

Epidemiological and Clinical Features of COVID-19 Confirmed Cases in Babel Governorate, Iraq

Hasan Alwan Baiee¹, Kahtan Hadi Hussein², Issam Salim Ismail³, Mustafa Khudhair Abbas², Ali Talib Abd Hammadi²

¹Nursing Department, Hilla University College, Iraq, ²Babylon Health Directorate, Iraq, ³Wasit Health Directorate, Iraq

Abstract

Background: SARS-CoV-2, a newly emergent virus which is related to SARS-CoV, caused the pandemic of COVID-19 in China to the world. **Objective:** The aim of this study was to describe the basic epidemiological and clinical features of confirmed COVID-19 cases in Babel Governorate and to find out the comorbidities and risk factors of severity of COVID-19 infection. **Materials and Methods:** This is an observational, descriptive, cross-sectional study, conducted on a convenient sample of 222 participants selected from five referral district hospitals in Babel Governorate, over the period from May 12, 2020 to August 22, 2020. A structured questionnaire was used to collect data and to interview patients. Data were analyzed by using SPSS version 23. **Results:** The mean age \pm SD was (49.92 ± 14.062 years) ranged between 10 and 89 years (median 50 years) with male predominance. The majority of the participants had comorbid conditions, including hypertension, diabetes mellitus, heart disease, and asthma. Fever constituted (85%) of symptoms followed mainly by persistent cough, loss of appetite, breathing difficulty, and diarrhea [(81%), (56.9%), (55%), and (42.3%)], respectively. In addition, 33.34% of the patients have $SpO_2 \leq 92\%$, and two of the three patients have mild-to-moderate symptoms, and one-third considered either severe or critically ill cases of COVID-19. **Conclusion:** Elderly people with comorbidities are the most vulnerable to the infection of COVID-19. Smoking, obesity, traveling history, and working in healthcare facilities that contain cases of COVID-19 are risk factors leading to the occurrence of and exposure to COVID-19. People who have low level of education and are living in rural areas with big families tend to get infected mainly, and this may be due to their poor knowledge about the route of transmission and the importance of prevention measures.

Keywords: Babel, clinical features, COVID-19, epidemiological features, Iraq

INTRODUCTION

In December 2019, a cluster of cases of pneumonia of unknown cause in Wuhan, Hubei Province have been reported by China to the World Health Organization (WHO).^[1] In February 2020, WHO announced an official name for this disease, as Coronavirus Disease 2019 or COVID-19, and the virus causing it as SARS-CoV-2; evidences suggested that this newly emergent virus shares high sequence similarity with the spike protein of SARS-CoV.^[2,3] The severity of infection in COVID-19 patients ranges from mild respiratory tract infection to severe or critical symptoms, and patients may need admission to intensive respiratory care unit and require mechanical ventilation.^[4-7]

According to the recently published study in China on a sample of 44,672 laboratory-confirmed patients, the

SARS-CoV-2 virus infects people of all ages (ranging from newborns to patients aged above 80 years) and both males and females get infected at very close prevalence rates (51.4% males and 48.6% females).^[8] Two studies reported adverse complications (including death) on newborns of COVID-19 infected mothers in China.^[9,10] Current evidence suggests that older individuals and those pre-existing conditions (including smoking and obesity) are more likely to develop severe forms of COVID-19, and the mortality rate was higher among elderly individuals who

Address for correspondence: Mr. Mustafa Khudhair Abbas,
Babylon Health Directorate, Iraq.
E-mail: khmustafa894@gmail.com

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have underlying health conditions, such as cardiovascular diseases and diabetes mellitus, than among individuals with no underlying health conditions.^[3,11] Several studies have revealed that COVID-19 can be transmitted between humans via nasal droplets and direct contact in both symptomatic and asymptomatic patients.^[12,13]

On February 22, 2020, Iraq confirmed its first case of COVID-19, an Iranian theology student in the holy city of Najaf, and by the 27th of March, other cases were confirmed in all over the 19 Iraqi Governorates.^[14,15] The Iraqi Government has taken a set of general public measures including flexible arrangements for work and educational facilities such as teleworking and online learning classes; these measures are used along with health education on individual protective measures against COVID-19 such as frequent hand washing, wearing face masks and gloves, and cough etiquette.^[16]

The aim of this study was to describe the basic epidemiological and clinical features of confirmed COVID-19 cases in Babel Governorate and also to find out the comorbidities and risk factors of severity of COVID-19 infection.

