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№ 10411

Age and Gender Profile of Coronavirus Disease 2019 (COVID 19) in Quarantine Center in Baghdad, Iraq

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June 16, 2023

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Abstract. The emanation of the "Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2)" has resulted in the "coronavirus disease (COVID-19)" cosmopolitan widespread of the virus. First, the Iraqi government forced compulsory quarantine of returning travelers and positive cases to curb and manage the viral outbreak. A COVID-19 positive cases descriptive evaluation in a quarantine facility in Baghdad-Iraq was performed. The age and gender prevalence of positive cases distributed according to gender, age group, and mean age, recovered and deceased were recorded and analyzed statistically. Up to 434 positive cases, 196 males and 238 females with age range (≤ 20 – ≥ 70 years) were included. The highest infection was among the age group (60 – 69 years) in both genders recorded at 25.5% among males and 23.5% among females (P = 0.055). The total number of recovered patients was 347, the highest percentage recorded at 24.8% among the age group (40 – 49 years) meanwhile; 57 patients were deceased recorded at 28.1% among the age group (60 – 69 years) (P = 0.051). The highest COVID 19 recovered cases distributed according to gender were 53.0% among females. Meanwhile; the highest deceased patients were males recorded 54.4% (P = 0.299). The evaluation revealed an immense need to power the quarantine medical institution for managing the flood of confirmed COVID-19 patients among the elderly who suffered from chronic lung diseases complications including pneumonia and acute respiratory failure.

Keywords. COVID-19; Age; Gender; Recovered; Deceased.

INTRODUCTION

Coronaviruses belong to the *Coronaviridae* family which alone brought to the world several "Severe Acute Respiratory Syndrome (SARS)" outbreaks just in the last two decades; Asia suffered from SARS during the 2002-2004 outbreak caused by (SARS-CoV) [1], Saudi Arabia in 2012 experienced Middle East Respiratory Syndrome (MERS) caused by (MERS-CoV) [2], China in 2019 afflicted the globe with coronavirus disease 2019 (COVID-19) pandemic caused by (SARS-CoV-2) [3]. The latter is perhaps the most aggressive SARS and had spread to more than 220 nations afflicting peoples in millions globally; "180,142,412 COVID-19 cases with 3,902,294 deceased patients" by October 10, 2021, were registered worldwide, in Iraq 2,023,761 total confirmed cases from 15,409,353 tested subjects with 22,563 deceased patients have been reported [4]. On February 11, 2020, the World Health Organization (WHO) declared a pandemic public health threat officially named COVID-19 caused by SARS-CoV-2 [5]. COVID-19 is either mild or may develop to the severity with pulmonary signs leading to acute respiratory distress syndrome and atypical pneumonia with accelerated morbidity and mortality [6].

It is crucial to understand the risk factors that may involve newly emerged diseases like COVID-19 which, may contribute to its evolution, reform therapy protocol, and tailored vaccine strategies. Epidemiological studies have reviewed that generally, populations are at risk of the disease infection progression with some factors that have been suggested to increase susceptibility to the COVID-19, and age is among those risk factors [7], [8]. Different age groups are not confronted with developing the disease, people with senility are candidates for severe COVID-19 infection [9]. Less severe COVID-19 infection among children was observed; nevertheless, severe respiratory failure among infants has been suggested [10], [11]. The clinical features of COVID-19 in 406 children in China were analyzed and revealed that (44.8%) were asymptomatic or mild cases and that severe cases developed only in seven children [12]. Another study by [13] included twenty-five COVID-19 infected children, revealed that (10 patients; 40%) were aged < 3 years, (6 patients, 24%) were aged > 3 years, and (9 patients; 35%) were aged ≥ 6-years [13].

Gender has been proposed as a COVID-19 risk factor, a more severe disease in men is more favorable than in women. The meta-analysis study conducted by [14] confirmed that men's chances of the increased gender distribution of COVID-19 patients percentage accounting for 60% [14]. A large-scale study carried out on 552

hospitals among 1099 confirmed cases from Thirty China provinces revealed that 58% were men and 41.0% were women with 47 years as the median age [15].

