

## Home Health Care Services Delivered by Nurses to the Relatives with COVID-19

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### ABSTRACT

**Background and objective:** Kurdish community have a long-standing history of looking after family members and loved one in times of sickness. Caring for COVID-19 patients at home is a huge responsibility and challenging. Despite fear of losing family members, relatives working in the health care system dedicated their time to care for their relatives affected by COVID-19. No studies have been done to investigate the care provided to the COVID-19 patients at home-setting by nurses. The purpose of this study is to investigate the health care services provided to COVID-19 patients at home-setting by nurses.

**Methods:** This study is a descriptive quantitative study with a sample size of seventy-four nurses. The nurses claimed that they looked after more than 180 patients at the home setting. The data was collected through an online questionnaire format prepared by the researcher after an extensive literature review and discussion with the nurses who provided home care to COVID-19 patients. The researcher also utilized the guidelines and data published on the World Health Organization (WHO), National Institutes of Health (NIH) and Centers for Disease Control (CDC) websites for constructing the tool. Data was collected through Google Forms from 1st January 2022 to 29th March 2022.

**Results:** Of the seventy-four nurses that completed the questionnaire, half held a bachelor's degree in nursing. The nurses reported caring for more than 180 patients in total with 37.8% of nurses caring for one patient. More than half (52.7%) of patients were aged 50-64 years. The results of the study showed that the home care included health assessment, nursing intervention, evaluation, reassessment, and practicing preventive measures.

**Conclusion:** Depending on the data received from the nurses, COVID-19 patients in home setting received holistic nursing care and patients were under close and constant monitoring.

**Keywords:** COVID-19; Pandemic; Home health care; Nursing care.

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### INTRODUCTION

The World Health Organization (WHO) designated COVID-19 a global pandemic on March 11, 2020 [1]. The fast spread of this virus, along with the limited number of viable therapies now available, has resulted in a global catastrophe, with

overburdened healthcare systems scrambling to respond to the emergency. This has been particularly case for the Kurdistan region, Iraq, with the presence of limited medical recourses and highly recorded cases. At the time of writing, at least

437,643 cases were confirmed, and 7,450 people have died since the pandemic has started [2]. On 22 February 2020, the first case of COVID-19 infection was confirmed in Iraq/Najaf City. The following month, the number of confirmed COVID-19 patients exceeded the hundred [3, 4]. The data provided by the Kurdistan Regional Government reported high number of recoveries with 205, 290 cases discharged from the hospitals [2]. However, the provided data does not include patients treated at home since there is no available record. Home-based care is an important alternative to facility-based care, especially for infection prevention during the COVID-19 pandemic [5]. WHO recommended that “patients with mild symptoms and without underlying chronic conditions such as lung or heart disease, renal failure, or immune compromising conditions that place him/her at increased risk of developing complications may be cared for in the home environment” in case of limited health care service capacity and resources [6]. At some points in the Kurdistan region, patients preferred to be treated at home, where they felt most secure and stress-free [3]. Kurdish community have a long-standing history of looking after family members and loved one in time of sickness. Although, looking after the COVID-19 patient at home is a huge responsibility and challenging fear of losing family members, relatives working in the health care system dedicated their time to look after relatives affected by COVID-19. No studies have been done to investigate the care provided to COVID-19 patients in home-settings. Therefore, the purpose of this study was to investigate the health care services provided to the COVID-19 patients at home-setting by nurses.

## METHODS

A quantitative descriptive design was used to collect data from nurses who provided home health care services for COVID-19 patients. The study was conducted in the Kurdistan region/Iraq.

**Inclusion criteria:** One of the main inclusion criteria for the recruitment was the care recipient must be participants’ next of kin, not admitted to the hospital and the care recipient must be still alive.

**Tool and method of data collection:** The data was collected through a questionnaire format prepared by the researcher after an extensive literature review and discussion with the nurses who provided extensive nursing care to COVID-19 patients. The researcher also utilized the guidelines and data published on the WHO [6], NIH [1] and the CDC websites [7] for constructing the tool of data collection. To ensure the validity of the questionnaire, it was sent to three nurses who dedicated their time to look after COVID-19 patients at home-settings and their comments were put into consideration.

**Parts of questionnaire:** The questionnaire included four parts. Part one included general information from the participants, part two included questions on the health history of the patients who received the care, part three included a list of nursing care that was delivered by the nurses to the COVID-19 patient at-home settings, and part four included questions on personal protection measures. The list was based on the Coronavirus disease 2019 (COVID-19) treatment guidelines developed by the NIH for hospitalized and non-hospitalized adult patients with COVID-19 [1]. The personal protection measures questions were based on the guideline developed by the WHO for taking care of COVID-19 patients at home [6].

