Research Paper
Study of Nurses' Knowledge About COVID-19 in Al-Hilla Teaching Hospitals

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ABSTRACT

Objectives: The COVID-19 pandemic is a major health crisis that emerged at the end of the first quarter of the 21st century and changed the lives of millions of people globally. Nurses have close contact with infectious patients; therefore, nurses need to obtain sufficient knowledge in this regard. They need to assess their level of knowledge about COVID-19 and explore their needs to enhance and improve their knowledge in order to be more qualified to fight this virus. This study intends to assess nurses' knowledge regarding COVID-19 and to find out the differences in nurses' knowledge about COVID-19 with regard to their demographic variables.

Methods: A descriptive (cross-sectional design) study was conducted to assess nurses' knowledge regarding COVID-19 in Al-Hilla teaching hospitals in Al-Hilla City, Iraq, from September 25, 2020, to February 20, 2022. Using a convenient sampling method, a sample of 200 nurses working at epidemic hospitals was selected. The data collection process began with a questionnaire, which nurses answered as a self-report (questionnaire). Then the questionnaires were collected from the respondents. The average time to fill out the questionnaire was between 10 and 20 minutes.

Results: The findings indicate that most nurses (58%) had poor knowledge about COVID-19. There were significant differences in nurses' knowledge about COVID-19 with regard to their educational levels ($P<0.05$) and experience in epidemiological wards ($P<0.05$). Also, there was no difference between nurses' attitudes toward COVID-19 with regard to their experience in epidemiological wards ($P>0.05$), but there was a significant difference between nurses' knowledge about COVID-19 with regard to their source of information about COVID-19 ($P<0.05$).

Discussion: The present study revealed that nurses had moderate knowledge about COVID-19. They had poor knowledge related to the prevention of COVID-19, while they had poor knowledge as overall knowledge related to COVID-19.

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Highlights

● Nurses had moderate knowledge related to general information about COVID-19.

● Nurses had poor knowledge related to the prevention of COVID-19.

● Nurses had poor knowledge as overall knowledge related to COVID-19.

● There were significant differences between nurses' knowledge of COVID-19 with regard to variables of nurses' education level, experience in epidemiological wards, and sources of information.

Plain Language Summary

All health care practitioners, particularly nurses, are fighting this pandemic on the front lines and delivering services to patients to prevent and control the COVID-19 pandemic. Nurses should be aware of the virus and infection control procedures to avoid disease spread, given that people involved in health care settings are at a greater danger of contamination or transferring the virus to coworkers, relatives, and families.

1. Introduction

The coronavirus family has been linked to several disease outbreaks in East Asia and the Middle East during the last two decades. The severe acute respiratory syndrome (SARS) and the Middle East Respiratory Syndromes (MERS) appeared in 2002 and 2012, respectively. A novel coronavirus, the severe acute respiratory syndrome coronavirus [1] (SARS-CoV-2), arose in late 2019, producing the coronavirus disease-2019 (COVID-19), posing a worldwide health hazard with its ongoing pandemic in many nations and territories [2].

The cases of unknown pneumonia were reported to the World Health Organization on December 31, 2019, in Wuhan, China. Coronavirus-2 was identified as the pathogen (SARS-CoV-2). On March 11, 2020, WHO announced COVID-19, a global pandemic (China, was caused by a novel betacoronavirus, the 2019 novel coronavirus (2019-nCoV) [3].

Europe was the most severely impacted, accounting for more than half of all cases and 60% of all deaths. The United States has the most cases (695350), as well as the most fatalities in the world (32427 deaths). With 13892 cases and 628 deaths, the African area is the least impacted, although the numbers are rising [4].

The Saudi Ministry of Health confirmed the first positive case on March 2, 2020, and the number of patients in the kingdom quadrupled in a month, creating a severe problem for healthcare providers [5].

According to the Iraqi Ministry of Health, COVID-19 was first found in an Iranian resident undergraduate in Najaf City on February 24, 2020 [6].

Nurses are essential members of the healthcare system and team. All health care practitioners, particularly nurses, are fighting this pandemic on the front lines and delivering services to patients. They assist in preventing and controlling the COVID-19 pandemic. Today, everyone appreciates all coronavirus warriors, particularly nurses, who are working around the clock, away from their families, and putting their lives in danger to battle this pandemic. We have seen extraordinary overwork by nurses directly involved in the COVID-19 pandemic response. India has just 1.7 nurses per 1000 people, which is 43% lower than the global average (3 per 1000). Overall, India has 3.07 million registered nursing workers, which includes nurses, midwives, lady health visitors, and auxiliary nurses and midwives [7].