MATERIALS AND METHODS

Design, setting, and sample

This is an observational, descriptive, cross-sectional study, conducted on a convenient sample of 222 participants selected from five referral district hospitals in Babel Governorate, namely, Al-Imam Al-Sadiq Teaching Hospital, Al-Hilla Teaching Hospital, Marjan Teaching Hospital, Al Hashimiya General Hospital, Al-Qasim General Hospital, over the period from May 12, 2020 to August 22, 2020. All patients who were confirmed cases of COVID-19 based on the interim guidance of WHO were successfully enrolled in this study.

Data collection

Data were collected by the authors from patient's clinical, radiographic, and laboratory records and also by interviewing and observing of participants who were confirmed cases of COVID-19 based on the clinical management of COVID-19 WHO interim guidance and admitted to the above-mentioned hospitals. Verbal consents were obtained from participants after explaining to them the objectives of the study.

Classification of cases according to severity of disease^[17]

1. *Mild disease*: Symptomatic patients present with the non-specific symptoms as follows: fever, cough, fatigue, anorexia, sore throat, nasal congestion, headache, diarrhea, nausea, and vomiting, with NO signs of pneumonia or hypoxia.
2. *Moderate disease*: Clinical characteristics of non-severe pneumonia are as follows: fever, cough, dyspnea, SpO₂

equal or more than 92% on room air, and respiratory rate (RR) ranged between 21 and 30 breaths/min.

3. *Severe disease*: Clinical characteristics of severe acute respiratory infection or severe pneumonia are as follows: fever, cough, dyspnea, SpO₂ less than 92% on room air, and RR less than 30 breaths/min.
4. *Critical disease*: Patients manifest with acute respiratory distress syndrome, sepsis, and/or septic shock and in need of ICU admission.

Instruments

A structured questionnaire was used to collect demographical data and interview patients; this questionnaire, in general, included items measuring the demographic characteristics, clinical manifestations, and patients' underlying health conditions. In addition, the smoking history of patients (type of smoking, frequency, and duration) and traveling before infection was included.

Data analysis

Analysis of data was performed through descriptive statistics (frequency, percentage, mean, and standard deviation) and inferential statistics (χ^2 and independent *T*-test). Data were entered and analyzed using SPSS Version 23.

RESULTS

Demographic data

A sample of 222 patients with COVID-19 enrolled in this study, their mean age \pm SD was (49.92 \pm 14.062 years) ranged between 10 and 89 years. The most outnumbered age group was 41–50, whereas the lowest affected age group is < 10 years of age [Figure 1].

The female to male ratio was 1:1.2; most of the participants are rural dwellers (56.3%). The vast majority of the study group mentioned that they are living with families of

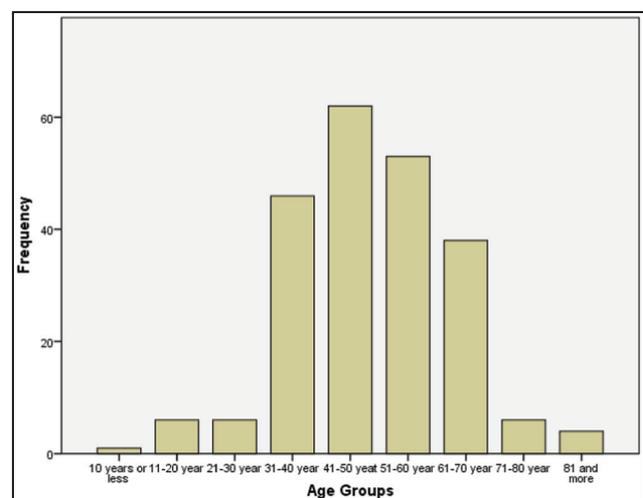


Figure 1: Frequency distribution of age groups (N=222)

