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Evaluation of the Nurses' Knowledge and Attitudes toward COVID-19: A Cross-Sectional Study

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Abstract: After its outbreak in 2020, the new coronavirus SARS-CoV-2 was dubbed COVID-19. Nursing staff in Iraq have been working continuously since the outbreak; nurses have critical roles and responsibilities during the COVID-19 pandemic. They will continue to remain on the front line of hospital care and actively participate in assessment and monitoring in the community. Assess knowledge, attitudes, and use of COVID-19 preventive measures and the relationship between nurses' knowledge, attitudes, and use of preventive measures with COVID-19 and demographic characteristics (age, gender, etc.). A descriptive cross-sectional on nurses' knowledge. The study was carried out at (Marjan Teaching Hospital, Hilla Teaching Hospital, and Imam Al-Sadiq Hospital) in Al-Hilla city. The study period was extended from the 10th of March 2022 to the 30th of May 2022. For data collection, a purposive (non-probability) sample of (200) nurses was collected through direct interviews, a personal information form, and information about COVID-19. Twelve experts who determined the validity content of the study were selected to review the questionnaire. The age of the participants was 33.69 ± 13.32. Results of the study group were defined concerning Nurses' knowledge about COVID-19 in Hilla City Hospitals and sub-dimensions. Show that 75% of participants have high knowledge of COVID-19, 90% have high attitudes toward COVID-19, and 55% use preventive measures. According to this study, nurses working in Al-Hillah City Hospitals have high knowledge, positive behavior, and great use of COVID-19 preventive measures for the virus, its transmission, and prevention. Increasing training courses for nurses on infectious diseases is necessary.

Keywords: Evaluation, Nurses, Knowledge, Attitudes, COVID-19

Introduction

In January 2020, there were reports of a new coronavirus outbreak in Wuhan, China. Scattered Things moved quickly to the rest of the world, and in March 2020, Sweden was completely affected by the new SARS-CoV-2 coronavirus, which has been dubbed "COVID-19". And so the epidemic was viewed as a fact Wu et al., 2020 A pandemic similar to Covid-19 is rarely seen, which is why it will happen in 2020. History That year, we couldn't hug our elderly loved ones, hospitals were crowded, and The debate over the presence or absence of a face mask was widely discussed [1].

Typical manifestations of COVID-19 infection are fever >38 °C (83%), sore throat, cough (76%), shortness of breath (31%), rash, headache, and even fatigue. Smoking can be an important risk factor for COVID-19 and may be critical to developing lung damage. Some studies support the hypothesis that SARS-CoV can replicate efficiently; lung epithelial cells are somewhat elucidated in SARS-CoV-2-associated lung disease. Tissue samples infected with SARS-VOC showed infection mainly in the lung and alveolar cells. Still, the affected tissue is also observed in the conjunctival epithelium, which occurs in the form of conjunctivitis: This is apparently due to the presence of ACE 2, angiotensin-converting enzyme 2, which is present in the cells of the conjunctiva; they initiate viral replication after binding to the receptor protein. This could indicate visual manifestations of this new virus (Seah and Agrawal, 2020). In other words, ACE2 is a mediator of intracellular entry of viral particles. Additionally, viral RNA was found in COVID-19 patient feces samples; this may be related to the fact. The virus spreads from the lungs to the blood, infecting the digestive system [2].

COVID-19 often spreads through the air when a person infected with the virus breathes near a healthy person, so the air becomes contaminated with the virus and is transmitted through the air because the patient may cough or talk, so it is easy to transmit through the air [3], [4] that the spread of the virus is at the highest levels when approaching the patient, and the patient may be infected before symptoms appear on him, from one to three days, but most often people are infected when They are close in the body, the disease spreads inside the respiratory system, such as the nose and throat, and then gradually decreases after a week, and there is a period of infection that may infect people within twenty days [5]

Airborne transmission, however, may also happen over significant distances in places with inadequate ventilation [6]. Small particles may float in the air for several hours in such conditions [7].

COVID-19 can be tentatively identified based on symptoms and then verified using RT-PCR or another nucleic acid testing of contaminated secretions [8], [9]. Those with a high clinical suspicion of infection may find that laboratory testing and chest CT scans help identify COVID-19 [10], [11]. A prior infection may be discovered by serological testing, which detects antibodies produced by the body in reaction to an infection [12].