**Data collection and data analysis:** Depending on the personal contact and with the help of snowballing technique the questionnaire was purposively sent out to more than 120 nurses on the first of January 2022 via a Google form. Till 29th of March 2022 a total of 81 surveys were returned (response rate 67.5%). Of these 7 surveys had substantial amounts of missing information and were eliminated from further analyses. Final analyses were performed on 74 surveys, which had responses to nearly all survey questions. The frequency and percentage of the data were received via a Google form. The overall of the fourth part of the study result was obtained by dividing the sum of the frequencies to the number of the protection measure's statement.

**Ethical Considerations:**

Ethical approval was obtained from the scientific committee of the College of Nursing, Hawler Medical University with code No. 5 on 16th Dec. 2021. Participation was voluntary. The participants were informed about the purpose, benefits, and risks of the study, and they were allowed to withdraw the form from the study at any point felt insecure or uncomfortable.

**RESULTS**

Table 1 demonstrates general information collected from the participants. Exactly half of the participants were held a bachelor's degree in nursing. The nurses reported caring for more than 180 patients in total with 37.8% of nurses caring for one patient. More than half (52.7%) of patients were aged 50-64 years. Supervised physicians were the main support of the nurses (35.1%) concerning decision-making during the care. Exactly half of the nurses reported that their presence was the main reason behind patient's refusal of hospitalization as they preferred to be looked after the nurses. About 37.8% of nurses report the highest number of hours COVID-19

patients received care was 4 to 6 hours per 24 hours. About 46 % of the nurses reported it took 10 to 20 days for COVID-19 symptoms to subside among the patients who received care. Table 2 provides information about the health history of COVID-19 care recipients. Hypertension was recorded among 31.1 % of the patients followed by diabetes mellitus (29.7%) and cardiovascular disease (25.7%). The highest percentage of participants (37.8%) recorded oxygen saturation levels (SPO2) between 86% and 95%. The highest body temperature recorded was between 38 and 38.5°C with a percentage of 35.1%. The most concerning sign and symptoms exhibited by patients for more than one week were fatigue (77%), fevers (74.3 %), body aches (66.2%), and dry cough 6 (4.9%). The most common psychological problems noticed by the participants during care were insomnia (48.6%) and anxiety (47.3%). Table 3 shows the frequency and percentage of nursing care providers for the COVID-19 patient in a home setting. As it is shown in the table, the most frequent nursing care provided by the study participants were checking vital signs and SPO2 levels (91.9 %), medication administration (71.6%), and checking laboratory test (68.9%). Activities performed less were hot shower/bath and steam for loosening up phlegm and mucus in the chest (24.3%) and helping with the activity of daily (27 %). Table 4 shows the extent the study participants followed WHO guidelines recommended for preventing COVID-19 spread at-home settings. Overall, the percentage of practicing the guideline is high. Hand hygiene, handling waste products properly, and wearing disposable masks were the most frequent items in the guideline practiced by the nurses during the care with the percentages of 71.6 %, 67.6 %, and 64.9% respectively.

**Table 1:** General information collected from the participants.

Variables (n= 74)		F.	(%)
Level of education	PhD	11	(14.9)
	M.Sc.	26	(35.1)
	B.Sc.	37	(50)
Number of the patient looked after by the study participants from the beginning of the pandemic	One	28	(37.8)
	Two	11	(14.9)
	Three	10	(13.5)
	Four	8	(10.8)
	>Four	17	(23)
Patients' age	18-29	5	(6.8)
	30-39	14	(18.9)
	40-49	16	(21.6)
	50-64	39	(52.7)
The main support of study participants in decision making regarding patients' health.	Decision made independently	18	(24.3)
	A supervised Physician	26	(35.1)
	A health worker who had experience with looking after COVID-19 patient	13	(17.6)
	With the help of a Supervised Physician and experienced health care worker	17	(23)
	The patient preferred to be looked after by the study participants.	37	(50)
The reasons the patients were not admitted to the hospital.	Patient refused to go to hospital/ un explained reason	23	(31.1)
	The doctor recommended to stay at home	22	(31.1)
	Unavailability of bed at hospital / Governmental hospital	3	(4.1)
	Financial constrain. Not being able to go to private hospital	5	(6.8)
	Unavailability of corona unit at hospital (private and governmental), where the patient lived.	2	(2.7)
	The approximately hours/24 hrs. the patients were looked after by the study participants.	1-3 hr.	16
After how many days the patients got well (symptom subside) approximately	4-6 hrs.	28	(37.8)
	7-9 hrs.	24	(32.4)
	>9	6	(8.1)
	<10 days	18	(24.3)
	10-20 days	34	(45.9)
	21-29 days	12	(16.2)
	>1 month	10	(13.5)

