

COVID-19 Knowledge of Health Care Workers in Mosul city, Iraq

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ABSTRACT

Background: In December 2019, new coronavirus-induced pneumonia (SARS-CoV-2) appeared in Wuhan, China, and since then has spread quickly everywhere in the world.

Objectives: To determine the level of knowledge of Health care workers regarding COVID-19 in Mosul city.

Subjects and Methods: A descriptive, cross-sectional study was performed at 28 hospitals and health care centers randomly selected (multistage sampling) in Mosul city, including 517 healthcare workers.

Results of demographic data of HCWs: the age range was between 22–63 years, The Mean \pm SD of the ages was 39.5 ± 9.9 , the highest percentage of ages (38.9%) that was in the age group 30–39 years and the lowest percentage (16.2%) was in the group 20–29 years. The percentage of males in a sample was (52.8%), and females were (47.2%). Relating educational qualification, the highest percentage (46.8%) was from diploma, whereas the lowest percentage (18.8%) was from secondary school. Concerning occupational level, the majority of them were from Paramedical staff (44.5%). The highest percentage regarding years of experience was (61.5%) for those who had equal or greater than 11 years of experience. The most sample of HCWs (82.8%) was married.

Conclusion: This study concluded that the most significant proportion of the study sample had an acceptable knowledge score during the study period.

Recommendation: Applying for health education programs about the COVID-19 virus for health care workers by health institutions.

Keywords: COVID-19, health care workers, knowledge, Mosul city

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INTRODUCTION

The “Coronavirus Disease 2019” (COVID-19) that produced by “Severe Acute Respiratory Syndrome- Coronavirus-2” (SARS-CoV-2) is emergent as a major worldwide communicable disease epidemic.¹ A dry cough, fever, and tiredness are the most common COVID -19 symptoms, and it might lead to more serious symptoms, for example, persistent pain in the chest, shortness and difficulty breathing, and a high temperature above 38 degrees Celsius.² SARS-CoV-2 transmits via person-to-person transmission method and indirect contact with tools contaminated with a virus.³ The SARS-CoV-2 usually can transmit through the droplets emitted from the mouth and nose, which can spread to others if the infected person speaks or sneezes or coughs.⁴ Droplets usually cannot travel more than 6 feet (approximately 2 meters). SARS-CoV-2 can remain intact & infectious in droplets. Also, it can remain on hold in the air for up to 3 hours. These droplets contaminated

with viruses can land on surfaces, for example, Stainless steel, plastic, and other surfaces.

Here, infection occurs if people touch these contaminated surfaces and then touch the mucous membranes in the nose and mouth.³ Although most cases of COVID-19 are self-limiting, some cases develop complications including “acute respiratory distress syndrome” (ARDS), parenchymal lung infections, shock, organ damage, pulmonary embolism, and venous thromboembolism.⁵ The emergence and spread of the current “2019-novel coronavirus” (2019-nCoV) or the (SARS-CoV-2) is presenting a new public health disaster danger world. The virus initially originated in bats and then transmitted to humans throughout still unidentified intermediate animal in China, specifically in Hubei province, which is located in the city of Wuhan that was in the last month of 2019.⁶ In several nations, the virus spread worldwide quickly, producing an alarming rate of morbidity and mortalities.

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The “World Health Organization” (WHO) declared the COVID-19 a global public health emergency that was on 30th January, 2020.⁷

OBJECTIVES

To determine the level of knowledge of health care workers regarding COVID-19 in Mosul city.

Subjects and Methods

Study Design: This research is descriptive; cross-sectional study was performed at 28 hospitals and health care centers randomly selected (multistage sampling) in Mosul city.

Duration of Study: The data collection period lasted 3 months, as it began on 10th December 2020 ending on 7th march 2021

Place of Study: The study was done in 4 hospitals, 2 health sectors, and 24 primary health care centers in Mosul city.

Inclusion and Exclusion criteria of study: Inclusion criteria: health care workers randomly selected in health care centers and hospitals in Mosul city. Exclusion criteria: health care workers out Mosul city and health care workers who does not have the desire or refuses to participate

Statistical analysis: Data analysis was carried out using the available statistical package of SPSS-27 “(Statistical Packages for Social Sciences-version 27)”. Data were presented in simple frequency, percentage, mean, standard deviation, and range (minimum-maximum values). The significance of the difference of different percentages (qualitative data) was tested using Pearson Chi-square test (χ^2 -test). Statistical significance was considered whenever the *P-value* was equal or less than 0.05.