A nasopharyngeal swab is demonstrated for COVID-19 testing. Nucleic acid tests, which reveal the presence of viral RNA fragments, are the key techniques for identifying SARS-CoV-2 [13]. Because these tests identify RNA but not active viruses, their "ability to estimate patients' duration of infectivity is restricted." [14]. The test is usually performed on respiratory samples acquired through a nasopharyngeal swab, but a nasal swab or sputum sample may also be utilized [15].

Chest CT scans may help persons with a high clinical suspicion of infection find COVID-19, but they are not advised for routine screening [16]. Early infection is indicated by bilateral multilobar ground-glass opacities that are posterior, asymmetrical, and peripherally distributed. As the disease progresses, consolidation, subpleural dominance, and crazy paving (thickened lobular septa with varied alveolar filling) may develop [17], [18].

Avoiding crowded areas, remaining at home, using a mask in public, maintaining a safe distance from other people, ventilating interior spaces, and controlling possible exposure periods are all preventative measures [19]. Preventive methods include proper respiratory hygiene, regular hand washing with soap and water for at least 20 seconds, and refraining from touching the eyes, nose, or mouth with unkempt hands [20].

The CDC recommends calling ahead before contacting a healthcare practitioner for anybody who has been diagnosed with COVID-19 or who suspects they may be contaminated, to put on a face mask before going into the doctor's office, and whenever you're with someone else in a vehicle or room, to prevent sharing personal home goods, to often wash hands with soap and water, to cover coughs and sneezes with tissues [21].

Coronavirus disease 2019 (COVID-19), Which scientists consider to be caused by the so-called SARS-CoV type II, but there may not currently be an effective treatment or treatment that leads the patient to a full recovery [22]. But after a whole year, scientists introduced multiple vaccines for this virus, which are considered effective. After it was widely spread in all countries of the world, so it increased the cases in which the disease caused death until it reached hundreds of thousands, which makes the vaccine important, Especially great for people with weak immunity even if their response is not strong to vaccination [23]. As a result of the lack of significant progress in the process of developing or discovering effective treatments for this virus, nursing care that leads to support was considered a cornerstone or necessary in the management of COVID-19, which may include some types of treatments used in other treatments that are also used In the treatment of this disease as a treatment to relieve symptoms, in addition to other treatment such as fluids. It is also possible to give the patient support through oxygen. Healthcare personnel perform a specific position for the patient, such as the prone position, according to the patient’s need, in addition to some types of medication or Adding other devices to support some vital organs that

are also infected [24], [25].

Some think that the majority of COVID-19 cases are at a moderate level. In cases of this level, it may include the use of some treatments as support for these patients, for example, anti-inflammatories, which relieve a large number of symptoms such as coughing or fever, and patients should take a rest [26], [27]. Therefore, following a diet rich in vegetables and fruits is usually recommended, and personal hygiene must be adhered to [28]. All specialists and health care personnel are advised to control all contagious diseases to prevent them in the United States; anyone who fears Whoever is infected with this virus has to do the so-called self-isolation at home without mixing with it the rest of the people. He must also wear a face mask [29].

People with more severe cases may need to be hospitalized. In patients with low oxygen levels, administering the glucocorticoid dexamethasone is highly advocated since it may reduce the risk of death [30], [31]. Noninvasive ventilation and admission to an ICU for mechanical ventilation may be required to keep the patient breathing. Respiratory failure has been treated using extracorporeal membrane oxygenation (ECMO), although its merits are still debated [32]. Some cases of severe disease progression are triggered by systemic hyper-inflammation, often known as cytokine storm [33].

There are types of treatments, or rather there are two of them; the basis of its action is based on antibodies, especially monoclonal, as they can be used at the beginning of the disease, especially in the case of patients who may be at high risk of disease progression, as Remdesivir treatment Available and considered antivirus, but it is different in some countries in the United States or Canada and many countries around the world; however, it is not recommended for people who may be able to expose the space to good ventilation due to limited evidence of efficacy for this disease [34].

