Original Article

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A Study on 696 COVID-19 Cases in Basrah-Southern Iraq: Severity and Outcome Indicators

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ABSTRACT

Background: COVID-19 epidemic is escalating in Basrah regardless of the efforts to abate the wave of new cases.

Objectives: To present a profile on the demographic and selected clinical characteristics of COVID-19 cases reported in Basrah from March 9 to May 19, 2020.

Patients and Method: A record-based observational study was conducted in Basrah. Data were compiled from all available sources on the cases reported between March 9 and May 19, 2020. Data included age, sex, residence, occupation, date of onset of detection of infection, severity of clinical condition, and fate in terms of cure, continuing treatment, or death. Excel and Statistical Package for Social Sciences programs were used for data-base generation and for statistical analysis.

Results: A total of 696 cases were identified, with ages ranging from < one year to 99 years. Males accounted for 42.5% and females for 57.5%. Most of the cases were from Basrah city and the district of Hartha. Housewives and self-employed people represented a majority of cases (28.4 and 21.6% respectively). Most of the cases were either asymptomatic (51.3%) or with mild condition (30.3%). Critical cases represented a small proportion (3.2%) and case fatality was relatively low (2.6%). The presence of co-morbidity, older age and travel history were significant predictors of both severe cases and higher case fatality.

Conclusions: COVID-19 cases in Basrah was found among young people, predominantly females, and the fatal outcomes are predicted by severity, older age, and presence of co-morbidity

Keywords: COVID-19, Basrah, Case fatality, COVID severity.

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INTRODUCTION

In December 2019, a large number of patients who had been diagnosed with lower respiratory tract infection of unknown origin in Wuhan, China, raised some concern among health authorities. Shortly after that, the Wuhan Municipal Health Commission issued a health alert and the WHO was notified about a new threat. Epidemiological investigation pointed out that the seafood market in Wuhan was the source of the infection. Immediately, that market was shut down and disinfected.[1,2] The common causative agents including influenza, adenovirus, avian influenza, Middle East respiratory syndrome corona virus (MERS-CoV), and severe acute respiratory syndrome corona virus (SARS-CoV) were excluded as the culprits in the new threat.[2]

The virus that caused the outbreak was found to be a new virus that came to be known as SARS-CoV-2. This virus is closely related to bat corona viruses, pangolin CoV), and the severe acute respiratory syndrome corona virus (SARS-CoV).[3] Afterward, a number of other countries around the globe started to report cases. South Korea, Malaysia, and Iran were among the first and most affected countries in Asia.[4] The first confirmed case in Iraq was reported on 22 Feb 2020 in Al-Najaf government, and by the 27th of March, cases were confirmed in all the 19 Iraqi Governorates. By mid-April, the number of confirmed cases had exceeded the hundred marks in Baghdad, Basrah, Sulaymaniyah, Erbil, and Najaf.[5,6]

To enable the formulation of appropriate interventions and therapies against the novel CoVID-19, the need to know the biological pathways that contribute to its virulence and pathogenicity in humans is important. However, the noticeable difference in the disease severity and mortality rates between populations is one of the most compelling issues demanding to be studied by biologists, epidemiologists, and clinicians in all countries.[7] The characterization of the epidemiological features of COVID-19 is very crucial for the successful development and implementation of effective control strategies. Previous studies have given a reasonable description of the epidemiological features of COVID-19 in Basrah.[8] In this article, we have reported the results of a descriptive, exploratory analysis of all cases found in Basrah government in Iraq from 9 March to 19 May, 2020, with the main emphasis on the severity and outcome of cases.

PATIENTS AND METHODS

This is a record-based observational cross-sectional study. The data used were completely abstracted from patients' records from any healthcare institution dealing with COVID-19 events under Basrah governorate. During the study period, patients who tested positive to the SARS-CoV2 antigen by the Polymerase Chain Reaction (PCR) were either admitted to Basrah Teaching Hospital for inpatient care or to one of the two isolation camps, depending on the clinical conditions. The latter are also put under medical observation by medical teams. Sufficient information is recorded for each person found positive by the PCR test. This study used both the inpatients records of the cases admitted to Basrah Teaching Hospital as well as the records for the asymptomatic cases in isolation camps.