six and more numbers (91.4%), about one-third of the study sample are healthcare providers (33%), and nurses constitute the highest among healthcare givers (14%) followed by physicians (9.5%). Most of the respondents (59.5%) are middle-income patients and one-third of them are low-income (based on patients' perception).

More than half of the patients have intermediate school level and below, concerning the contagion of family members, and more than one-half of the patients (55%) reported that they have infected persons in their families [Table 1]. More than one-third of collected cases (82 patients) occurred in June, followed by 64, 42, and 34 cases occurred in July, May and August, respectively.

Clinical features

According to the results shown in Table 2, two of the three patients have mild-to-moderate symptoms, and one-third considered severe or critically ill cases of COVID-19, most of severe cases are 51–70 years and half of the critically ill patients are 61–70 years.

Regarding the symptomatology of the disease, fever constituted (85%) of symptoms including mainly persistent cough, loss of appetite, breathing difficulty, and diarrhea [(81%), (56.9%), (55%), and (42.3%)], respectively. In addition, 33.3% of the patients have $SpO_2 \leq 92\%$ [Figure 2]. Fifty-nine percent of the patients with persistent cough have a dry cough whereas 41% of them have wet cough [Figure 3].

Diagnosis and treatment

The vast majority of cases were diagnosed in hospitals and confirmed by nasal-oral swabs PCR, along with CT scan (74.8%) and IgG or IgM blood test (70.3%). About 71.6% of the patients received treatment in the hospitals, and the median duration of hospitalization was 10 days, mostly 7–14 and >14 days which constitute 41.5% and 42.8%, respectively [Table 3]. The mean duration between the beginning of signs and symptoms of COVID-19 and the date of seeking health care was 3.2 days. One-quarter of the patients were treated with convalescent plasma therapy and 75.2% said that they wish to donate their plasma after complete cure. The duration of post-cure quarantine for 7–14 days was done by 84.7% of them [Table 3].

Comorbidities and risk factors of severity

Four out of five patients with COVID-19 had comorbid conditions; the majority of them have hypertension (44.6%) followed by diabetes mellitus, heart diseases, and asthma [(36.9%), (36%), (26.1%)], respectively. Risk factors that increase the severity of disease such as tobacco smoking and obesity are prevalent in 40% and 26% of the patients, respectively [Figure 4]. The average \pm SD duration of staying in hospital was 13.5 ± 6.34 days, ranged from 3 to 32 days. Patients with comorbidities such as heart diseases and diabetes mellitus stayed for long times than those without comorbidities ($P < 0.05$), whereas there were no

Table 1: Distribution of sample according to demographic and socio-economic characteristics (N=222)