Nurses should be aware of the virus and infection control procedures to avoid dissemination, given that people working in hospitals are at a greater risk of secondary infection or transferring the virus to coworkers, relatives, and friends. However, the evidence suggests that COVID-19 is a burden to nurses owing to the disease's strangeness, insufficient information, training, and courses about how to manage the patients infected with the virus, and the psychological stress caused by patients' mortalities. Because COVID-19 is such a novel virus, nurses' misinterpretation of its signs and symptoms, as well as inappropriate treatment, may accelerate the spread of the disease in hospitals [8, 9]. Several

studies had conducted to assess nurses' knowledge about COVID-19, which showed that COVID-19 was well-understood by the majority of participants. The healthcare workers (HCW) highlighted three significant barriers to infection control practice: overloading in emergency departments, a shortage of contamination-controlling materials, and a lack of awareness of COVID-19 transmission [10, 11]. Therefore, the main aim of the present study was to investigate nurses' knowledge of the COVID-19 outbreak in Iraq and to find out the differences in nurses' knowledge about COVID-19 with regard to their selected demographic variables.

2. Materials and Methods

Study design

A descriptive (cross-sectional study design) was conducted to assess nurses' knowledge regarding COVID-19 in Al-Hilla Teaching Hospitals at Al-Hilla City from September 25, 2020, to February 20, 2022.

Study sample

Using a convenient sampling method, 200 nurses were selected who were working at epidemic diseases hospitals. The reliability of the present study instrument was 0.843 for the domains of nurses' knowledge regarding COVID-19.

Study instrument and data collection

The researchers designed a questionnaire based on multiple previous studies (12 attitudes, and practices toward the coronavirus disease 2019 (COVID-19). Although the questionnaire was validated in those studies, the researcher sent it to 15 experts to validate it, and a pilot study was carried out in Marjan Medical City Hospital and Al-Hilla Teaching Hospital, too. The researcher selected 20 nurses: 15 from the Marjan Medical City Hospital and 5 from Al-Hilla Teaching Hospital. They completed the instrument, and after that, the instrument reliability was assessed. The study questionnaire comprised two parts: the first part asks about demographic data (seven questions), and the second part asks about nurses' knowledge on COVID-19, which contains two sections. The first consists of general information regarding COVID-19 with 10 items, and the second section asks about the prevention of COVID-19 with 8 items. All the questions were multiple choices.

Part 1. Demographic data of the samples included age, gender, educational level, years of employment in nursing, experiences in epidemic units, the source of information about COVID-19, training courses, and its number about infection control.

Part 2. Nurses' knowledge about COVID-19 with 18 items in two sections.

Section 1. General information of nurses regarding COVID-19 with 10 items, all the questions were multiple choices.

Section 2. Prevention of COVID-19 with 8 items, all the questions were multiple choices.

The items found in part two were multiple choices questions, scored as true =2 and false =1. The mean score and cutoff point for the overall knowledge score were calculated as follows: poor knowledge, 1-1.33; fair knowledge, 1.34-1.67; and good knowledge, >1.68.

The study questionnaire was answered by the respondents (nurses) working in epidemic diseases hospitals when conducting the study and collecting data (Marjan Medical City Hospital and Al-Hilla Teaching Hospital). After taking the formal approval from health directors, a permission agreement of participation was obtained from the hospitals. Then the questionnaires were distributed to the respondents and collected after they completed them. The average time that the nurse participants took to fill out the questionnaire was between 10 and 20 minutes.

Ethical considerations

To ensure compliance with research ethics, the identity of the nurses was not revealed, and the data were analyzed collectively. The consent form was obtained before filling out the questionnaire and after reading the instructions to the nurses.

