuhan City, China, in December 2019. Its was declared a global pandemic by the WHO on 11 March 2020 and could affect all countries and people around the globe. **Objectives**: To determine the extent of COVID-19 disease in the first year. **Methods**: A cross sectional study was carried out on patients with COVID-19 in al_amiriyah city, during the period between March 26, 2020 to February 28, 2021. A total of (956) patients, (572) male and (384) female who attended al_amiriyah general hospital and al_ amiriyah sector for primary health care was constituted the study group. **Results**: There were (59.83%) males patients and (40.17%) females patients. Most of the cases in the current study were in the age group between (40_60) years. The male to female ratio was found to be (1.64:1). The prevalence of COVID -19 in this study was (86,90/10000) person. The percentage of positive case was high in August and November 2020. Males and adults accounted for the majority of COVID-19 cases. **Conclusions**: The epidemiological status of COVID-19 in Al_ amiriyah city showing promising improvement and the prevalence of COVID-19 is within the global average. Most of the cases in the current study were in the middle age group. COVID-19 was clearly more prevalent among males compared to females. Most of COVID-19 patients treated outside the hospital (home isolation). Occurrence of the COVID-19 in rural population more than in urban one. Case _fatality rate was moderate in our study.

Keywords: COVID-19, PCR, CT-scan and epidemiology.

INTRODUCTION

The recent COVID-19 is a continuing pandemic that creates confusion and panic around the world. According to the genomic studies, the virus is considered to originate from infected bats, and can be transmitted to humans and animals. It was found to have a positive-sensed, single-strand RNA virus. On December 2019, atypical unknown pneumonia was first recorded in Wuhan city, Hubei province, China. Patients have showed high fever (more than 38 C), dry cough, malaise, and breathe difficulties. The infection has been linked to the seafood market of Wuhan, and named COVID-19 (WHO, 2020).

It spread rapidly to other Far East then to the Middle East and Europe. The incubation period has been estimated from 5 - 14 days and may vary from patient to patient according to age and infection history. (Lauer, S.A. *et al*., 2020).

The novel coronavirus disease 2019 (COVID-19) was first isolated from biological samples in Wuhan, China, in December 2019. The virus was identified as a member of the genus beta coronavirus, grouping it with Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS) (WHO, 2020).

Coronaviruses are a group of related RNA viruses that cause diseases in mammals and birds. These viruses can cause Acute Respiratory Distress Syndrome (ARDS), bilateral pneumonia and pulmonary failure leading to mortality (Jorge, H).

The virus spread internationally and the ongoing explosive spread of COVID-19 to all countries calls for additional regional actions to stem its further spread .The global outbreak of COVID-19 has been a matter of international concern as the disease is spreading very fast. Considering the transmissible nature of the disease, which has had a massive impact worldwide, there is a crucial need to explore the trend of the epidemiology of the disease. The importance of early detection and isolation of COVID-19 patients to prevent the spread of the disease. (The Novel Coronavirus Pneumonia Emergency Response pidemiology Team, 2020).

Retrospective investigations by Chinese authorities have identified human cases with onset of symptoms in early December 2019. While some of the earliest known cases had a link to a wholesale food market in Wuhan, some did not. Many of the initial patients were stall owners, market employees, or regular visitors to this market.

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Environmental samples taken from this market in December 2019 tested positive for SARS-CoV-2, further suggesting that the market in Wuhan City was the source of this outbreak or played a role in the initial amplification of the outbreak (WHO, 2020).

The full genetic sequence of SARS-CoV-2 from the early human cases and the sequences of many other viruses isolated from human cases from China and all over the world since then show that SARS-CoV-2 has an ecological origin in bat populations. All available evidence to date suggests that the virus has a natural animal origin and is not a manipulated or constructed virus. Many researchers have been able to look at the genomic features of SARS-CoV-2 and have found that evidence does not support that SARS-CoV-2 is a laboratory construct. If it were a constructed virus, its genomic sequence would show a mix of known elements (Lauer, S.A. *et al*., 2020).