| Items | Frequency % | |
|--|-------------|------|
| Age groups | | |
| 10 years or less | 1 | 0.5 |
| 11–20 year | 6 | 2.7 |
| 21–30 year | 6 | 2.7 |
| 31–40 year | 46 | 20.7 |
| 41–50 year | 62 | 27.9 |
| 51–60 year | 53 | 23.9 |
| 61–70 year | 38 | 17.1 |
| 71–80 year | 6 | 2.7 |
| 81 and more | 4 | 1.8 |
| Gender | | |
| Male | 120 | 54.1 |
| Female | 102 | 45.9 |
| Marital status | | |
| Married | 181 | 81.5 |
| Single | 17 | 7.7 |
| Divorced | 2 | 0.9 |
| Widowed | 22 | 9.9 |
| Residency | | |
| Rural | 125 | 56.3 |
| Urban | 97 | 43.7 |
| How many members in your family? | | |
| 5 or less | 19 | 8.6 |
| 6–10 members | 147 | 66.2 |
| 11 or more | 56 | 25.2 |
| Occupation | | |
| Housewife | 45 | 20.3 |
| Laborer | 34 | 15.3 |
| Nurse | 31 | 14.0 |
| Physician | 21 | 9.5 |
| Pharmacist | 8 | 3.6 |
| Laboratory technician | 7 | 3.2 |
| Dentist | 6 | 2.7 |
| Earnar | 15 | 6.7 |
| Driver | 15 | 6.7 |
| Student | 8 | 3.6 |
| Retired | 7 | 3.2 |
| Teacher | 6 | 2.7 |
| Government employee | 19 | 8.5 |
| Monthly income | | |
| Enough | 132 | 59.5 |
| Not enough | 70 | 31.5 |
| More than enough | 20 | 9.0 |
| Educational level | | |
| Illiterate | 52 | 23.4 |
| Primary | 43 | 19.4 |
| Intermediate | 30 | 13.5 |
| High school | 21 | 9.5 |
| College | 51 | 23.0 |
| Postgraduate | 25 | 11.3 |
| Has anyone in your family been infected with COVID-19? | | |
| Yes | 122 | 55 |
| No | 100 | 45 |

Table 2: Age groups and severity

| Age groups (years) | Severity | | | | Total |
|--------------------|----------|----------|--------|----------------|-------|
| | Mild | Moderate | Severe | Critically ill | |
| ≤ 10 | 1 | 0 | 0 | 0 | 1 |
| 11–20 | 3 | 2 | 1 | 0 | 6 |
| 21–30 | 3 | 1 | 1 | 1 | 6 |
| 31–40 | 31 | 5 | 7 | 3 | 46 |
| 41–50 | 49 | 8 | 1 | 4 | 62 |
| 51–60 | 30 | 6 | 13 | 4 | 53 |
| 61–70 | 5 | 3 | 14 | 16 | 38 |
| 71–80 | 0 | 0 | 4 | 2 | 6 |
| ≥ 81 | 0 | 1 | 1 | 2 | 4 |
| Total | 122 | 26 | 42 | 32 | 222 |

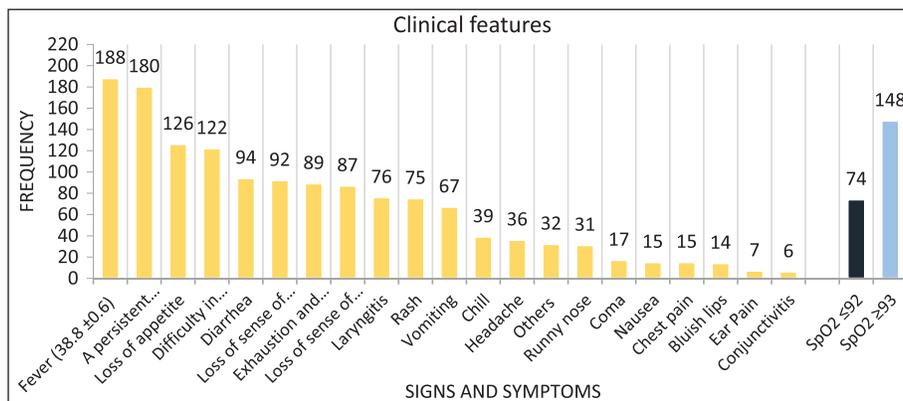


Figure 2: Clinical features of COVID-19 in patients (N=222)

significant differences in staying at hospital in patients with/without hypertension ($P > 0.05$). In addition, older patients and those with SpO2 $\leq 92\%$ stayed more than patients < 60 years and those with SpO2 $\geq 93\%$ ($P < 0.05$). There were no significant differences in staying between males and females ($P > 0.05$).

However, patients with many health conditions and severe respiratory symptoms stayed more days in hospitals [Figure 5 and Table 4]. Patients with SpO2 $\leq 92\%$ with the presence of hypertension or diabetes mellitus have longer stay in the hospital [Table 5].