Statistical analysis

The obtained data were analyzed by descriptive and inferential statistics in SPSS v. 25 and Microsoft Excel (2010). Numerical variables were measured as mean and standard deviations, while categorical variables were expressed as frequencies and percentages. The mean score and cutoff point for the overall knowledge score were calculated as follows: poor knowledge, 1-1.33; fair knowledge, 1.34-1.67; and good knowledge, >1.68. One-way ANOVA was performed to assess any difference in mean knowledge score by demographic characteristics.
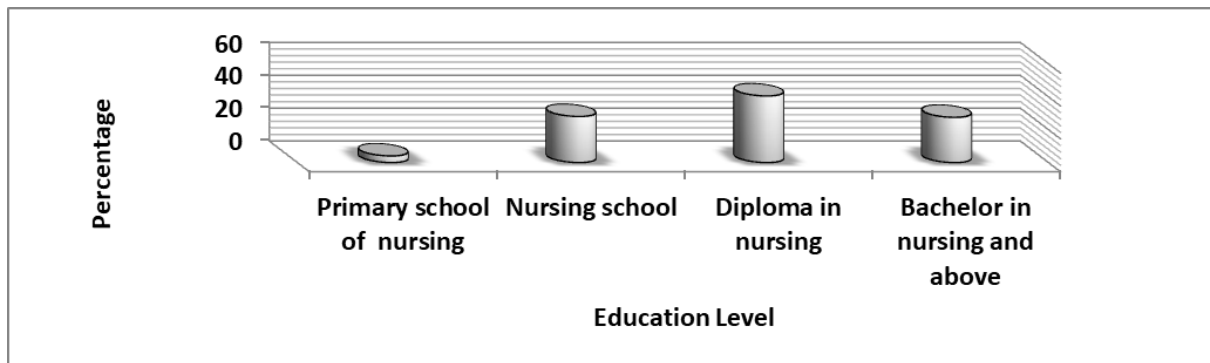
Figure 1. Distribution of study samples by their education

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3. Results

Figure 1 shows the educational qualification of the nurses. Most had a diploma (n=81; 40.5%), then those graduated from Nursing schools (n=56; 28%), followed by those with a Bachelor in nursing degree (n=55; 27.5%) and those passed Primary school of nursing (n=8; 4%).

The results in Figure 2 show the experience of nurses in epidemiological wards. Most have 6-12 months (n=125; 62.5%), followed by those with less than 6 months (n=61; 30.5%), and then those with more than one year (n=14; 7.0%).

The results in Figure 3 show the sources of knowledge of nurses. Most use social media (n=112; 56.0%), followed by their colleagues (n = 62; 31.0%), then scientific websites (n=25; 12.5%), and finally the library (n=1; 0.5%).

The results in Figure 4 show the overall nurses' knowledge. The findings indicate that the nurses have moderate knowledge about COVID-19 (n=100; 50%), followed by those who have poor knowledge (n=87; 43.5%) and then those with good knowledge (n=13; 6.5%).

The results in Figure 5 indicate that the nurses had poor knowledge related to the prevention of COVID-19 (n=118; 59%), followed by those with moderate knowledge (n=68; 34%) and those with good knowledge (n=14; 7%).

The results in Figure 6 show that the nurses have poor knowledge of COVID-19 (n=117; 58%), followed by those with moderate knowledge (n=79; 40 %), and then with good knowledge (n=4; 2%).

According to Table 1, there were important differences in nurses' knowledge of COVID-19 with regard to nurses' education level (P<0.05).

Table 2 indicates significant differences in nurses' knowledge about COVID-19 regarding their experiences in epidemic wards (P<0.05).

Table 3 indicates significant differences between nurses' knowledge about COVID-19 with regard to the source of nurses' information about COVID-19 (P<0.05).
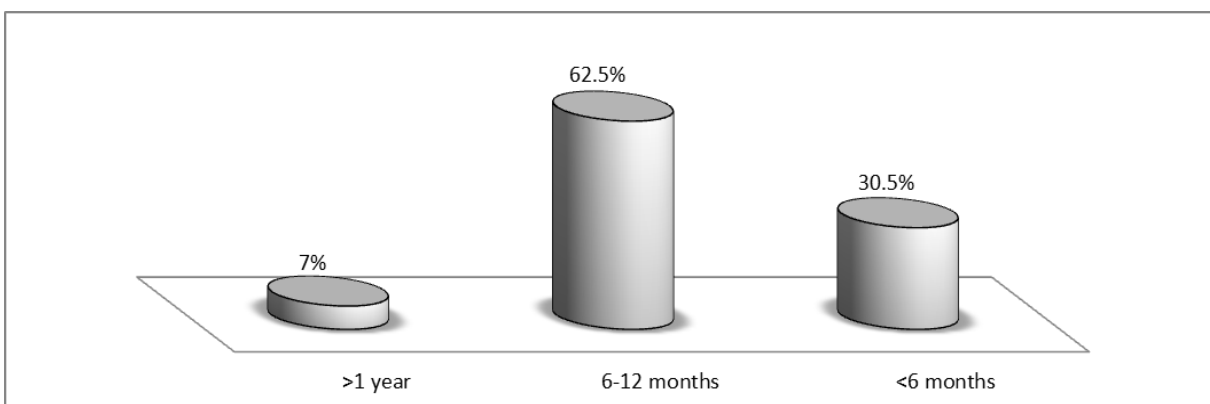