Another coronavirus, SARS-CoV-1, the cause of the Severe Acute Respiratory Syndrome (SARS) outbreak in 2003, was also closely related to other coronaviruses isolated from bats. These close genetic relations of SARS-CoV-1, SARSCoV-2 and other coronaviruses, suggest that they all have their ecological origin in bat populations. Middle East Respiratory Syndrome (MERS-CoV) is found in dromedary camels, and has continued to infect humans since 2012 (Ralston, S.H. *et al*., 2018).

All available evidence for COVID-19 suggests that SARS-CoV-2 has a zoonotic source. Since there is usually limited close contact between humans and bats, it is more likely that transmission of the virus to humans happened through another animal species. A number of investigations to better understand the source of the outbreak in China are currently underway, including investigations of human cases with symptom onset in and around Wuhan in late 2019, environmental sampling from markets and farms in areas where the first human cases were identified (Taxonomy browser, 2020).

WHO continues to collaborate with animal health and human health experts, Member States, and other partners to identify gaps and research priorities for the control of COVID-19 (WHO, 2020).

As the COVID-19 pandemic continues to impact people across the globe, different groups experience the virus. Children and adolescents are generally at low risk of infection, and if they become infected it is likely to be mild. However, some children and young people have had severe form of the disease, and a few have died. Children and adolescents of all ages and in all countries are suffering from the consequences of the pandemic.
For example, COVID-19 has created the largest disruption of education systems in history, affecting students in more than 190 countries. (www.who.int)

AIM OF STUDY:

The purpose of this study was to determine the extent of COVID-19 disease in the first year.

METERIAILS AND METHODS:

A cross sectional study was carried out on patients with COVID-19 in al_amiriyah city, during the period between March 26, 2020 to February 28, 2021. A total of (956) patients (572) male and (384) female who attended al_amiriyah general hospital and al_ amiriyah sector for primary health care was constituted the study group. This study was an exploratory and descriptive analysis of all COVID-19 cases.

Data were collected from follow up of all patients, regarding age, sex, residence, risk factor, co-morbid disease and result of CT_ scan and PCR-test.

For statistical analysis: Data analyses were conducted with SPSS _25 (statistical package for social sciences- version 25) and the chi-square test was used to analysis the group's percentage in addition to statistical tables. Variables were described using frequencies and percentages. A p-value < 0.05 was considered to be significant.

RESULTS

Iraq, was one of the countries worst affected by COVID-19. The number of cases is still rising dramatically during this period of study. So these findings enable us to understand COVID-19 prevalence that can alert our community to the risk of this novel coronavirus. Of the 956 patients studied, 572 of them were males and 384 were females and the male to female ratio was found to be 1.64:1. p -value was not significant. p-value>0.05 as shown in table.1.

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Table 1: The frequency of patients according to gender

Gender	No.	Percentage
Male	572	59.83%
Female	384	40.17%
Total	**956**	**100%**

Most of the patients with COVID-19 treated outside the hospital as shown in table 2

Table 2: distribution of cases according to place of treatment

Place	No.	Percentage
Isolation Ward(quarantine)	126	13.18%
Home	830	86.82%
Total No.	**956**	**100%**

With respect to the habitation of the patients with COVID-19, patients from rural population more than in urban one.

Table 3: distribution of cases according to the residence

Residence	No.	Percentage
Rural	586	61.29%
Urban	370	38.71%
Total No.	**956**	**100%**

In al_amiriyah general hospital, during the study period a lot of CT_ scan have done for symptomatic and suspected case of COVID-19. The percentage of positive case was high in August 2020.

Table 4: distribution of cases according to CT_ scan result

Month	No.	Positive	Percentage
June 2020	77	23	29.87%
July 2020	273	114	41.75%
August 2020	551	236	42.83%
September 2020	363	188	51.79%
October 2020	226	176	73.89%
November 2020	151	103	68.21%
December 2020	106	55	51.88%
January 2021	91	38	41.75%
February 2021	88	23	26.13%
Total No.	**1926**	**956**	**49.63%**

Al_ amiriyah sector for primary health care have done a lot of PCR-test for suspected case of COVID-19. The percentage of positive case was high in August and November 2020.