**Table 2:** Health history of the Patients

Variables		F.	(%)	
Medical history	Hypertension	23	(31.1)	
	Diabetes mellitus	22	(29.7)	
	Cardiovascular disease	19	(25.7)	
	Kidney diseases	9	(12.2)	
	Asthma	5	(6.8)	
	No medical history	20	(27)	
SPO <sub>2</sub> level	75-65	8	(10.8)	
	85-76	10	(13.5)	
	95-86	28	(37.8)	
	95<	22	(29.7)	
	Not checked	6	(8.1)	
Temperature (°C)	35.5-38	26	(35.1)	
	39-38.6	20	(27)	
	40-39.1	11	(14.9)	
	40<	4	(5.4)	
	Not checked	13	(17.6)	
The most concerned sign and symptoms that stayed in the patient more than one week	Fever	55	(74.3)	
	Body ache	49	(66.2)	
	Dry cough	48	(64.9)	
	Headache	38	(51.4)	
	Low level of SPO <sub>2</sub>	35	(47.3)	
	Chills	34	(45.9)	
	Loss of taste	28	(37.8)	
	Shortness of breath	27	(36.5)	
	Chest pain	26	(35.1)	
	Productive cough	23	(31.1)	
	Loss of smell	20	(27)	
	Loss of voice	13	(17.6)	
	Hyperglycemia	10	(13.5)	
	Unstable heart rate	9	(12.2)	
	Hypotension	6	(8.1)	
	Nausea and vomiting	5	(6.8)	
	Fatigue	57	(77)	
	Common psychological distress noticed on the patient during the care.	Insomnia	36	(48.6)
		Anxiety	35	(47.3)
		Stress	33	(44.6)
Loss of hope		21	(28)	
Sense of helplessness		8	(10.8)	
Incompliant with the care		8	(10.8)	

**Table 3:** Nursing interventions provided to the COVID-19 patients by the study participants.

Variables	Yes	No
	F. (%)	F. (%)
Checking vital signs and SPO <sub>2</sub> level regularly.	68 (91.9)	6 (8.1)
Administering medication as ordered.	53 (71.6)	21 (28.4)
Checking laboratory test for signs of infection.	51 (68.9)	23 (31.1)
Teaching deep breathing technique	45 (60.8)	29 (39.2)
Teaching and performing coughing technique for patients with chest infection	45 (60.8)	29 (39.2)
Providing food that improve optimal health.	38 (51.4)	36 (48.6)
Stress reduction technique (listening to Quran, music, watching mobile or tv, chatting with the patient.....etc.)	31 (41.9)	43 (58.1)
Help the patient to stay hydrated.	30 (40.5)	44 (59.5)
Percussion for lung clearance, removing phlegm and mucus.	26 (35.1)	48 (64.9)
Oxygen administration when needed	26 (35.1)	48 (64.9)
Postural drainage: Repositioning and avoiding supine position	23 (31.1)	51 (68.9)
Helping with activity of daily living [ bathing, toileting, dressing, eating....etc.]	20 (27)	54 (73)
Hot shower/bath and steam for loosen up phlegm and mucus in the chest.	18 (24.3)	56 (75.7)

**Table 4:**The extend the study participants practiced WHO guideline recommended to prevent COVID-19 spread at home settings

