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Echoes of history: Understanding healthcare professionals' response to COVID-19 pandemic

Basema Nofal[1], Muhammad W. Darawad[2*], Salam Mahmoud Abufeddeh[3]

[1]*Faculty of Nursing, Al-Zaytoonah University of Jordan, Amman, Jordan.*
[2]*School of Nursing, The University of Jordan, Amman, 11942 Jordan.*
[3]*Zayed Military Hospital, Abu Dhabi Health Authority, Abu Dhabi, UAE.*

Corresponding author: Muhammad W. Darawad (*Email: m.darawad@ju.edu.jo*)

Abstract

Due to the significant number of casualties among both patients and healthcare providers (HCPs), the COVID-19 pandemic put an enormous strain on healthcare systems around the world. Healthcare providers played a crucial role in the prevention, management, and containment of the pandemic due to their proximity to the outbreak. This study explored COVID-19-related knowledge, attitudes, and practices among HCPs. A descriptive cross-sectional design was utilized with an online survey. The target group in Abu Dhabi included three types of HCPs: physicians, nurses, and paramedics. The study questionnaire was completed by 290 individuals in total. Participants exhibited high levels of attitudes (M=6.8, SD=1.02), practices (M=5.7, SD=0.80), and knowledge (M=13.9, SD=1.76). Based on the demographics of the participants, many significant differences in all study variables were found. In conclusion, participants showed a high level of awareness, favorable attitudes, and strong infection control measures regarding the COVID-19 pandemic. To maintain the continuation of the appropriate knowledge, attitudes, and practices surrounding COVID-19 that may be used in potential future COVID or other infection outbreaks, a continuous training and evaluation program should be implemented.

Keywords: Abu Dhabi, Attitudes, COVID-19, Healthcare providers, Knowledge, Practices.

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1. Introduction

The SARS-CoV-2 Virus Pandemic (COVID-19), which began in Wuhan City, China, in December 2019, has had a devastating effect on people's physical and mental health, social life, educational systems, and economic sector internationally [1, 2]. Sadly, this virus has persisted in spreading throughout the world and has the capacity to evolve into new generations that are considerably more virulent and resistant to vaccines created in laboratories [3]. When in touch with infected

individuals or contaminated objects and surfaces, the COVID-19 virus is mostly spread through air droplets [4]. More than 400 million people were infected, and more than 5.8 million of them passed away [5]. More than 850,000 people in the United Arab Emirates (UAE) were infected, and there were almost 2,100 fatalities [6].

The COVID-19 pandemic put enormous strain on the healthcare system globally due to the high number of casualties among both patients and healthcare workers (HCPs), which resulted in an increase in workload and a shortage of protective equipment [7]. Due to their frequent interaction with patients, HCPs were most at risk of contracting this virus. According to Mutambudzi et al. [8], HCPs are seven times more likely than other workers in other professions to have severe COVID-19. Furthermore, according to Bandyopadhyay et al. [9], 1413 (0.5%) deaths and 153 thousand HCPs reported globally as having COVID-19 infections as of May 2020, which represents 4% of the global COVID-19 infection rate.

Healthcare providers are on the front lines of combating the COVID-19 pandemic; therefore, their role is essential in the prevention, management, and control of this pandemic. It is crucial for individuals to have the correct knowledge, attitudes, and practices surrounding the pandemic to avoid getting sick and spreading it to others. In some countries, assessments of HCPs' knowledge, attitudes, and practices regarding COVID-19 have been conducted. There were noteworthy findings in the literature. For instance, HCPs in Vietnam had an average knowledge score of 88% [10] compared to only 57% for HCPs in the UAE [11]. HCPs in Vietnam and the UAE, however, showed comparable scores for COVID-19 practices (88% vs. 90%, respectively).

One of the developing Gulf nations is the United Arab Emirates, which consists of seven emirates (Abu Dhabi, Dubai, Sharjah, Ajman, Fujairah, Ras Al Khaimah, and Umm Al Quwain). The largest emirate is Abu Dhabi, which is home to 2.7 million people, or 28% of the UAE's total population. Despite having excellent access to healthcare facilities, chronic illness rates remain high in Abu Dhabi. Cardiovascular disorders caused roughly 35% of all fatalities in 2015, followed by cancer (14% of all cancer-related deaths in the emirate) [12].