Table 5: frequency of patients according to PCR-test result

Month	Total No.	Positive	Negative
June 2020	112	28	84
July 2020	409	44	365
August 2020	610	57	553
September 2020	478	31	447
October 2020	219	34	185
November 2020	1041	51	990
December 2020	1702	40	1662
January 2021	1215	14	1201
February 2021	1806	6	1800
Total No.	**7592**	**305**	**7287**

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DISCUSSION

There is no previous study that has investigated the characteristics of the epidemiology of COVID-19 in al_amiriyah city. This study aimed to examine the trend of COVID-19 epidemiology in term of its prevalence rate and mortality rate. In addition, this study aimed to explore the gender and age differences of the disease and method used in the diagnosis.

The first wave of COVID-19 pandemic in Iraq is part of the worldwide pandemic of coronavirus disease (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) started in March 2019 and lasted six months fallowed by the second wave which more aggressive. (wikipedia.org).

During the pandemic, Iraq reported a substantial cumulative rise of COVID-19 cases since the first case was confirmed on February 22, 2019 in al_Najaf province. (The Ministry of Health in Iraq, 2020).

The first confirmed cases of COVID-19 were register in al_ amiriyah city on March 26, 2020(10). Al_ amiriyah is district in al- Anbar province in the west of Iraq with a total number of population was about (110,000) people's (Monthly Report, al_amiriyah sector).

Epidemiological aspect of COVID-19 globally during period study show: Age average (56), Sex ratio 1.6:1 ((M: F), Deaths cases (2,986,951), Case fatality rate (2.1%). Symptoms mainly include; Fever (87.9%), Dry cough (18.7%), dyspnea (67.7%), Diarrhea (3.7%), Sore throat (13.9%), headache, Loss of smell or taste, tiredness, aches and pain (5).

The total confirmed cases in Iraq between March, 2020 to February, 28 2021 was (695,489) patients, and deaths cases was (13,406) patients, /deaths / 1mpop was (364). (www COVID Live Update).

Variation when comparing Iraq with neighboring countries was obvious, like studies in Saudi Arabia, the total confirmed cases in Saudi Arabia was (403,106) patients and deaths cases was (7,471) patients, / deaths/ 1mpop was (193). (www.worldometers).

This inconsistency may be due to the fact that each country has different management protocols, case reporting and the number of tests carried out on each day, so comparison is difficult. (wikipedia.org).

In this study, data showed all ages are susceptible to infected with COVID-19 including children and adolescents and the highest range was between (40_60) years old.

Our study found that the highest proportions of COVID-19 cases were among the male population (on average 59% of the cases) compared to (41% for females) as in table 1. Differences between males and females in getting infection with COVID-19 remain unclear but young and middle age groups male are the ones that are most likely to have a high chance of participation in different sectors of work in our community. Various epidemiological and population-based studies from other countries supported these findings like studies in Saudi Arabia on average 79% of the cases male compared to only 21% for females (www.worldometers).

Also the rates of infection among men appear to be much higher in Greece, Pakistan and Mexico. Globally, the incidence of COVID-19 was found most commonly among adult males due to differences in the physiological structure of women and men, gender differences play an indisputable role in the pandemic of the disease. Also, aging is connected with a number of variations in pulmonary physiology, pathology and function. The age-related alterations in sensitivity and tolerance may lead to an increased rate of death in aged people. (www. COVID Live Update).

In this study COVID-19 spread rapidly with periodic variation, highest infection (August_december 20220). The majority of COVID-19 cases seen in patients have previously asthma or COPD. Furthermore, the highest proportion of severe cases is reported among adult patients ≥60 years of age, especially those with back ground of low immunity (suffer from one or more disorders such as cancer, diabetes, cardiovascular, cerebrovascular diseases and renal failure) which are run commonly in Iraq. There is a clear trend that COVID-19 negative outcomes and increasing in the fatality rate related to these factors. For example, from the 126 patients admitted in al_amiriyah general hospital, 35 of them were dead during our study period. Case _fatality rate was (3.66%). Most of COVID-19 patients (mild illnesses with full recovery) treated outside the hospital (home isolation) as in table 2. This due to different reason related to patients or community especially in the first months of COVID-19 (Monthly Report, al_amiriyah general

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hospital). However, the current study provides evidence that sever cases of COVID-19 account for increasing fraction of the hospitalization. With respect to the admission rate of patients to hospital, the percentage was high especially during September and October 2020 (Monthly Report, al_amiriyah general hospital).