Nurses have many roles and roles that may be critical in dealing during and after the COVID-19 pandemic. They are considered the primary defense for the injured person's care, whether in the hospital or during quarantine. They participate by performing several activities in the examination and evaluation or monitoring there of juried within socisocial addition; it is necessary for healthcare personnel who take care of other patients to verify that services will be provided to them most fully, whether their condition is infectious or non-infectious. Hence, nurses usually share their opinions in cases of epidemics that have occurred in the spread of this epidemic globally. This increases the demand for the services provided by nurses [35]

Therefore, this study is important to highlight the role of nurses in preventing the infectious disease outbreaks such as COVID-19. Nurses are in direct contact in healthcare settings (with patients and relatives) and community settings (with family and friends). This study will help to put light on the necessary nursing skills and knowledge that aid health systems and control pandemic outbreaks. Hence, this study allows researchers to thoroughly examine and assess the role of nurses in controlling and preventing such infectious diseases. This may be because the nurses have a direct and long-term relationship with the infected person during the period of his infection, so they are at great risk of infection with the virus, so t large number of them have been infected, so the need for nurses has arisen, as their numbers have decreased due to infection and due to the increase in cases of patients worldwide [36].

In healthcare systems at an international level, whether they are developed or developing countries, the pathogen is considered it is the first line of defense in terms of providing health services to infected people, especially during the spread of this epidemic, so researchers are considered one of the people most vulnerable to infection, through direct dealing with the infected [37]. The nurse faces pressures, whether physical or psychological, due to the increase in cases that have been infected and are being cared for, in addition to the lack of information related to this virus, due to its recent emergence and development at that time and the information obtained is dealt with in a pracpractically without checking them due to the novelty of this spreading virus, so you must understand the anxiety or pressure that the nurse is exposed to while working with COVID-19 patients, and this is considered one of the important things to manage

the disease [38].

Materials and Methods

To achieve the aims of the current study: A descriptive study was conducted on nurses' knowledge toward COVID-19 at Marjan Teaching Hospital, Hilla Teaching Hospital, and Imam Al-Sadiq Hospital. The study period was extended from the 10th of March 2022 to the 30th of May 2022. A non-probability purposive sample consists of (200) nurses. The researcher constructed the instrument. The study instrument is composed of five parts: the first part consists of nurses' demographic data, the second part consists of sources of information about COVID-19 (6 items), and the third part: consists of knowledge items about COVID-19 (8 items), fourth part: consist of nurses' attitudes about COVID-19 (two items), and fifth part consists of nurses' use of preventive measures against COVID-19 (three items). The first part consisted of demographic characteristics, including age, gender, educational level, years of service, & training sessions. Each question in the first part assessed involved two items (Yes and No). Each question in the third part assesses knowledge items about COVID-19 involving eight questions (True and False) and scored as (1 for True and False for No). The fourth part consists of nurses' attitudes about COVID-19 (do not agree = 1 I'm undecided = 2, agree = 3 Possible initial ratings (scores). The fifth part consists of nurses' use of preventive measures against COVID-19 (Yes and No) scored as Yes = 2, No = 1.

About (15) minutes are given to complete the questionnaire. Twelve experts who determined the content validity of the study were selected to review the questionnaire. The determination of the reliability of the questionnaire is based on Cronbach's Alpha. Cronbach's alpha was 0.75. knowledge items $\alpha = 0.76$, attitude items $\alpha = 0.97$, and use of protective measures had a Cronbach's alpha of 0.87. The data analysis used descriptive and inferential statistics to find the differences between the nurses' demographic characteristics and their knowledge and attitudes. Data were analyzed through the use of SPSS application version 26.0. Descriptive data analysis includes mean score (M.S), standard deviation (Sd), and frequency (F). Inferential data analysis includes t-test and ANOVA.

Results

The results of this study show the mean age of the participants was 33.69±13.32 (42.5%) of the nurses are between 20-25 years old, 51.5% are female, and 48% are Nursing school graduates, and 77.5% of the nurses have experience ≤ 5 in addition to that 76% of nurses who received training sessions on end-of-life care, and finally 51.5% were infected with COVID-19.

The results also show that 94.0% of nurses obtained information toward COVID-19 through the internet / social media, 60% of nurses obtained information toward COVID-19 through television and radio, and the lowest number (31%) obtained information through newspapers and magazines.

The findings also show that 100% answered that COVID-19 is a viral infection, and 60% answered that the possible signs and symptoms of COVID-19 are fever, sore throat, cough, muscle aches, and shortness of breath, as well as signs and symptoms of COVID-19 illness that could be similar to influenza or a cold, 75% of respondents said that COVID-19 symptoms and indicators might resemble the flu or a cold, and 100% said that COVID-19 does not currently have effective therapy. Still, early symptomatic and supportive treatment can help most patients recover 100% of people with poor immune systems and the elderly are more susceptible to infection, and 100% of the study sample answered that people are exposed in crowded places to an increased risk of being affected by the disease, in addition to that 75% answered That if medical masks are used appropriately, they can prevent the spread of infection, and 93.5% finally answered that the possible signs and symptoms of COVID-19 are not considered a fever, sore throat, cough, muscle aches and shortness of breath, in addition.