A limited number of studies have been conducted in the UAE to evaluate HCPs' knowledge, attitudes, and practices regarding COVID-19. Albahri et al. [11] conducted a study among HCPs (nurses and physicians) working at a primary healthcare center in Dubai with a relatively small sample size and found that participants had an insufficient level of knowledge, attitudes, and acceptable levels of infection control practices regarding the COVID-19 pandemic. These practices were found to be affected by participants' profession, religion, organization, and source of information about COVID [13]. Furthermore, Alghfeli et al. [14] mentioned that there was a gap between knowledge and practices regarding COVID-19 among HCPs working in Abu Dhabi, where participants demonstrated a poor level of knowledge and a high level of practices. In order to add to the existing knowledge, this study was carried out after the epidemic had subsided to reexamine those factors in order to explain what has been learned from them and to prepare in case further waves of the pandemic or another pandemic develop.

Furthermore, the current study sought to examine and compare HCPs' knowledge, attitudes, and practices regarding COVID-19 based on participant demographics. The decision-making authorities can have the baseline data regarding HCPs' degree of knowledge, attitudes, and practices regarding COVID-19 by evaluating these factors and comprehending their relationship with participants' demographics. Additionally, this can aid in identifying the factors that have both favorable and unfavorable impacts on the knowledge, attitudes, and practices of HCPs regarding COVID-19.

The following questions are meant to be addressed by the researchers in order to fulfill the study's objectives among nurses, physicians, and paramedics working at healthcare facilities during the initial phase of COVID-19:

1. What is the level of COVID-19 knowledge among HCPs in Abu Dhabi?
2. How favorable are the HCPs' attitudes of COVID-19 in Abu Dhabi?
3. What is the level of COVID-19 practice among HCPs in Abu Dhabi?
4. Based on their demographics, are there statistically significant differences in the HCPs' knowledge, attitudes, and practices regarding COVID-19?

2. Methods

2.1. Design and Setting

Utilizing an online survey, a descriptive cross-sectional study design was applied. The survey was disseminated by email and social media without advertising. (HCPs) Working in hospitals and primary healthcare facilities in Abu Dhabi, the capital of the UAE, participated in this study. According to the Abu Dhabi Social Statistics Center (SCAD) (2022), Abu Dhabi has 65 hospitals in total, representing the public, private, and military sectors. The majority of them (42 hospitals) are private, with a capacity for roughly 6,000 beds overall. With over 27,650 nurses, nurses make up the largest percentage of healthcare professionals in Abu Dhabi.

2.2. Sampling

Three types of hospitals and healthcare centers in Abu Dhabi were used to readily enlist participants (physicians, nurses, and paramedics). Five hospitals were chosen at random to represent each of the three healthcare sectors (public, private, and military). The selection process included writing the names of the eligible hospitals in each sector on a piece of paper, followed by a blind selection. Regarding military hospitals, there is only one military hospital in Abu Dhabi, which was conveniently chosen. Indeed, the selected hospitals were considered COVID-19 centers (out of 11 public hospitals, 1 military, and 6 private hospitals determined by the health authority of Abu Dhabi), in which all cases were positive for the Corona Virus. Physicians, nurses, and paramedics who had direct contact with patients diagnosed with the COVID-19 virus met the inclusion criteria. However, HCPs with administrative responsibilities were not included. A convenience sampling technique was used to recruit the sample for this study.

2.3. Instruments

The study instrument included the knowledge, attitudes, and practices (KAP) survey regarding COVID-19, which was developed by Albahri et al. [11]. After reviewing the literature, the researchers created the demographic data section, which included information on gender, religion, age, income, years of experience, marital status, type of facility, type of hospital, educational level, and status of COVID-19 exposure or infection (not exposed to a confirmed case, past exposure and quarantine, currently ill with the virus, and past illness with the virus), primary source of information (official health organizations, government agencies, and other sources), as well as the duty shift (day, night or rotating).

The KAP survey is divided into three sections. The first section uses 15 questions to gauge respondents' understanding of COVID-19, with the alternatives for each question being true, false, or I don't know. Only the correct response received a score of 1, while all other responses received a score of 0. This resulted in a range of scores from 0 to 15. Using seven questions, the second section gauges attitudes toward COVID-19. Agree, disagree, or I'm not sure are the available response choices. Only the agree response, which demonstrated a positive attitude, received a score of 1, while all other responses received a score of 0. The final score ranged from 0 to 7. Six questions make up the final section, which serves as practice. Practices that were consistently performed received a score of 1; otherwise, they received a score of 0. The maximum score for this section was therefore 6.