The study shows that, occurrence of COVID-19 disease in rural population was more than in urban one; 586 patients from rural area (61.29%) compared to 370 patients from urban area (38.71 %). Probably due to structure of our population, life style of the area and level of health services as in table 3.

Chest CT _scan may be a useful adjunct in the initial detection of COVID-19 in certain patients in the context of a pandemic. We suggest RT-PCR remains the primary diagnostic tool and that chest CT is only considered if there is a strong clinical suspicion of COVID-19 with repeatedly negative RT-PCR test results. A relatively high false positive rate can be expected with chest CT. The median accuracy of chest CT for the diagnosis of COVID-19 is relatively high (Shi, H. *et al*., 2020).

In al_amiriyah general hospital, during the study period a lot of CT_ scan have done for symptomatic and suspected case of COVID-19. From (1886) patients tested (956) patients was positive in (49. 63%).The percentage of positive case was high in August 2020 as in table 4.

Reverse-transcription polymerase chain reaction (RT-PCR) tests are currently the gold standard diagnostic tool for COVID-19. RT-PCR assays can be performed on nasopharyngeal and/or oropharyngeal swabs, sputum, blood samples, body fluids, stool samples and Broncho alveolar lavage fluid.

RT-
PCR is limited by its low sensitivity and associate d relatively high number of false-negative results that can lead to the erroneous assumption that a patient who does actually have COVID-19 does not have it and is not infectious, leading to an undetected transmission risk in either the community (www.ncbi.nlm.nih.gov).

Al_ amiriyah sector for primary health care have done a lot of PCR-test for any suspected case of COVID-19. The percentage of positive case was high in November 2020. According to PCR-test result, from (126) patients treated in the isolation Ward (quarantine) 111 was positive (88.9%) and from (830) patients treated at home 305 was positive (36.74%) as in table 5. The total number of PCR-test done was 7592, from which only 416 was positive. That's to say, most of our patients diagnosed by CT_ scan rather than PCR-test (al_amiriyah sector).

In summary, a lot of population had been infected by the viruses. The prevalence of COVID -19 in this study was (73.53/10000) patient per million population (PMP).

There are some limitations to this study. First, we were unable to evaluate clinical characteristics of confirmed cases of patients treated outside the hospital (home isolation). Second as despite the fact that this study was a population-level study, it was ecological and therefore we were unable to access data on patient level to identify other risk factors associated with COVID-19. Taken together, these findings contribute to our understanding of the epidemiology and prevalence of COVID-19 in the west of Iraq may be useful and provide a basis for future studies.

CONCLUSION

The epidemiological status of COVID-19 in Al_ amiriyah city showing promising improvement and the prevalence of COVID-19 is within the global average. Most of the cases in the current study were in the middle age group. COVID-19 was clearly more prevalent among males compared to females. Most of COVID-19 patients treated outside the hospital (home isolation). Occurrence of the COVID-19 in rural population more than in urban one. Case _fatality rate was moderate in our study.

RECOMMENDATION

Further studies are recommended to be conducted at the patient level to identify other patient groups who are at higher risk of getting infected with COVID-19, and for whom the best pharmacological intervention could be provided.

The methods suggested to slow progression of diseases includes:
Interrupt human-to-human transmission including reducing secondary infections among close contacts and health care workers, preventing transmission amplification events, and preventing further international spread. Identify, isolate and care for patients early, including providing optimized care for infected patients. Identify and

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reduce transmission from the animal source. Communicate critical risk and event information to all communities and counter misinformation.

Minimize social and economic impact through a combination of public health measures, such as rapid identification, diagnosis and management of the cases, identification and follow up of the contacts, infection prevention and control in health care settings, implementation of health measures for travelers, awareness-raising in the population and risk communication.

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