The present study aimed to report the age and gender profile of quarantined COVID-19 patients in Al-Furat General Hospital with a focus on recovered and deceased patients in the intended period of the study carried out on June – August 2021.

MATERIALS AND METHODS

This is a descriptive study that included 434 consecutive COVID-19-infected patients that had been primarily hospitalized in the quarantine wards of Al-Furat General Hospital, Baghdad which is a fully integrated health care facility for mandatory patient quarantine and was elected to run as a quarantine center in Baghdad by Iraqi health authorities. Admitted patients of COVID-19 confirmed cases between June 12 and August 26, 2021, were investigated retrospectively. Demographic and clinical outcome data were obtained. RealLine SARS-CoV-2 kit (Bioron diagnostics GmbH) was run for the swabs from the nasopharyngeal region and for robust confirmation; a chest tomography (CT) scan was performed. After 4–7 days after the patient's admission, the study criteria were collected. The evaluation included patients which were grouped into the following: (discharge with recovery, hospitalized patients under treatment, return home with a patient who signed a pledge of house quarantine, send home under treatment, or deceased). The Ethics Committee of the Ministry of Health and Environment approved the study.

Statistical analysis

Descriptive analyses of quantitative data comprised the mean or median parameters and comparisons between categorical groups were performed using the "Pearson chi-squared test" for percentages. Qualitative data were analyzed depending on population sizes and percentages. Age runs as the test variable, meanwhile, the state variable was the COVID-19 cases in this study. The statistical package IBM SPSS Statistics 25.0 (Armok, NY: IBM) was used to perform the data analysis, $P < 0.05$ was considered statistically significant.

RESULTS AND DISCUSSION

Age and gender distribution of COVID-19

Among 434 of COVID-19 infected patients, (145; 45.2%) were males and (238; 54.8%) were females (Fig. 1), and the highest age group of COVID-19 cases were (60 – 69 years) recorded 24.4% (Fig. 2). Mean age of males were 52.2% *vs* 53.7% were females; $p = 0.285$ as in (Fig. 3). The males percentage among age group (60 – 69 years) were closely to percentage of the females recorded (25.5% *vs* 23.5 %; $p = 0.055$) as in (Table 1).