A total of 696 patients, representing all COVID-19 cases, were included in the present study reported in Basrah from March 9 to May

19, 2020. No attempt was made to search for unidentified cases at the community level. The information collected from the records included the demographic variables (Age, Sex, Place of residence, and current occupation), the presence of any co-morbid diseases (mainly heart disease, pulmonary disease, diabetes mellitus, and bronchial asthma), and history of travel to countries with epidemic status (any person who was in one of the countries known to be affected by the COVID-19 pandemic and had come back to Basrah). The patients were also classified according to the severity of the COVID-19 disease into five categories, as follows:

1. Asymptomatic: the patient remained without any symptoms during the period that he remained tested PCR positive
2. Mild: The patient showed only symptoms of upper respiratory tract infection (features of sore throat) during the period he remained tested PCR positive.
3. Moderate: The patient showed symptoms of lower respiratory tract infection (Pneumonia like disease) during the period he remained tested PCR positive but did not require any form of assisted ventilation.
4. Severe: The patient showed symptoms of lower respiratory tract infection (pneumonia) during the period he remained tested PCR positive and required some form of assisted ventilation.
5. Critical: the patient admitted to the intensive care unit (ICU) due to any organ failure.

The above classification was used to classify cases of COVID-19 by the treating medical team at Basrah General Hospital.

Ethical approval was obtained from the Central Research Committee in Basrah Directorate General for Health Services (Committee meeting dated 15/4/2020, notification letter No. 184 on 16/4/2020). No direct contact was made with patients, but their information was made totally confidential.

The frequency tables were used to show the descriptive results from the study. The multivariable logistic regression analysis using the demographic variables, the travel history, and the co-morbidity as independent variables was used to predict outcomes . Two dependent variables were used. These are the severity of the disease and the outcome in terms of being dead or alive at the time of the study. Data analyses were conducted with SPSS version 25. The statistical significance level was set at $p \leq 0.05$ (two-sided).

RESULTS

Demographic characteristics

This study covered 696 cases with the median age of 34 years. Table 1 summarizes certain demographic characteristics of the studied cases. COVID-19 affects all age groups in Basrah governorate. It is more frequent among females (57.5%) as compared to males (42.5) and the inhabitants of Basrah city and Hartha district. Housewives and self-employed people are more common among the occupational groups. Travel history was reported in 1.9% only, but co-morbidity was fairly common among cases (13.6%).

Time of admission

It is clear from Table 2 that the frequency of patients' admission to hospitals was increasing

with the passage of time, reflecting the rate at which new cases were being identified.

Severity and demographic characteristics

Table 3 shows the association of disease severity and demographic characteristics of cases. A strong association is seen between severity with advancing age (P=.000), occupation (P=0.000), presence of travel history (P=0.004), and co-morbidity (P=0.001) but not with gender or residence.

Outcome (fate) of cases)

Table 4 shows that at the time of closing this study (May 19, 2020), 2.6% of the cases had died and 65.9% were cured. The remaining 31.5% were still under treatment. Fatal outcome among cases was categorized as severe (24.2%) or critical (45.5%). No death was reported among the other three categories.

Logistic regression analysis

In order to identify significant independent predictors of the severity of cases and outcome in terms of being dead or alive at the time of the study, a logistic regression analysis was done. For severity, cases were categorized as (severe+critical) versus others. For outcome, cases were categorized as dead versus alive. The tested predictors were age, gender, occupation, residence, presence of travel history, and presence of chronic disease (co-morbidity). The results are shown in tables 5 and 6.

Independent significant predictors of severity of the cases were presence of chronic diseases, age (older), and presence of travel history. Independent significant predictors of fatal outcome were also age (older), chronic disease and travel history; gender, residence, and occupation could not predict fatal outcome.

Table 1: The distribution of the studied patients according to age, gender, residence, occupation, travel history, and comorbidity

Characteristics	No.	%
Age		
<10	51	7.3
10-19	104	14.9
20-29	126	18.1
30-39	112	16.1
40-49	117	16.8
50-59	107	15.4
60-69	38	5.5
70-79	35	5.0
80+	6	0.9
Gender		
Male	296	42.5
Female	400	57.5
Residence		
Basrah city	337	48.4
Hartha	132	19.0
Qurna	69	9.9
Mdainah	50	7.2
Zubair	33	4.7
Abulkhasib and Faw	49	7.0
Shatt Al-Arab	26	3.7
Occupation		
Housewife	198	28.4
Self-employed/Private work	150	21.6
Student of any stage	97	13.9
Children<15 (Not working)	82	11.8
Unemployed	73	10.5
Retired	38	5.5
Governmental employee	35	5.0
Health personnel	23	3.3
Travel history****		
Present	13	1.9
Absent	683	98.1
Comorbidity****		
Present	95	13.6
Absent	601	86.4
Total	**696**	**100.0**