Knowledge and practices regarding COVID-19

Regarding the preventive measures used by participants, about 60% of the participants were not using masks and or washing their hands regularly. More than half of these patients used the public transport during the outbreak before they got infected. More than half of them do not know how the SARS CoV-2 virus transmits. The sources of information about COVID-19 were healthcare providers, social media, and television/radio in 52%, 31%, and 16% of patients, respectively [Table 6].

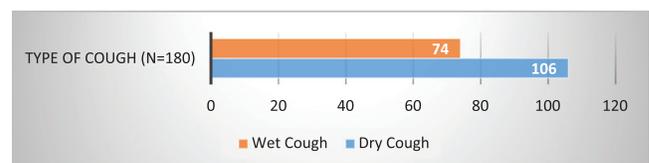


Figure 3: Type of cough (N=180)

DISCUSSION

In this study, we performed a descriptive, cross-sectional study conducted on a purposeful convenience sample of 222 participants selected from five referral district hospitals in Babel Governorate. All patients who enrolled in this study were confirmed cases of COVID-19 based on the interim guidance of WHO; this study focusses on the epidemiological and clinical characteristics of confirmed cases of COVID-19 over the period from May 12, 2020 to August 22, 2020. The data were collected by the authors from patients' records (demographical data) also through interviewing and observation of participants.

In this epidemiological study on 222 COVID-19 hospitalized patients, the mean age of the patients was 49.92 ± 14.062 years and median 50 years, and the female to male ratio was 1:1.2. These results tend to agree with

Table 3: Diagnostic features, treatment of COVID-19, severity of disease, and hospitalization (N=222)

| Variables | Frequency | % |
|---|-----------|-------|
| Settings of diagnosis | | |
| The hospital | 182 | 82.0 |
| Outpatient clinic | 26 | 11.7 |
| Healthcare center | 14 | 6.3 |
| Total | | |
| Diagnostic procedure | | |
| Oral or nasal-swab PCR | 222 | 100.0 |
| IgG or IgM blood test | 156 | 70.3 |
| CT scan | 166 | 74.8 |
| Total | | |
| Place of receiving treatment | | |
| Hospital | 159 | 71.6 |
| At home | 58 | 26.1 |
| Outpatient clinic | 5 | 2.3 |
| Total | | |
| Duration of hospitalization (n=159) | | |
| Less than 7 days | 25 | 15.7 |
| 7–14 days | 66 | 41.5 |
| More than 14 days | 68 | 42.8 |
| Total | | |
| Treatment with convalescent plasma therapy | | |
| Yes | 57 | 25.7 |
| No | 165 | 74.3 |
| Total | | |
| Do you wish to donate plasma after recovery? | | |
| Yes | 167 | 75.2 |
| No | 55 | 24.8 |
| Total | | |
| How many days have you quarantined yourself?* | | |
| Less than 7 days | 22 | 9.9 |
| 7–14 days | 188 | 84.7 |
| More than 14 days | 10 | 4.4 |
| Total | 220 | 100% |

*There were two missing data for this variable

other studies conducted in Jordan, Saudi Arabia, and Oman.^[18-20] Results show that most of the participants are rural residents with intermediate school level and below and living within a big family (six or more family members) of middle income; this may affect their knowledge and practices toward the importance of prevention measures such as social distancing, wearing masks and gloves, and hand washing and transmission of the disease. In our study, about one-third of the study sample are healthcare providers (33%), nurses constitute the highest percentage (14%) followed by physicians (9.5%); this is related to the exposure to infected patients.^[21]

In terms of diagnostic procedures, physicians in the settings of our study rely mainly on oral or nasal-swab PCR, along with IgG or IgM blood test and CT scan in the diagnosis of COVID-19. These procedures were done to measure the existence of disease, its severity, and the chances for successful recovery in patients.^[22]