Figure 2. Distribution of Study Samples by Their Experience in Epidemic Wards

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AL-Salih SHL., & Muhbes FJ. Study of Nurses' Knowledge About COVID-19. IRJ. 2022; 20(2):245-252
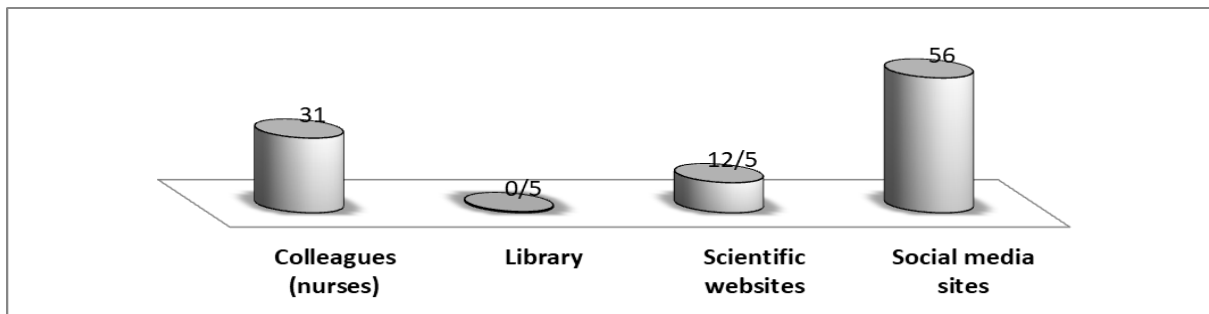
Figure 3. Distribution of study samples by source of information about COVID-19
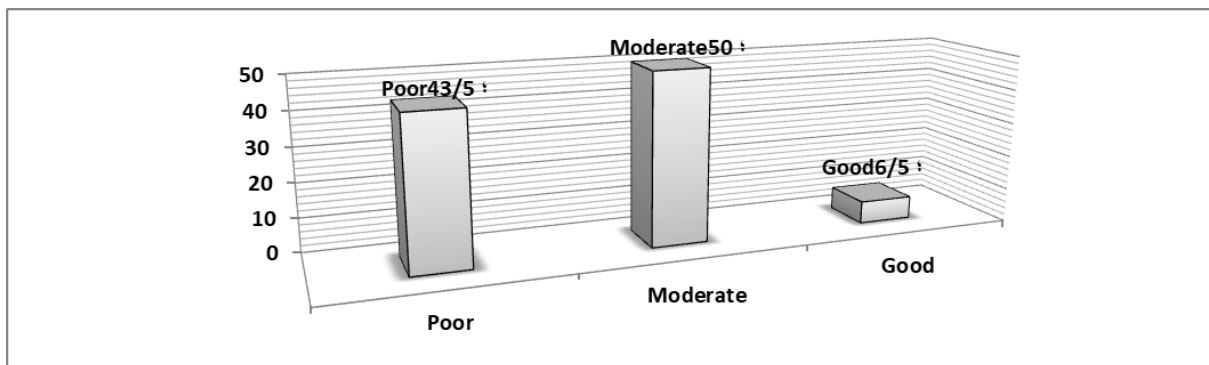
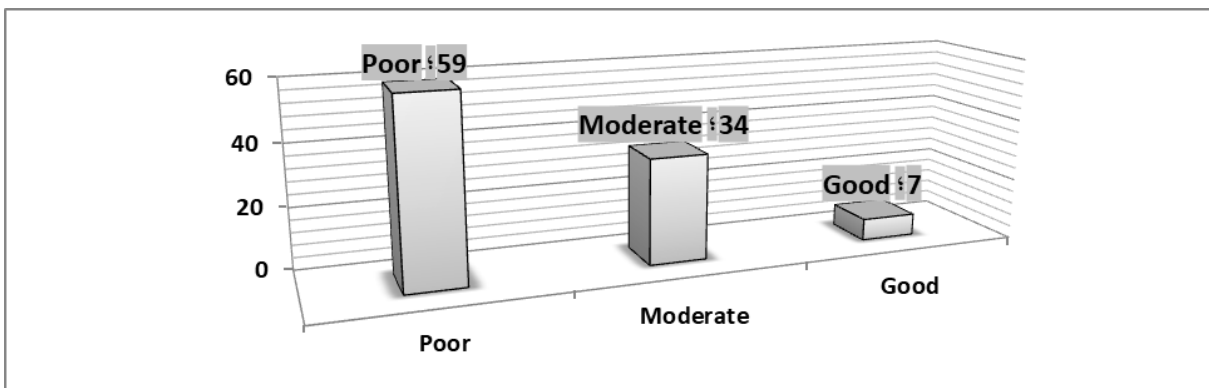**Figure 4.** Overall knowledge related to general information of COVID-19