Home prevention measures	Always	Sometimes	Never
	F. (%)	F. (%)	F. (%)
The patient was placed in a well-ventilated single room.	46 (62.2)	20 (27.0)	8 (10.8)
Only one person took care of the patient (had direct contact).	33 (44.6)	36 (48.6)	5 (6.8)
No visitors allowed	35 (47.3)	32 (43.2)	7 (9.5)
Household members maintain at least 1m distance from the patient	30 (40.5)	31 (41.9)	13 (17.6)
The patient’s movement limited.	21 (28.4)	39 (52.7)	9 (12.2)
The caregiver wore disposable mask when in the same room with patient.	48 (64.9)	19 (25.7)	7 (9.5)
The mask discarded properly and performed hand hygiene	41 (55.4)	22 (29.7)	11 (14.9)
Hand hygiene was performed after any contact with the patient	53 (71.6)	19 (25.7)	2 (2.7)
Disposable paper towel was used to dry the hands	40 (54.1)	26 (35.1)	8 (10.8)
Respiratory hygiene was practiced by all (Respiratory hygiene refers to covering the mouth and nose during coughing or sneezing using medical masks, cloth masks, tissues or flexed elbow, followed by hand hygiene)	45 (60.8)	24 (32.4)	5 (6.8)
Used materials discarded properly	45 (60.8)	21 (28.4)	8 (10.8)
Direct contact with patient’s body fluid was avoided	35 (47.3)	32 (43.2)	7 (9.5)
No items were shared with the patient (eating utensil, towels, clothes.....etc.)	47 (63.5)	19 (25.7)	8 (10.8)
The patients’ room environment and touched surface cleaned and disinfected daily.	34 (45.9)	35 (47.3)	5 (6.8)
Bathroom cleaned and disinfected daily.	36 (48.6)	32 (43.2)	6 (8.1)
All the waste product generated by the patient or in the care of the patient placed in a special container before disposal.	50 (67.6)	22 (29.7)	4 (5.4)
Bed lines, clothes, towel...etc. of the patient washed regularly and separately and dried thoroughly. Direct contact with these materials were avoided.	34 (45.9)	35 (47.3)	5 (6.8)
PPE was used and discarded properly	25 (33.8)	36 (48.6)	13 (17.6)
The patient stayed at home until all the symptoms subsided or after two negative RT-PCR, 24 hr. apart	41 (55.4)	26 (35.1)	7 (9.5)
All household members considered contacts with the COVID-19 and their health were monitored regularly.	38 (51.4)	29 (39.2)	7 (9.5)



Figure 1 illustrates the overall distribution of how closely the study participants followed WHO guidelines recommended to prevent COVID-19 spread in at-home settings. Thirty-nine participants of seventy-four always practiced steps in the guideline, 28 reported sometimes, and 7 reported they never practiced the guideline.

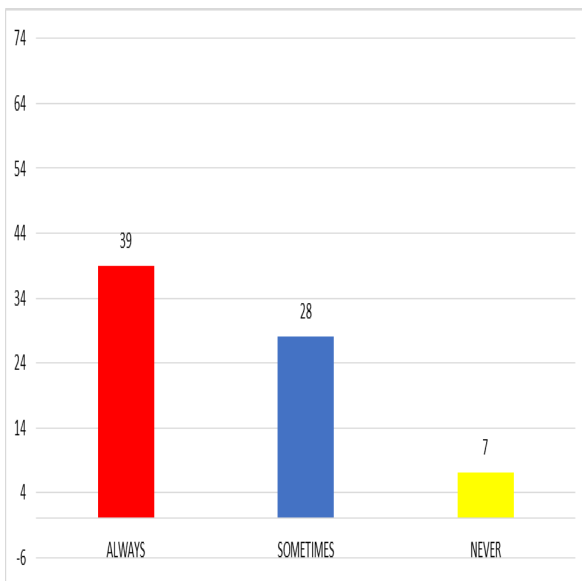


Figure 1: The extent the study participants practiced WHO guideline recommended to prevent COVID-19 spread at home-settings

## DISCUSSION

The study aimed to identify home health care services delivered by nurses for relatives with COVID-19. Half of the participants held a bachelor degree in nursing and participants reported caring for a sum of more than 180 patients. Patients voluntarily decided to be cared for at home despite their advanced age, presence of chronic conditions, and presence of severe COVID-19 symptoms. The directorate of health in Erbil City claimed that patients with COVID-19 and their relatives seek health when they reach a stage where patients' survival rate is significantly low. This attitude gave a message to the public that most patients admitted to hospital