Bloom's cutoff criterion of 80% was chosen in order to have a sufficient score in each part [11]. As a result, a score of 12 or higher was deemed to indicate sufficient knowledge, a score of 5.6 or higher indicated favorable attitudes, and a score of 4.8 or higher indicated appropriate infection control practices. The survey took about 15 minutes to complete and was in the English language. In the current study, the internal consistency reliability was evaluated using Cronbach's alpha. The scores for the knowledge scale were 0.73, the attitude scale was 0.80, and the practice scale was 0.70.

The authors of the questionnaire reported its face validity and content validity. ace validity was examined by specialists in the field, and content validity was based on previously published pertinent literature [15-17].

2.4. Ethical Consideration

The scientific study committee at Zayed Military Hospital granted its ethical permission (Approval # 2021/8), after which each participating hospital was contacted to gain its own ethical approval. By coding the questionnaire, the data collectors protected the confidentiality of the participants. They explained the purpose and nature of the study. The completion of the questionnaire by participants who willingly consented to participate implied their agreement without being subjected to coercion, risk, or harm.

2.5. Data Collection

The data collectors approached the management of the selected settings to request permission to conduct the study after receiving ethical approval. After obtaining permission, they identified and targeted eligible participants, conducted interviews with them to describe the nature and objectives of the study. The data collectors then sent the survey link (using Google Forms) via email and social media applications in accordance with the participants' desires. Participants were aware that they were implying consent when they submitted the questionnaire. The cover letter included the purpose, risks, and benefits as well as the rights of the participants. Data were gathered between February and April 2021.

2.6. Data Analysis

Data analysis was conducted using IBM SPSS (version 21). The first three questions were addressed using descriptive statistics (means, standard deviations, and frequencies) after the data had been cleaned and checked for errors. To assess differences in participants' knowledge, attitudes, and practices regarding COVID-19 based on their demographics, the fourth question was addressed using a series of independent sample t-tests, one-way analysis of variance (ANOVA), and Pearson correlation.

3. Results

3.1. Sample Characteristics

The study questionnaire was completed by 290 individuals in total. Male participants made up the majority (n= 237, 81.7%), followed by those who were married or living with a partner (n= 197, 67.9%), Muslims (n= 204, 70.3%), bachelor's degree holders (n= 229, 79.0%), and those who worked in hospitals (n= 219, 75.5%). Government employees (n=145, 50%) and those working rotating shifts (n=166, 57.2%) made up the majority of the group of nurses (n=188, 64.8%). The participants' average age was 36.4 years (SD= 5.0), their average experience was 12.9 years (SD= 4.2), and their average income was 19,888 UAE dirhams (SD= 10,193.8). The majority of the individuals (n=266, 91.7%) had previously experienced COVID-19 exposure, quarantine, and illness.

3.2. Description of Main Study Variables and Each Individual Items

90% of the participants correctly replied, indicating that they had a high degree of knowledge about the COVID-19 pandemic (mean score: M=13.9 [out of 15], SD=0.93). The statement "There is presently no effective cure for COVID-19, but early symptomatic and supportive treatment can help most patients recover from the infection" (n=288, 99.3%) was correctly answered by the greatest number of participants. While "Diarrhea is a probable symptom of COVID-19" (n= 239, 82.4%) had the lowest percentage of participants who answered it correctly (Table 2).

Table 2.
Description of the individual items of the knowledge regarding COVID-19.

Item	Frequency of correct answer (n)
1. There is currently no effective cure for COVID-19, but early symptomatic and supportive treatment can help most patients recover from the infection.	288 (99.3)
2. Not all persons with COVID-19 will develop severe cases. Those who are elderly, have chronic illnesses, and are obese are more likely to be severe cases.	287 (99)
3. Persons with COVID-19 cannot transmit the virus to others when a fever is not present.	297 (96.2)
4. The COVID-19 virus spreads via respiratory droplets of infected individuals.	284 (97.9)
5. Wearing general medical masks by the public can help prevent the acquisition of infection from the COVID-19 virus.	269 (92.8)
6. It is not necessary for children and young adults to take measures to prevent infection by the COVID-19 virus.	240 (82.8)
7. To prevent infection by COVID-19, individuals should avoid going to crowded places such as bus parks and refrain from taking public transportation.	264 (91)
8. Isolation and treatment of people who are infected with the COVID-19 virus are effective ways to reduce the spread of the virus.	270 (93.1)
9. People who have contact with someone infected with the COVID-19 virus should be immediately isolated in a proper place. In general, the observation period is 28 days.	284 (97.9)
10. Diarrhea is a possible symptom of COVID-19.	239 (82.4)
11. Currently COVID-19 vaccine is available in the market.	241 (83.1)
12. Healthcare workers are at a higher risk of infection.	271 (93.4)
13. Early antibiotic use shortens the duration of COVID-19 illness.	257 (88.6)
14. SARS-CoV-1 is the causative agent of COVID-19 infection.	266 (91.7)
15. Detection of the viral protein via PCR analysis of the patient's sample is the main way of diagnosing COVID-19.	286 (98.6)