Figure 5. Overall knowledge related to the prevention of COVID-19
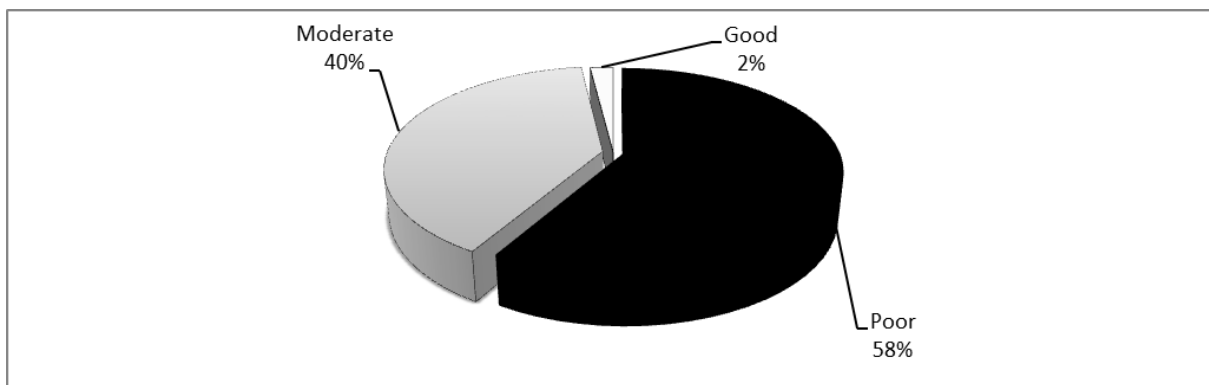
Figure 6. Overall assessment of nurses' knowledge

Table 1. Significant differences in nurses' knowledge with regard to education level (n=200)

Education Level	Variance Source	Sum of Squares	df	Mean of Squares	F	P≤0.05
	Between groups	0.445	3	0.148		
Nurses' knowledge about COVID-19	Within groups	4.304	196	0.022	6.757	0.000
	Total	4.749	199			

Table 2. Significant differences in nurses' knowledge with regard to experience in epidemic wards (n=200)

Experience	Variance Source	Sum of Squares	df	Mean of Squares	F	P≤0.05
	Between groups	0.197	2	0.098		
Nurses' knowledge about COVID-19	Within groups	4.552	197	0.023	4.260	0.015
	Total	4.749	199			

Table 3. Significant differences in nurses' knowledge with regard to the source of information about COVID-19 (n=200)

Sources of Knowledge	Variance Source	Sum of Squares	df	Mean of Squares	F	P≤0.05
	Between Groups	0.244	3	0.081		
Nurses' knowledge about COVID-19	Within Groups	4.506	196	0.023	3.531	0.016
	Total	4.749	199			

4. Discussion

Concerning the educational qualification, the study finding (Figure 1) revealed that most of the nurses (40.5%) had a diploma because a large number of technical institutes and higher health institutes graduate diploma degrees rather than other specialties. These findings are supported by Sahar et al., who studied public health nurses (PHN) in Indonesia. They reported that about 61.4% of the study samples held a diploma in nursing [10].