This shows that 62.0% of the study sample is not sure that COVID-19 will eventually be successfully contained, and 75.5% of the study sample agree and are sure that the Iraqi Ministry of Health can win the

war against COVID-19.

The current study results show that 92.5% of the participants are neutral and unsure of whether to use soap or sanitizer to wash hands and face, and 96%, while interacting with the patient (including the COVID-19 patient), donned the required personal protective gear, such as masks, gloves, and gown, etc.

The findings of this study show the distribution of the study group's scores on "Nurses' knowledge towards COVID-19 in Hilla City Hospitals" and its sub-dimensions. It showed an average level of nursing knowledge of 4.42 ± 1.6, meaning that the knowledge is high, and the participants' attitude regarding COVID-19 is an average of 4.0 ±0.53 and nurses' use of preventive measures against COVID-19 was high with an average of 3.3 ±0.10.

The results of this study showed that 75% of the participants had high knowledge about COVID-19, 90% of the participants had high attitudes toward COVID-19, and 55% Used of Preventive Measures.

There is a relationship between demographic data, with significant value, age, educational level, and infection with COVID-19.

The results of this study show the relationship between demographic data and differences in knowledge of COVID-19 among participants. In this study, there was a significant relationship between the degrees of age and knowledge (P = 0.04 *), and the knowledge was higher among the age groups between 20-25 years, the reason for this is that these groups may have a higher ability to teach than the larger groups, as it was clarified. The study showed a relationship between the educational level and the degrees of knowledge with a significant value (P = 0.001 *), and it was the highest among the graduates of the nursing institute. The reason for this is that this category in Iraq works in direct contact with patients, as they are widely distributed in all hospital departments.

There is a statistically significant relationship between infection with the COVID-19 virus and knowledge scores (P = 0.001 *), and knowledge was higher among those who were previously infected with it, with an average of 96.4 ± 36.4. This is because previously infected people experienced these symptoms on their bodies as they were treated, so they had higher knowledge.

İn this study shows the relationship between demographic data and differences in attitudes toward COVID-19 among participants. In this study, there is no significant relationship between age and attitude scores, educational level, and training course where the value of (p>0.05).

There is a statistically significant relationship between attitudes toward COVID-19. There is a statistically significant relationship between gender and attitudes toward Covid 19 (P = 0.000 *), where attitudes were better and higher for females with a mean of 80.4 ± 13.5 due to the reason for this Because females in Iraq, in general, have higher responsibilities, whether at work or home, so they had better attitudes towards COVID-19, and there is also a statistically significant relationship between infection with COVID 19 virus and attitudes toward COVID 19 (P = 0.000 *) where it was higher A value for those who were previously injured with an average of 86.7 ± 29.1 because this injury made them fear recurring the injury, so their positions were better.

There is a statistically significant relationship between the use of preventive measures towards COVID-19. There is a statistically significant relationship between the use of preventive measures (P = 0.040*) and it was higher in age groups ≥51 with a mean of 77.1±9.2 The reason for this is that these ages in Iraq often suffer from chronic diseases, so they had higher use of preventive measures, especially in light of the COVID-19 pandemic.

There is a statistically significant relationship between the use of preventive measures toward COVID-19. There is a statistically significant relationship between the use of preventive measures (P = 0.03 *) as it was higher in females with a mean of 101.0 ± 15.6 due to this That these females have great responsibilities in caring for their children and managing the house in general, so they had higher use of preventive measures, especially in light of the COVID-19 pandemic.

The results of this study revealed a significant association between knowledge and the use of COVID-

19 preventive measures. In addition, there is a significant association between attitudes and the use of COVID-19 preventive measures that positively correlate with results of knowledge and attitudes combined P<0.05, the results indicate that our finding that adequate knowledge combined with a positive attitude may increase the proper implementation of COVID-19 prevention strategies among nurses.