Participants generally had positive attitudes about the COVID-19 pandemic as evidenced by their score of 97.9% (*M*= 6.8 [out of 7], *SD*= 1.02), with six out of seven items scoring >90%. The question with the highest score (*n*=280, 96.6%), as shown in Table 3, was "If the country needs you, you will be willing to help in the frontline rescue." While "If getting COVID-19, you will accept isolation in health facilities" (*n*=259, 89.3%) had the lowest item score.

Table 3.
Description of the Individual Items of the Attitudes regarding COVID-19.

Item	Frequency of correct answer (n)
1. You are extremely worried that you might catch the COVID-19 infection.	274 (94.5)
2. You are extremely worried that one of your family members might get infected.	279 (96.2)
3. If getting COVID-19, you will accept isolation in health facilities.	259 (89.3)
4. Prevalence of COVID-19 can be reduced by the active participation of healthcare workers in infection control programs.	273 (94.1)
5. If a COVID-19 vaccine were available, I would have it.	275 (94.8)
6. COVID-19 pandemic will be successfully controlled.	268 (92.4)
7. If the country needs you, you will be willing to help on the frontline rescue.	280 (96.6)

With a mean score of (*M=5.7* [out of 6], *SD=0.95*], participants indicated good levels of infection control practices (92.1%) in relation to COVID-19. The question "During the epidemic, did you use sodium hypochlorite or 70% alcohol as surface disinfectant?" had the highest score, as indicated in Table 4. (*n*=286, 98.6%) and "Did you participate in training programs to improve/refresh your practice on infection control and COVID-19 during the outbreak?" (*n*= 285, 98.3%). The question "During the outbreak, did you maintain social distance at work?" received the lowest score (*n=266*, 87.9%).

Table 4.
Description of the individual items of the practice regarding COVID-19.

Item	Frequency of correct answer (n)
1. During the outbreak, did you participate in training programs to increase/ refresh your practice on infection control and COVID-19?	285 (98.3)
2. During the outbreak, did you use sodium hypochlorite or 70% alcohol as surface disinfectant?	286 (98.6)
3. During the outbreak, did you wash your hands before and after contact with your patients?	281 (96.9)
4. During the outbreak, did you maintain social distancing at your workplace?	266 (87.9)
5. During the outbreak, did you follow the steps in doffing your PPE as per protocol?	280 (96.6)
6. During the outbreak, did you wear a surgical mask for routine patient contact?	270 (93.1)

3.3. Comparison of Study Variables Based on Participants' Demographics

Based on the participants' demographics, Table 5 contrasted their knowledge, attitudes, and practices about COVID-19. Based on the participants' religion, there was a statistically significant difference in knowledge (t= -4.9, df= 287, $p < 0.05$), attitudes (t= -1.71, df=287, $p < 0.05$), and practices (t= -3.7, df= 287, $p < 0.05$), according to the findings of the independent-samples t-test. In comparison to Muslims, Christian volunteers significantly outperformed them in terms of knowledge (M=14.63, SD=0.77), attitudes (M=6.96, SD=0.21), and practices (M=5.98, SD=0.22). Additionally, based on educational level, the findings showed a significant difference in practices (t = –2.07, df= 288, $p < 0.05$). Participants with a Master's degree or higher exhibited considerably greater levels of practices than their contemporaries (M= 14.25, SD= 1.11 vs. M= 5.90, SD= 0.35).

Table 5.
Comparison of HCPs, KAP regarding COVID-19 based on categorical demographic variables.