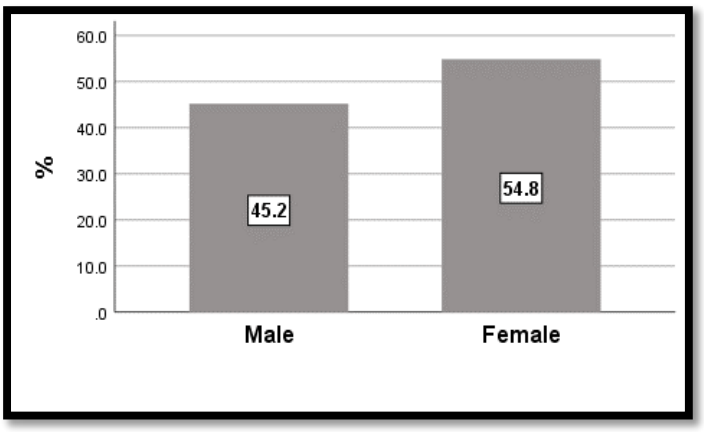

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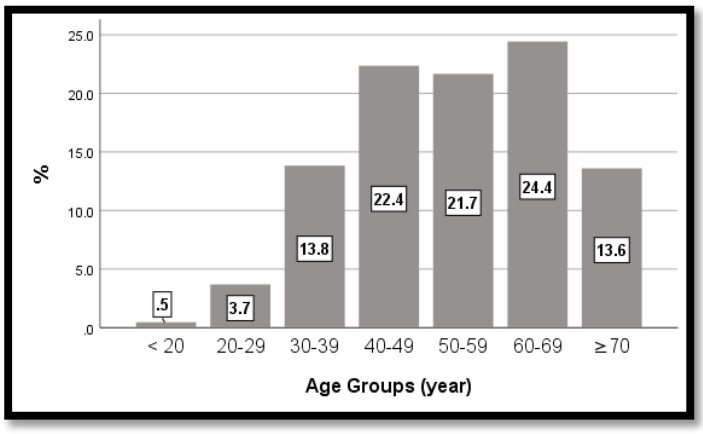
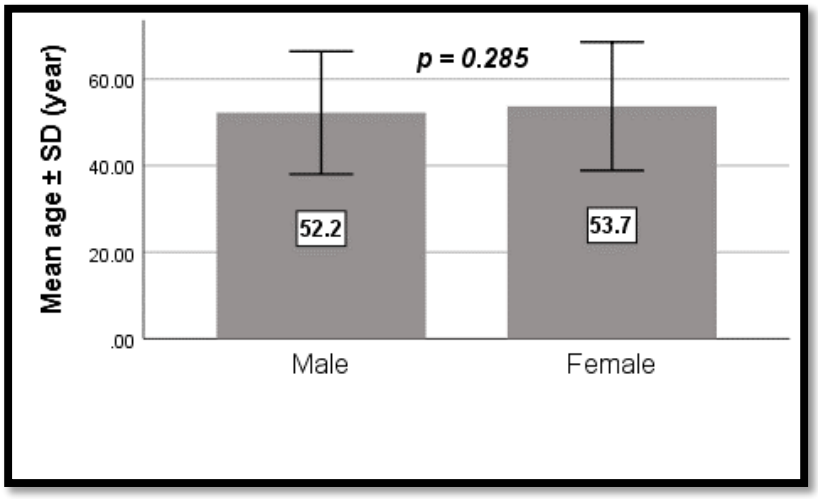
FIGURE 1: Gender distribution of COVID-19 cases



. **FIGURE 2**: Age groups distribution among COVID-19 cases.



. **FIGURE 3:** Male and female mean age distributed among COVID-19 cases.

TABLE 1: Age groups of male and female COVID-19 cases.

Age group (year)	Male (N = 196)		Female (N = 238)	
	N	%	N	%
< 20	1	0.5	1	0.4
20-29	3	1.5	13	5.5
30-39	36	18.4	24	10.1
40-49	44	22.4	53	22.3
50-59	41	20.9	53	22.3
60-69	50	25.5	56	23.5
≥ 70	21	10.7	38	16.0
Pearson Chi-square = 12.306; DF = 6; p = 0.055				

Recovered and deceased COVID-19 cases

The mandatory hospitalized COVID-19 patients were grouped into (recovered, deceased, and under therapy), and there was an 80.0% recovery among the COVID-19 patients (Fig. 4).

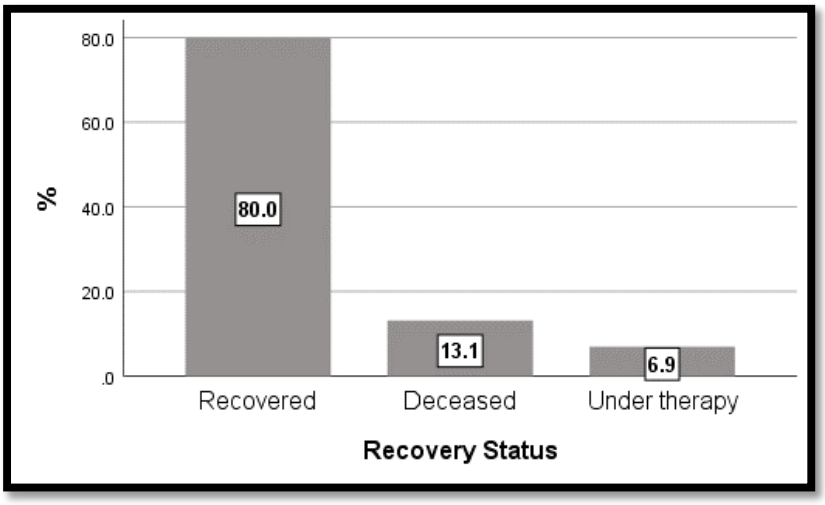


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FIGURE 4: Recovered, deceased and under therapy cases of COVID-19.