Table 1. Demographic data of the nurses

Variables	Mean±SD	Min.	Max.
Age	**33.69±13.32**	**20**	**60**
		N	**%**
Age	**20-25**	**85**	**42.5**
	26-30	**43**	**21.5**
	31-35	**14**	**7.0**
	36-40	**1**	**0.5**
	41-45	**8**	**4.0**
	46-50	**9**	**4.5**
	≥51	**40**	**20.0**
Gender	**Female**	**103**	**51.5**
	Male	**97**	**48.5**
Education	**Nursing school graduate**	**96**	**48.0**
	Nursing institute graduate	**58**	**29.0**
	Nursing college graduate	**42**	**21.0**
	Master and PhD	**4**	**2.0**
Years of service at wards	**≤ 5**	**155**	**77.5**
	6-10	**23**	**6.5**
	11-15	**12**	**6.0**
	16-20	**14**	**7.0**
	≥21	**6**	**3.0**
Training session about end-life care	**Yes**	**152**	**76.0**
	No	**48**	**24.0**
infected with COVID-19	**Yes**	**97**	**48.5**
	No	**103**	**51.5**

Table 2. Nurses' knowledge about COVID-19

	Variables		N	%
1	**COVID-19 is a viral infection**	**True**	**200**	**100**
		False	**00**	**00**
2	**The following are some COVID-19 warning signs and symptoms: fever, sore throat, cough, myalgia, and shortness of breath.**	**True**	**120**	**60**
		False	**80**	**40**
3	**COVID-19 symptoms and signs might resemble those of the cold or the flu.**	**True**	**150**	**75**
		False	**50**	**25**
4	**Currently, COVID-19 is not curable. However, early symptomatic and supportive care may help most patients recover from the infection.**	**True**	**200**	**100**
		False	**00**	**00**
5	**Older adults and those with weakened immune systems are more likely to get the virus.**	**True**	**200**	**100**
		False	**00**	**00**
6	**People are more likely to get the illness in crowded areas.**	**True**	**200**	**100**
		False	**00**	**00**
7	**Medical masks, when used properly, may stop the**	**True**	**150**	**75**

	transmission of illness.	**False**	**50**	**25**
8	**Antibiotic use may stop COVID-19 from spreading.**	**True**	**13**	**6.5**
		False	**187**	**93.5**

Table 3. Nurses' Attitudes toward COVID-19

Variables		N	%
Do you believe COVID-19 can be effectively controlled in the long run?	**I do not agree**	**34**	**17.0**
	I'm undecided	**124**	**62.0**
	I agree	**42**	**21.0**
Do you have confidence in the Iraqi Ministry of Health's ability to win the war against COVID-19?	**I do not agree**	**10**	**5.0**
	I'm undecided	**39**	**19.5**
	I agree	**151**	**75.5**

Table 4. Nurses' use of preventive measures against COVID-19

Variables			N	%
1.	**I am using soap or sanitizer to wash my hands and face**	**Yes**	**15**	**7.5**
		No	**185**	**92.5**
2.	**I exercise physical distancing, prevent close physical contact, and maintain a minimum 1-meter distance between patients and other medical personnel.**	**Yes**	**20**	**10.0**
		No	**20**	**10.0**
3.	**I put on the required personal protective gear, such as masks, gloves, and gowns, when interacting with patients (including COVID-19 patients).**	**No**	**8**	**4.0**
		Yes	**192**	**96.0**

Table 5. Relationships of Demographic Variables with Nurses' Knowledge

Variables		Mean±SD	F	P
Age	**20-25**	**142.5 ± 40.6**	**1.452**	**0.04**
	26-30	**121.5 ± 39.8**		
	31-35	**40.1 ± 17.2**		
	36-40	**25.0 ± 5.4**		
	41-45	**34.3 ± 10.6**		
	46-50	**35.4 ± 11.0**		
	≥51	**120 ± 39.5**		
Education	**Nursing school graduated**	**55.8 ± 23.1**	**2.186**	**0.001**
	Nursing institute graduated	**69.0 ± 20.4**		
	Nursing college graduated	**98.0 ± 36.7**		
	Master and PhD	**22.7 ± 11.8**		
Years of service at wards	**≤ 5**	**99.1 ± 39.3**	**0.600**	**0.09**
	6-10	**62.5 ± 33.0**		
	11-15	**53.7 ± 29.9**		
	16-20	**55.2 ± 31.5**		
	≥21	**30.7 ± 14.4**		

Table 6. The relationship between age, education, years of service at wards, and nurses' Attitudes toward COVID-19