Regarding the experiences in epidemic wards, the findings (Figure 2) showed that most of the nursing staff (62.5%) had between 6 to 12 months of experience in epidemic wards. This time is a short period which may be due to the short time between the pandemic outbreak and the time of conducting the study, especially in the study settings. These findings nearly match Chau et al., who conducted a study in acute care hospitals and a public health department in Hong Kong. In this study, they reported that about half of the nurses (54%) had from 5 to 8 months working in caring for COVID-19 patients [11].

Also, Figure 3 shows that most nurses (56.0%) use social media as their information sources about COVID-19. That finding is primarily because of the lack of peer discussion, misleading information, and a lack of the feasibility of obtaining accurate information from social media and other inaccurate sources. These findings were reinforced by Sahar et al., who studied Indonesian PHNs. They reported that almost half of the nurses (40.2%) considered the use of social media as a source of knowledge on COVID-19 by nurses [10].

According to Figure 6, most nurses (58%) had poor knowledge about COVID-19. This finding seems reasonable because there was no available standard guide or information about COVID-19 from WHO, CDC (The Centers for Disease Control and Prevention), Iraqi Governorate, or any health care provider at that time. These findings were consistent with the Bhagavathula et al. study. They conducted a web-based, cross-sectional study using a survey tool to obtain replies from healthcare workers (HCWs) worldwide. They pointed out that a significant proportion (61.0%) of HCWs had poor knowledge about the spread of COVID-19, and about 63.6% of HCWs had poor knowledge about COVID-19 symptoms [12] the coronavirus disease 2019 (COVID-19.

The findings in Table 3 indicate that there were significant differences in nurses' knowledge about COVID-19 with regard to nurses' educational levels (P<0.05). These findings agreed with Shawahna's findings. The study was conducted in the occupied Palestinian territory. The study findings showed that nurses with high academic achievements expressed a high positive attitude compared to nurses without a high academic achievement [13].

Table 2 indicates significant differences in nurses' knowledge about COVID-19 with regard to their experiences in epidemic wards (P <0.05). These findings match with Chau et al. study. They investigated the hospitals and a public health section in Hong Kong. In this study, they indicated that the important influencing factor in epidemic settings was the working experiences in the epidemic wards, which were significantly associated with the knowledge and practice scores [11].

According to Table 3, there were significant differences in nurses' knowledge about COVID-19 as regards their sources of information about COVID-19 (P<0.05). These findings agree with the Sahar et al. study. They surveyed Indonesian PHNs, revealing that the information sources were the most important component in determining knowledge in this study and that social media was the first and most important source of COVID-19 awareness [10].

The present study assessed the nurses' knowledge at the beginning of the pandemic in Iraq. It gave the initial report about knowledge status and related demographic variables of study samples (nurses) using a researcher-made questionnaire based on several previous studies. Although previous studies validated the questionnaire, the researcher sent it to 15 experts to validate it, and a pilot study was carried out in Marjan Medical City Hospital and Al-Hilla Teaching Hospital, too. The researcher selected 20 nurses: 15 from the Marjan Medical City Hospital and 5 from Al-Hilla Teaching Hospital. They filled out the study questionnaire, and after that, the reliability of the questionnaire was achieved.

The study has several limitations. Firstly, it is a cross-sectional study conducted during the lockdown and constructed to enter the epidemic units; therefore, it was challenging to reach out to all nurses and explain the problems they faced while filling out the questionnaire. This condition may lead to response bias, and it also was difficult to achieve approval from health institutions because of the concerns of spreading infection out of the hospital.

The authors recommend that the Ministry of Health and related authorities promote and supply all precautionary and preventive measures of COVID-19 to all health facilities, especially in epidemic wards. We suggest that researchers conduct further studies with larger samples from various hospitals to assess nurses' knowledge about COVID-19 and compare their results with previous nurses' knowledge assessments.

5. Conclusions

Based on the current study finding and their interpretations, most nurses had a diploma, had 6 to 8 months of experience in epidemic wards, and used social media as their sources of information about COVID-19. Nurses had moderate knowledge of general information for COVID-19 and poor knowledge about the prevention of COVID-19. Finally, their overall knowledge related to COVID-19 was poor. There were significant differences in nurses' knowledge about COVID-19 with regard to the variables of nurses' education level, experience in epidemic wards, and source of information.

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