In terms of comorbidities and risk factors, the majority of the participants had comorbid conditions, including hypertension, diabetes mellitus, heart disease, and asthma. Our study and other studies concluded that COVID-19 has a more severe impact on elderly patients with underlying comorbidity.^[4,23-27]

The dominant clinical features of COVID-19 were fever, persistent cough, loss of appetite, breathing difficulty, and diarrhea. Diarrhea, headache, sore throat, exhaustion, loss of smell, and loss of taste are present; shock, coma, and conjunctivitis symptoms are rare. These findings are similar to what is concluded in other epidemiological studies.^[28-34] The median length of hospitalization is 10 days. The current study confirmed previous reports that age and presence of chronic medical diseases such as diabetes mellitus, heart diseases, and chronic kidney diseases are associated with severe symptoms and long stay in the hospital.^[35-40] Smoking, obesity, and using public transports are also considered risk factors for

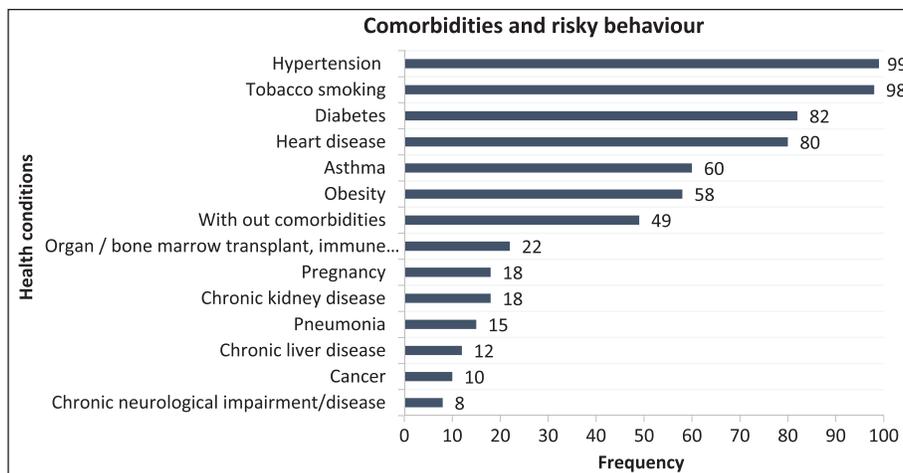


Figure 4: Frequency distribution of comorbidities and risk factors of severity (N=222)

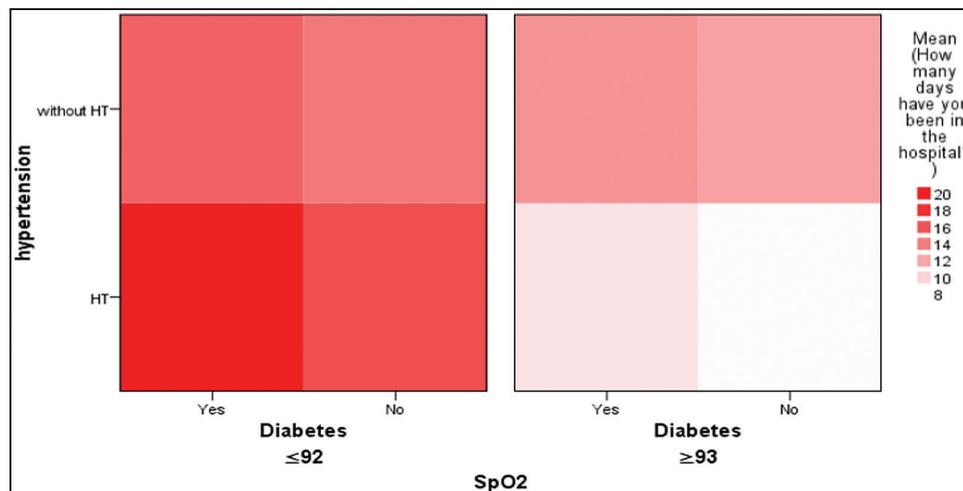


Figure 5: Frequency distribution of comorbidities and length of hospitalization (N=159)