Variables		Mean±SD	F	P
Age	**20-25**	**136.8±33.6**	**1.52**	**0.10**
	26-30	**116.6±28.9**		
	31-35	**38.49±16.5**		
	36-40	**24.0± 5.1**		
	41-45	**32.92±10.1**		
	46-50	**33.98±10.5**		
	≥51	**115.2±37.9**		
Education	**Nursing school graduated**	**94.08±35.2**	**1.38**	**0.50**
	Nursing institute graduated	**66.24±19.5**		
	Nursing college graduated	**53.56±22.1**		
	Master and PhD	**21.792±11.3**		
Years of service at wards	**≤ 5**	**95.13 ± 39.3**	**3.05**	**0.07**
	6-10	**60.0 ± 33.0**		
	11-15	**51.55 ± 28.7**		
	16-20	**52.99 ± 30.2**		
	≥21	**29.4 ± 13.8**		

Discussions

Part One: Discussion of Demographic Characteristics of Nurses

The results of this study were that the mean of the participant's age was 33.69±13.32; the current result is consistent with a study conducted in Dubai, which stated that most of the study sample was middle-aged [39]. It corresponds with a study conducted in Palestine, which stated that most of the study sample was middle age [40].

The results of this study show that most of the study sample (51.1%) are females, and the rest are males, and most of them are between 20-25 years old and represent (42.5 percent). These results agreed with [27], which revealed that most nurses age less than 25 years (58.5%). This study agrees with the study [29], which showed that most participants were female (72.52%), and also agreed with [30], which showed most nurses were female (56%). It is consistent with the study of El-Monshed *et al*., 2021, who showed that most participants were female (72.52%). Most participants are female nurses (77.8%), and about 50% are between 25 and 30 years old, 84.5%.

The study also showed that 48% of the nurses graduated from nursing school, 77.5% of the nurses had ≤5 experience in addition to 76% of the nurses received training in end-of-life care, and 51.5% contracted the COVID-19 virus. These results agreed with, which showed that most nurses graduate from secondary school (48%). These findings also agreed with [25], which showed that most nurses had 1-5 years of experience (34%). This agrees with the study [21], which reported that the majority of nurses received education in educational institutes and received courses on COVID-19 (93%), and this is consistent with the study [25] who reported that the majority of nursing has They received training on COVID-19.

Part Two: Discussion of Nurses' Knowledge toward COVID-19

In this study, most nurses obtained information about the epidemic from the Internet and social media because the knowledge was the most visual. This result agrees with a study conducted in Palestine,

which stated that nurses obtained their information mostly from the media [26]. This result agrees with a study conducted in China, which stated that most nurses obtained information from the Internet [28].

In this study, female nurses' knowledge levels were higher than those of males. This is because nurses in Iraq are responsible for caring for children and their families. Therefore, they use more cognitive items than male nurses. This study agrees with a study conducted in Palestine, which reported that nurses' knowledge is higher than that of males [1]. It also agrees with a study conducted in Pakistan, where females scored higher than their male counterparts [5]. This study agrees with a study conducted in Jordan (Tariq *et al*., 2020) and a study conducted in Iran [6].

Part Three: Nurses' Attitudes toward COVID-19

The current study found that half of the nurses (90%) have good attitudes. This is due to the average level of knowledge that affected the nurses' attitudes in this study. This result agrees with previous studies in Jordan [15] in Pakistan [7]. In China [17], the participating nurses had highly positive attitudes regarding COVID-19.

Part Four: Relationship between knowledge, attitudes, and the use of preventive measures for COVID-19

This study found a relationship between knowledge and attitudes and the use of preventive measures for COVID-19 that are positively correlated with knowledge and attitude outcomes. Our findings suggest that adequate knowledge combined with a positive attitude may increase the proper implementation of COVID-19 prevention strategies among nurses. These findings are consistent with a study conducted in Jordan [20] and a study conducted in Palestine [28], which reported a significant relationship between knowledge, attitude, and the use of preventive measures toward COVID-19.

Conclusion

According to this study, nurses working at Hilla city Hospitals have high knowledge, positive attitudes, and high use of preventive measures for COVID-19 regarding the virus, its transmission, and prevention. There was also a statistical difference in COVID-19 knowledge among COVID-19 nurses at Hilla city hospitals with varying ages, educational levels, and COVID-19 infection at the significance level of $p<0.05$. There is also a significant correlation between knowledge and attitudes that correlate positively with the combined knowledge and attitude outcomes.

Recommendations

This study recommends the need to increase training courses for nurses concerning infectious diseases.

This study recommends that the owners of the Ministry of Health and decision-makers increase the use of infection prevention methods in hospitals.

Conducting training courses through the Ministry of Health for nurses to raise awareness among patients and their families of the risks of infection from epidemic diseases.

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