*P=0.000, ***P=.NS, ****P=0.001-0.004

Table 2: Distribution of patients according to week of admission to hospital/quarantine

Week of admission (Date)	No.	%
Week 1 (9-15 March	3	0.4
Week 2 (16-22 March)	8	1.1
Week 3 (23-29 March)	72	10.3
Week 4 (30 March-5 April)	57	8.2
Week 5 (6-12 April)	52	7.5
Week 6 (13-19 April)	81	11.6
Week 7 (20-26 April)	46	6.6
Week 8 (27 April-3 May)	179	25.7
Week 9 (4-10 May)	86	12.4
Week 10 (11-17 May)	112	16.1
Total	**696**	**100.0**

Table 3: Relationship between disease severity and demographic characteristics

Characteristics	Severity				
	Asymptomatic No. (%)	**Mild No. (%)**	**Moderate No. (%)**	**Severe No. (%)**	**Critical No. (%)**
Age*					
<10	33 (64.7)	12 (23.5)	5 (9.8)	1 (2.0)	0 (0.0)
10-19	69 (66.3)	28 (26.9)	4 (3.8)	3 (2.9)	0 (0.0)
20-29	74 (58.7	38 (30.2)	8 (6.3)	2 (1.6)	4 (3.2)
30-39	58 (51.8)	37 (33.0)	12 (10.7)	1 (0.9)	4 (3.6)
40-49	50 (42.7)	41 (35.0)	14 (12.0)	9 (7.7)	3 (2.6)
50-59	45 (42.1)	32 (29.9)	18 (16.8)	7 (6.5)	5 (4.7)
60-69	17 (44.7)	11 (28.9)	5 (13.2)	3 (7.9)	2 (5.7)
70-79	8 (22.9)	12 (34.3)	6 (17.1)	5 (14.3)	4 (11.4)
80+	3 (50.0)	0 (0.0)	1 (16.7)	2 (33.3)	0 (0.0)
Gender***					
Male	150 (50.7)	84 (28.4)	32 (10.8	18 (6.1)	12 (4.1)
Female	207 (51.8)	1 127 (31.8)	41 (10.3)	15 (3.8)	10 (2.5)
Residence***					
Basrah city	159 (47.6)	107(32.0)	39 (11.7)	20 (6.0)	9 (2.7)
Hartha	80 (60.6)	37 (28.0)	10 (7.6)	3 (2.3)	2 (1.5)
Qurna	33 (47.8)	20 (29.0)	10 (14.9)	2 (2.9)	4 (5.8)
Mdainah	26 (52.0)	15 (30.0)	4 (8.0)	3 (6.0)	2 (4.0)
Zubair	16 (50.0)	10 (31.3)	2 (6.3)	2 (6.3)	2 (6.3)
Abulkhasib and Faw	29 (59.2)	14 (28.6)	5 (10.2)	0 (0.0)	1 (2.0)
Shatt Al-Arab	12 (46.2)	7 (26.9)	2 (7.7)	3 (11.5)	2 (7.7)
Occupation*					
Housewife	98 (49.5	61 (30.8)	25 (12.6)	7 (3.5)	7 (3.5)
Self-employed/Private work	81 (54.0)	43 (28.7)	17 (11.3	4 (2.7)	5 (3.3)
Student of any stage	61 (62.9)	29 (29.9)	4 (4.1)	3 (3.1)	0 (0.0)
Children<15 (Not working)	44 (51.7)	24 (29.3)	7 (8.5)	5 (6.1)	2 (2.4)
Unemployed	34 (46.6)	28 (38.4)	8 (11.0)	3 (4.1)	0 (0.0)
Retired	11 (28.9)	8 (21.1)	7 (18.4)	6 (15.8)	6 (15.8)
Governmental employee including health workers	28 (48.3)	18 (31.0)	5 (8.6)	5 (8.6)	2 (3.4)
Travel history****					
Present	2 (15.4)	4 (30.8)	4 (30.8)	1 (7.7)	2 (15.4)
Absent	355 (52.0)	207 (30.3)	69 (10.1))	32 (4.7)	20 (2.9)
Comorbidity****					
Present	22 (23.2)	33 (34.7)	12 (12.6)	15 (15.8)	13 (13.7)
Absent	335 (55.7)	178 (29.6)	61 (10.1)	18 (3.0)	9 (1.5)
Total	**357 (51.3)**	**211 (30.3)**	**73 (10.5)**	**33 (4.7)**	**22 (3.2)**