The total recovered patients from COVID-19 infection were 347 (47.0% were males *vs* 53.0% were females; $p = 0.299$) and 57 patients were deceased (54.4% were males *vs* 45.6% were females) as in (Table 2). The mean age of recovered patients *vs* deceased was (51.9 *vs* 58.2 years; $p = 0.002$) as in (Figure 5). The deceased patients were among the age group (60 – 69 years and ≥ 70 years) recorded (28.1% and 24.6% respectively; $p = 0.051$) as in (Table 3) (Fig. 6).

TABLE 2: Recovered and deceased COVID-19 cases distributed according to gender.

Gender	Recovered (N = 347)		Deceased (N = 57)	
	N	%	N	%
Male	163	47.0	31	54.4
Female	184	53.0	26	45.6
Pearson Chi-square = 1.078; DF = 1; $p = 0.299$				

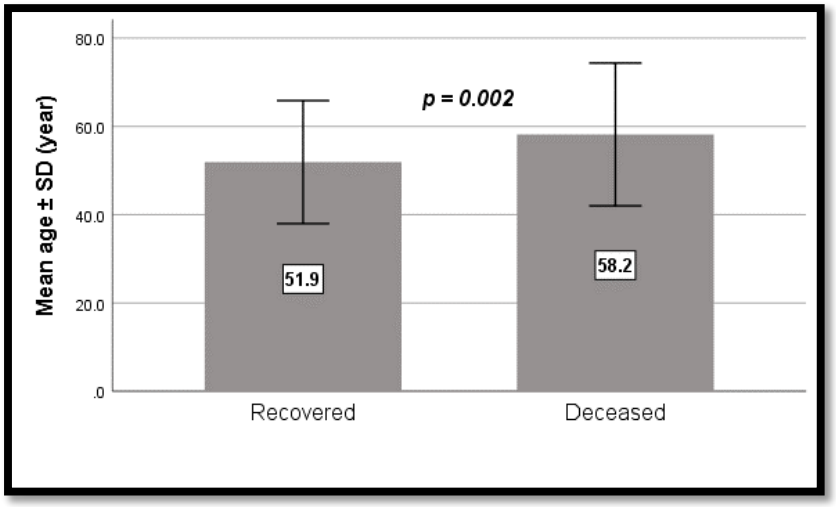

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FIGURE 5: Recovered and deceased mean age distribution of COVID-19 cases.

TABLE 3: Age groups of recovered and deceased COVID-19 cases.

Age group (year)	Recovered (N = 347)		Deceased (N = 57)	
	N	%	N	%
< 20	2	0.6	0	0.0
20-29	12	3.5	1	1.8
30-39	50	14.4	8	14.0
40-49	86	24.8	9	15.8
50-59	76	21.9	9	15.8
60-69	84	24.2	16	28.1
≥ 70	37	10.7	14	24.6
Pearson Chi-square = 11.031; DF = 5; *p* = 0.051				

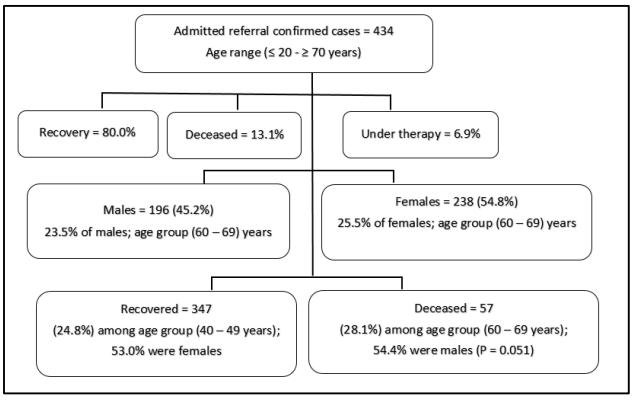

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FIGURE 6: Flowchart showing the evaluation of the cases included in the study.

RESULTS AND DISCUSSION

Gender and age play a role in the infectivity of COVID-19 and may affect the patient's status towards recovery or death in a single quarantine center in Baghdad, Iraq. The patients' mean age reached fifty years and above for both genders (males were 52.2 ± 13.8 years *vs* 53.7% were females ± 12.2 years; $p = 0.285$) (Fig. 3). Approximately patients' males were representing 25.5% of the age group ≥ 60 years. People aged above and equal to 60 years experienced COVID-19 infection more than other age groups (teenagers and younger adults) as have been reported by previous studies, and 80% of COVID-19 confirmed cases were registered among older individuals aged more than 65 years [16-18].