RESULTS

(59.2%) of them knew that incubation period of covid-19 is not 30 days, (47.8%) of Health Care Workers (HCWs) answered incorrectly that the proportion of covid-19 patients who had mild symptoms is 20%, whereas (77.9 %) of sample know correctly that children, as well as adolescents, can be infected with Covid-19, (66.7%) answered correctly regarding the unavailability of COVID-19 vaccine until the time of data collection, the highest percentage (88.4) knew that disease is not less dangerous for the elderly, the majority of the studied sample (92.3%) answered correctly that the virus might be more dangerous in individuals with a chronic disease, also the greatest percentage of sample (90.3%) answered correctly that infected persons who do not have any symptoms could transmit the infection to others (Table 1).

(75.0%) answered incorrectly that fever, cough, and fatigue are the secondary clinical symptoms of COVID-19. In contrast, the highest percentage (70.4%) of the sample answered correctly that COVID-19, unlike the common cold, as sneezing, stuffy nose, and runny nose are less public in patients of COVID-19 virus, (Table 2) (75.8%) know that vomiting and diarrhea may be present for a patient with covid-19, The majority of the sample (75.6%) answered correctly that Abdominal disorder as nausea and colic represent one of the clinical features of covid-19, more than half of sample (56.1%) answered correctly that shortness of breath doesn’t appear for all infected person.

About 95.2% of HCWS have correct knowledge (Table 3) that respiratory droplets are one of the methods of virus

Table 1: The distribution of sample according to their knowledge about general information of COVID-19.

<i>General information knowledge</i>	<i>Incorrect</i>		<i>DNK</i>		<i>Correct</i>	
	<i>No</i>	<i>%</i>	<i>No</i>	<i>%</i>	<i>No</i>	<i>%</i>
Incubation period of COVID-19 is 30 days	147	28.4	64	12.4	306	59.2
Percentage of people infected with covid19 whom have mild symptoms is 20%	247	47.8	90	17.4	180	34.8
Can adolescents and child catch COVID-19	76	14.7	38	7.4	403	77.9
Unavailability of COVID-19 vaccine until now	114	22.1	58	11.2	345	66.7
The disease is less dangerous for the elderly	38	7.4	22	4.3	457	88.4
The virus may be more dangerous in patients with chronic disease, and immunocompromised person	32	6.2	8	1.5	477	92.3
Can infected people without symptoms transmit the virus?	35	6.8	15	2.9	467	90.3

Table 2: The distribution of samples according to their knowledge about clinical features of COVID-19.

<i>Knowledge of clinical features</i>	<i>Incorrect</i>		<i>DNK</i>		<i>Correct</i>	
	<i>No</i>	<i>%</i>	<i>No</i>	<i>%</i>	<i>No</i>	<i>%</i>
Fever, cough, and fatigue are the secondary clinical symptoms of COVID-19 may it appear in some patients	388	75.0	8	1.5	121	23.4
Unlike the common cold, stuffy nose, runny nose, and sneezing are less common in persons infected with the COVID-19 virus	115	22.2	38	7.4	364	70.4
Vomiting and diarrhea	86	16.6	39	7.5	392	75.8
Abdominal disorder as nausea, colic	81	15.7	45	8.7	391	75.6
Shortness of breath appears for all infected	211	40.8	16	3.1	290	56.1

Table 3: The distribution of studied ample according to their knowledge about the mode of transmission of COVID-19.

Knowledge of mode of transmission	Incorrect		DNK		Correct	
	No	%	No	%	No	%
COVID-19 virus spreads through respiratory droplets of infected individuals	13	2.5	12	2.3	492	95.2
COVID-19 virus can be passed from a pregnant woman to her fetus	198	38.3	135	26.1	184	35.6
COVID-19 virus can be passed through breastfeeding	143	27.7	133	25.7	241	46.6
COVID-19 virus can transmitted by indirect contact with contaminated objects & surfaces	44	8.5	23	4.4	450	87.0
COVID-19 virus can get transmitted by touching the nose, eyes, and mouth	24	4.6	11	2.1	482	93.2
COVID-19 virus is transmitted through eating contaminated food	306	59.2	54	10.4	157	30.4
COVID-19 virus can be transmitted from pets and other animals to humans	214	41.4	127	24.6	176	34.0