*P=0.000, ***P=.NS, ****P=0.001-0.004

Table 3: Relationship of outcome (Fate) to severity of cases.

Severity	Under treatment No.; %	Cured No.; %	Dead No.; %	Total No.; %
Asymptomatic	136; 38.1	221; 61.9	0; 0.0	357; 100.0
Mild	61; 28.9	150; 71.1	0; 0.0	211; 100.0
Moderate	11; 15.1	62; 84.9	0; 0.0	73; 100.0
Severe	4; 12.1	21; 63.6	8; 24.2	33; 100.0
Critical	7; 31.8	5; 22.7	10; 45.5	22; 100.0
Total	**219; 31.5**	**459; 65.9**	**18; 2.6**	**696; 100.0**

Table 4: Predictors of severity of cases.

Variable	B	P value	OR	Confidence interval of OR	
				Lower	Upper
Significant predictors					
Presence of chronic disease	1.328	0.0001	3.774	1.983	7.183
Age	-0.043	0.0001	0.958	0.942	0.975
Presence of travel history	0.990	0.032	2.691	1.088	6.685
Insignificant predictors					
Gender					
Residence					
Occupation					

Table 5: Predictors of fatal outcome of cases.

Variable	B	P value	OR	Confidence interval of OR	
				Lower	Upper
Significant predictors					
Age	-0.060	0.0001	0.942	0.913	0.972
Chronic disease	2.056	0.001	7.811	2.394	25.483
Travel history	2.493	0.001	12.103	2.808	52.164
Insignificant predictors					
Gender					
Occupation					
Residence					

DISCUSSION

The results of the present study covered almost all cases of COVID-19 officially reported in Basrah between 9 March and 19 May, 2020, and include the clinical records. Most the cases studied had a documented outcome (Death or recovery); of the 696 cases, only 31.5% were still under treatment. The demographic characteristics display certain features. Patients were relatively of young age as compared to a study that covered the details of the first 152 cases in Basrah[8] and to the results reported in other countries.[9-11]

The first tens of cases were likely to be selective, and among them, some were travelers to Iran and relatively of older age. In the later phases of the epidemic, transmission became widespread and thus involved younger people. An excess of females among COVID-19 cases in Basrah was clear. No explanation can be suggested for this discrimination between gender groups and the results are in contrast to the figures reported for Iraq as a whole. According to reports published by the Iraqi Ministry of Health, male cases were much greater in numbers than female cases.[12, 13] Also, the gender distribution in the present study is different from a study reported in New York City, USA.[11] The predominance of younger patients among cases in Basrah reflects, in addition, the fact that Iraqi population is younger than the populations in western countries.[14, 15]

A great majority of cases was asymptomatic or had a mild–moderate clinical disease, but 7.9% were in the critical–severe spectrum and these were the candidates for fatal outcome. Severe clinical cases were independently and significantly predicted by advancing age, presence of co-morbidity (chronic diseases), and travel history, but, in general, the proportion of severe and critical cases were less in Basrah as compared to, for example, the results from studies conducted in New York city[11] and Italy.[16] The low proportion of severe and critical cases in Basrah allowed for the healthcare resources to be made compatible with patients' needs and prevented the threat of the healthcare system collapse.

Fatal outcome was documented in only 2.6% and was predicted by older age, comorbidity, and travel history. In general, severity and fatal outcomes' association with older age and co-morbidity are consistent with the results of studies conducted in Iraq[17] and other countries.[16,18,19]

CONCLUSIONS

COVID-19 cases in Basrah seemed to include young people, predominantly females, and the fatal outcomes are predicted by severity, older age, and presence of co-morbidity.

Limitations

The study could have been done on a larger number of patients to make the statistical analysis more efficient. This study missed a lot of mild or asymptomatic cases that did not consult any doctors or hospitals during the study reference period.

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