Table 4: Mean days difference of staying in hospitals in patients with/without comorbidities, oxygen saturation, gender, and age (N=159)

| Variables ▼ | | Test statistic | | |
|-------------------|----------------|--------------------|------------|--------|
| | | Independent T-test | Mean ± SD | Sig. |
| Hypertension | Present (n=80) | -0.332 | 13.39±7.34 | 0.740 |
| | Absent (n=79) | | 13.72±5.17 | |
| Diabetes mellitus | Present (n=74) | 2.092 | 14.69±7.11 | 0.038 |
| | Absent (n=85) | | 12.56±5.42 | |
| Heart diseases | Present (n=75) | 2.900 | 15.11±7.81 | 0.005 |
| | Absent (n=84) | | 12.17±4.24 | |
| SpO2 | ≤ 92% (n=84) | 6.625 | 16.35±6.68 | 0.0001 |
| | ≥ 93% (n=75) | | 10.43±4.12 | |
| Age (years) | ≥ 60 (n=48) | -3.621 | 16.71±8.02 | 0.001 |
| | ≤ 59 (n=111) | | 12.19±4.90 | |
| Gender | Male (n=92) | 0.458 | 13.89±6.45 | 0.433 |
| | Female (n=67) | | 13.09±6.19 | |

Table 5: Mean days of hospitalization in patients with/without diabetes mellitus, hypertension, and SpO2 level ≥ 93%/≤ 92% (N=159)

| SpO2 | Hypertension | Diabetes mellitus | Mean days of hospitalization |
|-------|--------------|-------------------|------------------------------|
| ≥ 93% | With | Without | 8.2 |
| | | With | 9.27 |
| | Without | Without | 12.35 |
| | | With | 13.0 |
| ≤ 92% | With | Without | 16.36 |
| | | With | 19.37 |
| | Without | Without | 14.19 |
| | | With | 15.33 |

COVID-19.^[41-43] The majority of our patients (66.67%) showed mild-to-moderate symptoms. This may be related to the young age of the majority of patients.

The general public knowledge and practices are a vital key in primary prevention of COVID-19 including social distancing, hand washing, wearing gloves and masks, and coughing etiquette. In this study, about 60% of the

participants are not using masks and or washing their hands regularly and more than half of them do not know how the SARS CoV-2 virus transmits. These results show poor public knowledge and attitude toward the prevention of COVID-19. The healthcare workers (HCWs), social media, and TV are the main sources of information for the sample of this study.^[38,39]

Table 6: Knowledge and practices of preventive measures and source of information (N=222)

| Item | No. | % |
|---|-----|-------|
| Did you wear face mask before your infected?* | | |
| Yes | 88 | 40.0 |
| No | 132 | 60.0 |
| Total | 220 | 100.0 |
| Did you wash your hands with soap and water or use sterilizers regularly? | | |
| Yes | 91 | 41 |
| No | 131 | 59 |
| Total | 222 | 100.0 |
| Were you using public transport before you got infected? | | |
| Yes | 116 | 52.3 |
| No | 106 | 47.7 |
| Total | 222 | 100.0 |
| How does the coronavirus transmit? | | |
| Patients answered correctly (respiratory droplets and contact) | 107 | 48.2 |
| Patients answered incorrectly | 115 | 51.8 |
| Total | 222 | 100.0 |
| What is your best source of information about COVID-19? | | |
| Healthcare provider | 116 | 52.3 |
| Radio and television | 36 | 16.2 |
| Social media | 70 | 31.5 |
| Total | 222 | 100.0 |

*There were two missing data for this variable

CONCLUSION

People who have low educational level and are living in rural areas with more than six family members tend to get infected mainly due to poor public knowledge and attitude toward the prevention of COVID-19. HCWs are also vulnerable to get hospital-acquired COVID-19. Older people, smokers, and those with comorbidities are the most vulnerable to severe infection and stay in hospital.

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Conflicts of interest

There are no conflicts of interest.

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