Table 4: The distribution of samples according to their knowledge about prevention of COVID-19

Knowledge of prevention	Incorrect		DNK		Correct	
	No	%	No	%	No	%
To prevent the infection by COVID-19, individuals should avoid going to crowded places such as train stations and avoid taking public transportations	13	2.5	8	1.5	496	95.9
Micronutrient (vitamin and mineral) supplements can prevent COVID-19 in healthy individuals	301	58.2	38	7.4	178	34.4
Minimum social distancing between two persons (50 cm)	190	36.8	24	4.6	303	58.6
Antibiotics are effective in preventing or treating COVID-19	162	31.3	66	12.8	289	55.9
The isolation and treatment of COVID-19 infected people are the effective ways to reduce the spread of the virus	19	3.7	14	2.7	484	93.6
People in contact with someone infected with COVID-19 virus should be immediately isolated in the proper place in general; the observation period is 3 days	343	66.3	31	6.0	143	27.7

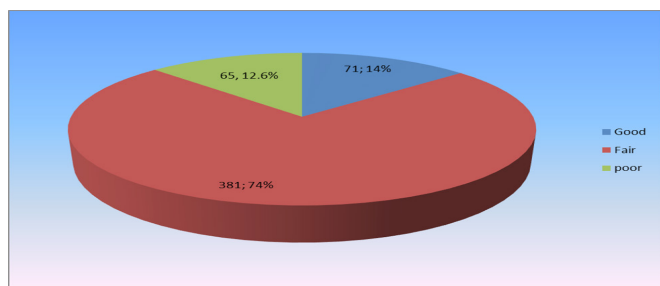


Figure 1: The total knowledge score of COVID-19 among healthcare workers

transmission, whereas 38.3% answered wrongly that SARS-COV2 could be passed from a pregnant woman to her fetus. Also, about 46.6% of the sample answered correctly that virus is not transmitted by breastfeeding, 87.0% of them answered correctly that COVID-19 transmitted by contact with contaminated objects & surfaces, the majority of the sample (93.2%) have a correct knowledge that COVID-19 can be transmitted by touching nose, eyes, and mouth. Further to that, more than half of sample (59.2%) have an incorrect knowledge that COVID-19 is transmitted through eating contaminated food, the highest percentage (62.3%) have a correct knowledge that the virus is not transmitted through airborne. In contrast, the highest percentage (41.4%) of the sample wrongly answered that COVID-19 can be transmitted from pets and humans.

Regarding the prevention from COVID-19, individuals should avoid going to crowded places. The greatest proportion (95.9%) answered correctly, whereas (58.2%) of them wrongly answered that micronutrient (vitamin and mineral) supplements could prevent COVID-19 (Table 4). The 58.6% had correct knowledge that minimum social distancing between two persons is not 50 cm, the highest percentage of them (55.9%) know the correct answer that Antibiotics are not effective in preventing or treating COVID-19, the majority of the sample (93.6%) had correct knowledge that the best way to reduce the rate of spread is by first isolating the infected and then starting to treat them, while The maximum proportion of the respondents (66.3%) had a wrong answer regarding the period of isolation of the contactors after their exposure or contact with the source of infection (Table 5).

The overall all knowledge score showed the greatest percentage (74%) had fair or acceptable knowledge, while (14%) having good knowledge, and the (12%) have poor knowledge relating to the COVID-19.

A significant association was found between knowledge score and qualification level, occupation, knowledge score, and demographic variables.

DISCUSSION

HCW are considered the main persons in providing various health care services, and these HCWs are in direct contact with patients as they are the first person to come into contact with

Table 5: The distribution of sample according to knowledge score about covid-19 by the demographic characteristics