will die due to neglect and not providing close and constant follow-up [2]. The COVID-19 Dynamic Infographic Dashboard for Iraq revealed that most of the deaths in the hospitals occurred during a period of less than 7 days. This indicates that most cases ending with death started treatment at home and were admitted to hospitals only after worsening the situation to an extent that little can be done by the hospitals [8]. As a result, patients preferred to be looked after by a trusted family member working in the health sector. Comparing the data collected in the study with the research done on COVID-19 in 2020 to 2022, the nurses agreed to participate in a highly risky and challenging task. First, more than half of the patients received care aged 50 to 64. In Iraq, patients aged 60–69 years contributed to the highest proportion of total COVID-19 deaths followed by those aged 50–59 years [3]. In 2022, the CDC reported that older adults are at higher risk of health deterioration from COVID-19. COVID death by age group 50-64 reached 17.8% on March 13, 2022 in the USA. The death rate was four times lower among the age group 40-49 (4.1%) and is even lower among the younger generation reported [1,7,9,10]. Second, 54 nurses in the current study reported that patients who received the care had comorbidities including hypertension, cardiovascular diseases (CVD), and diabetes mellitus (DM). The presence of an underlying medical condition increases the death risk ratio among COVID-19 patients, to the point if the patient had only one medical condition the death risk ratio (RR) increases by 1.5 [11]. Most studies done on the prognosis rate among COVID-19 patients concluded that the risk of mortality increases in the presence of comorbidities especially hypertension, CVD, and DM [12,13,14,15]. Third, SPO2 of less than 94% indicates the presence of lung inflammation and the



patient must be hospitalized to receive proper care [16]. Home SPO2 of less than 92% increases the likelihood of intensive care unit admission. Based on the study done on the SPO2 parameters as an indicator for hospitalization 48 health workers in the current study provided care to patients who needed immediate hospitalization. Body temperature is another significant parameter collected in the current study where almost all the patients had high body temperature. Studies found that temperature elevation is common during COVID-19 and it is present among the majority of hospitalized patients with COVID-19 [7, 16,17]. Studies suggest that poor control of body temperature is an indicator of poor outcomes. The mortality rate increased for every 0.5° elevation in body temperature in a study done at Mount Sinai in New York City [16]. The COVID-19 outbreak is mentally and physically challenging for patients and relatives [18]. In many studies since the emergence of the COVID-19 virus, it has been concluded that individuals experience high levels of negative emotions such as fear, anxiety and anger [19]. Participants noticed a wide range of mental break downs among the patients during the care ranging from fatigue, insomnia, anxiety, and stress. Severe anxiety and depression have been found among COVID-19 patients both previously and not previously diagnosed with psychological distress [20, 21, 22]. Difficulty breathing, prolonged quarantine, insufficient information, and social stigma were some causes of psychological distress [22]. The holistic home care provided by the study participants to the COVID-19 patients included health assessment, nursing intervention, evaluation, reassessment, and practicing preventive measures. Although, the administration of multiple effective antiviral and monoclonal treatment for Covid-19 has increased the

survival rate [23]. Isolation and supportive management play a crucial role for decreasing mortality rate [24]. Nurses have a long-standing history of providing supportive measures but in times of health crisis missed nursing care is predicted due to inadequate staffing levels. Inadequate patient surveillance has been highlighted in much research conducted during the COVID-19 pandemic [25]. In the current study, isolating patients with mild to severe COVID symptoms in a home setting considering all the guidelines released by WHO, CDC, and local government increased the chance of close monitoring by health professionals.

**Importance of the study and recommendations:** The strength of the study comes from the fact that the nurses successfully looked after COVID-19 patients and proved that holistic care increase the survival rate. Furthermore, the outcome of the study could be used as a guide for health care professionals taking care of patients with COVID-19 and diseases with similar characteristics at home-setting and as a starting point to developed multiple professional home health care agencies. Nurses working in-home services play a crucial role in decreasing the pressure on hospitals in times of pandemic and health crises. In addition, with the services nurses provide in the home settings, fewer patients are at risk of nosocomial infection. The COVID-19 pandemic proved that nurses are ready to look after patients successfully, however, no nurse should work at home services informally without governmental and medical supervision. The work should be legalized, legal protocol should be developed, the quality of care should be assured. Additionally, the nurses' rights and patients' rights must be secured by the ministry of health.

**Limitations:** The study has several limitations. First, the study did not collect data

about the involvement of family member (s) in the care of the patients. Second, unknown population prevalence led to small sample size recruitment which may be representative of the actual population size. Third, lack of research on the subject led to lack of research support. Finally, the study did not collect data about the challenges of looking after COVID-19 patients at home-settings. The researcher suggests more comprehensive research that enhance generalization and comparison with the care provided to COVID-19 patients at hospital setting. Patients' perspective on the care received at home setting should also be investigated. Further studies are suggested to overcome the limitations and collect data on the aspect that did not include in the current study.

## CONCLUSION

Depending on the data received from the nurses, COVID-19 patients at home setting received holistic nursing care and patients were under close and constant monitoring. The holistic care provided to the patients included financial, physical, emotional, and spiritual care. Most COVID-19 patients decided to treated at home by someone they trust.

## CONFLICT OF INTEREST

The author reports no conflict of interests.

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