The study results are in agreement with [19] who conducted a retrospective, single-center study that included 99 patients infected by the virus at 55 years means of age, the male outnumbered the female (68% *vs* 32%) respectively [20]. In China [21] in reported (51%) of men were infected by COVID-19. Our results disagree with a study by [22] in which most patients were aged 30 – 79 years. A review conducted by [23] reported that COVID-9 patient's poor prognosis have affected by gender, elderly aged more than 60 years especially when they complain of chronic disease which can be complicated by atypical pneumonia that resulted from acute respiratory distress syndrome (ARDS).

This study's results showed that 80.0% of patients were recovered and that 13.1% were decreased (Figure 4), in which from 347 patients 57 subjects were deceased among them 54.4% were males *vs* 45.6% were females (Table 2). The mean age of the deceased was 58.2 % ±13 years, p = 0.002 (Fig. 5), the deceased patients were aged ≥ 60 years recorded at 28.1% (Table 3), the deceased patients were increased in males which agrees with Jin *et al.* (2020) findings [24]. [14] carried out a meta-analysis study stated that the patients with COVID-19 discharge rates were 52% and 5% with a fatality rate; the deceased patients recorded 31.5% were advanced age (>60 years) amenable and had one or more of the underlying diseases such as cancer, diabetes, hypertension, and major infections.

[25] retrospective study reported that the fatality rate in women was 30%, meanwhile, 70% were men which confirmed that COVID-19 patients fatality rate was affected by age increment. Our results also agree with the retrospective study conducted by [23] included 799 patients, 113 were deceased, and 161 were recovered. The deceased median age was significantly higher aged 68 years than recovered patients were aged 51 years. Deceased patients predominantly were men (83; 73%) [23]. Our results are inconsistence with a study by [26] prospectively included 179 patients COVID-19 pneumonia patients (54, 2% male *vs* 45, 8% female; with 57.6 years mean age). The recovered patients recorded 88.8% (n=158), the men were 55% and women were 45%; meanwhile, mortality in men patients was 48% and in women patients 52%. The deceased was much older than those who recovered (70.2±7.7 years *vs* 56.0±13.5 years, p<0.001). The study concluded that there are many risk factors, among them were the age ≥65 years, preexisting concurrent chronic disease for mortality in COVID-19 pneumonia patients [26].

The study results disagree with a study by [27] in China which revealed that the age group (50 – 59 years) consider the peak of morbidity; meanwhile, peak morbidity in Korea is (20 – 29 years) was more afflicted by COVID-19 mortality , also disagree with a study by [28], in a systematic review stated that the estimated severe cases proportion and case-fatality rate was 26% and 4% respectively [28]. According to the Istituto Superiore di Sanità report (2020) the patients male median age deceased by COVID-19 were 85 years and female has had an older median age than men were 79 years with no gender differences regarding common pre-existing chronic diseases in deceased patients [29]. A robust assessment for measuring symptoms of COVID-19 with another parameter other than age and gender in the general population is important to consider like depression to pay more attention to the side effects of mandatory quarantine [30].

CONCLUSION

The study results concluded that age may be related to an increased risk of developing COVID- 19, especially in males leading to a higher mortality rate among much older people which needs the handling of individualized strategies in quarantine centers.

Limitation of the study

The current study has limitations it is worthy to be mentioned as the follows: other risk factors for instance: blood groups, obesity, vitamin D status, and chronic diseases such as diabetes, hypertension, and autoimmune diseases were not included in this study because this center was dedicated for quarantined patients to offer medical care for COVID-19 referral confirmed cases from other general and teaching hospitals. Any other diagnostic

laboratory tests like blood grouping, liver enzymes, lipid profile tests and other medical parameters that were performed by special laboratory delivered by the patients were kept in the medical charts in primary hospitals before referral to this quarantine center.

ACKNOWLEDGMENT

The authors appreciated the personal at Al-Furat General Hospital for their kind cooperation. Many thanks are extended to Professor Dr. Ali H. Ad'hiah for the data managed and statistical analyses carried out.

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