Demographic characteristics		Knowledge score						P-value
		Poor		Fair		Good		
		No	%	No	%	No	%	
Age groups	20–29	12	18.5	60	15.7	12	16.9	0.478
	30–39	19	29.2	148	38.8	34	47.9	
	40–49	15	23.1	92	24.1	15	21.1	
	50 & more	19	29.2	81	21.3	10	14.1	
Gender	Male	35	53.8	200	52.5	38	53.5	0.972
	Female	30	46.2	181	47.5	33	46.5	
Qualification	Secondary school	25	38.5	69	18.1	3	4.2	0.0001*
	Diploma	34	52.3	179	47.0	29	40.8	
	College & higher	6	9.2	133	34.9	39	54.9	
Occupation (profession)	Medical staff	2	3.1	93	24.4	34	47.9	0.0001*
	Paramedical staff	32	49.2	174	45.7	24	33.8	
	Nursing staff	31	47.7	114	29.9	13	18.3	
Years of experience	<5years	7	10.8	48	12.6	9	12.7	0.938
	5–9	15	23.1	100	26.2	20	28.2	
	=>11year	43	66.2	233	61.2	42	59.2	
Marital status	Single	6	9.2	40	10.5	14	19.7	0.131
	Married	53	81.5	321	84.3	54	76.1	
	Others	6	9.2	20	5.2	3	4.2	

cases; as a result, healthcare staff must be more aware of current and re-emerging health risks. Most of the study sample had sufficient knowledge about the disease in the current study, with the most significant percentage (74%) having fair or acceptable knowledge about COVID-19 and (14%) with good knowledge (Figure 1) These results are similar to what had been reported in Uganda by Olum *et al.*, 2020, who found that the majority of the participant had sufficient information.⁸ These results are also similar to the results reported by Huynh *et al.*, 2020 in Vietnam, who found that knowledge among the sample of health workers was high.⁹ While this result was higher than that reported in the United Arab Emirates by Bhagavathula *et al.*, 2020, who found insufficient knowledge levels.¹⁰ This difference is due to the focus of all international and local media on disseminating information about the disease.

In this study, 88.4% had correct knowledge that disease is highly dangerous for the elderly, and 92.3% knew correctly that the COVID-19 virus is more dangerous in patients with chronic disease. These results are similar to what had been reported in a study conducted by Singh *et al.*, 2020 in Nepal, who found that most participants (84.7%) answered correctly that the disease is more dangerous for elderly patients with chronic diseases.¹¹ (90.3%) of HCWs answered correctly that infected people without symptoms could transmit the virus; this result is similar to what had been conducted in south India by Singh *et al.*, 2020, who found that majority of the

participants knew that infected people without symptoms can transmit the virus.¹²

In the present study (70.4%) of the sample answered correctly that stuffy nose, runny nose, and sneezing are less common in persons infected with COVID-19 virus, this is in agreement with the results of a study reported in Malaysia by Azlan *et al.*, 2020, who found that 65% knew in this regard.¹³ The 75.8% of sample in the current study answered correctly that diarrhea might be one of the symptoms of COVID-19 that was in line with the result of a study was conducted in Iran by Taghrir *et al.*, 2020.¹⁴

In the present study, the highest percentage of the sample (95.2%) knew that a virus is transmitted through respiratory droplets of infected individuals, this result is similar to the result of a study conducted by Limbu *et al.*, 2020 in Nepal, who found that (96.1%) of the sample answered that respiratory droplets are the method of transmission of the virus.¹⁵ In the current study, (87.0%) of the participants responded correctly that the virus could transmit through contact with contaminated objects indirectly, this result is different from what was concluded in a study conducted in Bangladesh by Ferdous *et al.* (2020), where the percentage of those with correct knowledge was (61.3%).¹⁶ This difference may be due to the difference in the type of study samples (In Bangladesh, the 2017 studied sample was of people via the Internet, while in the current study, it involved 517 health workers through the interview).

The majority of the study sample (95.9%) had correct knowledge that to prevent the spread of the virus and prevent it, and we must avoid crowded places in addition to avoiding public transportation; this result agrees with what was concluded from a study conducted by Bates *et.al.* (2020), where the percentage of those answered correctly was (98.6%).¹⁷ Regarding social distance, more than half of the sample (58.6%) had the knowledge and correctly answered; this answer is different from what was reported in a study conducted in Egypt by Abdel Wahed *et.al.* (2020), who found that percentage of those who responded correctly is 97.1%,¹⁸ this difference may be due to the epidemic was more widespread in Egypt.

CONCLUSION

The largest proportion of the study sample had an acceptable score of knowledge regarding COVID-19.

RECOMMENDATIONS

Applying for health education programs about the COVID-19 virus for health care workers by health institutions can cooperate with those health institutions with non-governmental organizations to implement and succeed these educational programs. These educational programs should expand to comprise people, medical students, university students, and other employees.

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