Variable	Category	Knowledge	Attitude	Practice
		Mean (SD)	Mean (SD)	Mean (SD)
Religion	Muslim	13.56 (1.95)	6.73 (1.20)	5.60 (0.92)
	Christian	14.63 (0.77)*	6.95 (0.21)*	5.98 (0.22)*
Education level	Bachelor degree	13.78 (1.88)	6.79 (1.04)	5.66 (0.88)
	Master or higher	14.25 (1.11)*	6.82 (0.92)	5.90 (0.35)*
Type of hospital/healthcare center	Governmental	14.03 (1.59)	6.72 (1.29)	5.61 (0.95)
	Private	14.07 (1.67)	6.88(0.77)*	5.91 (0.33)
	Military	13.88 (2.12)*	6.86 (0.35)	5.68 (0.88)*
Type of profession	Physician	14.3 (1.40)*	6.95 (0.21)*	5.90 (0.39)*
	Nursing	13.71 (1.74)	6.80 (0.92)	5.72 (0.73)
	Paramedic	13.18 (2.24)	6.34 (2.07)	5.34 (1.20)
SARS-CoV. Status	Past illness with the virus.	12.73 (1.67)	5.13 (2.69)	5.53 (0.74)
	Not exposed to confirmed infected cases, Past illness with the virus	12.67 (1.63)	5.50 (2.73)	5.16 (0.75)
	Past exposure and quarantine, Past illness with the virus	13.97 (1.74)	6.91 (0.62)	5.75 (0.75)*
	Past exposed and quarantine, currently ill with the virus.	14.43 (1.15)*	6.92 (0.63)*	4.33 (2.88)
Primary source of information	Social media, News media, Seminar and workshop	13.85 (1.77)	6.86 (0.74)	5.31 (1.20)
	Official health organizations, News media, Seminars and workshops	14.53 (0.90)*	6.81 (1.02)	5.97 (0.14)*
	Official health organizations, News media, Scientific journals, internet	13.25 (2.11)	6.71 (1.23)	5.85 (0.43)
Duty shift	Day	14.10 (1.60)*	6.89 (0.67)	5.80 (0.59)
	Night	12.14 (2.54)	6.85 (0.37)	5.71 (0.75)
	Rotating	13.81 (1.78)	6.72 (1.21)	5.65 (0.92)

The kind of hospital/healthcare center, type of profession, and COVID-19 infection status were the categories for which the one-way ANOVA test was utilized to compare the means of the study variables. Based on knowledge and practices related to COVID-19, there was a statistically significant difference between the groups (F= 5.72, df= 2, $P < 0.05$) and (F= 4.11, df= 2, $P < 0.05$). The cause of the difference in these variables' means was found using post-hoc analysis (Bonferroni). The findings showed that individuals from the military hospital had considerably lower knowledge levels than participants from both public and private hospitals (M=13.88, SD=2.12). Additionally, the results of the study revealed that there are statistically significant differences in knowledge (F= 3.08, df= 3, $p < 0.05$), attitudes (F= 2.67, df= 3, $p < 0.05$) and practices (F= 4.33,

df= 3, $p < 0.05$) depending on the type of profession. According to the findings of the post-hoc study, doctors outperformed nurses and paramedics in terms of the three variables' mean scores.

One-way ANOVA analysis showed a statistically significant difference in knowledge (*F*= 3.45, *df*= 3, $p < 0.05$), attitudes (*F*= 21.77, *df*= 3, $p < 0.05$), and practices (*F*= 4.52, *df*= 3, $p < 0.05$) regarding the COVID-19 infection status. According to the findings of the post-hoc analysis, participants who had previously been exposed to the virus and were currently infected with it had the highest mean scores in knowledge and attitudes, while those who had previously been ill with the virus in the past had the highest mean scores in practice. Additionally, the primary source of information revealed a statistically significant difference in knowledge *(F*= 13.88, *df*= 2, $p < 0.05$) and practices (*F*= 21.47, *df*= 2, $p < 0.05$). The findings of the post-hoc analysis showed that the participants with the highest mean score levels reported using official health organizations, news media, seminars, and workshops. Last but not least, there was a statistically significant difference in knowledge only based on the duty shift *(F*= 4.29, *df*= 2, $p < 0.05$). The post-hoc analysis's findings revealed that day duty employees had the highest mean scores (*M*=14.10, *SD*=1.60). Finally, the continuous demographic data of the participants (age, income and years of experience) and the primary study variables were compared using the Pearson correlation test. Surprisingly, none of them had a statistically significant correlation with of the main study variables.

4. Discussion

The objective of the current study was to investigate COVID-19 knowledge, attitudes, and practices among HCPs in Abu Dhabi and to compare them based on participant demographics. It was interesting that the response rate was 94% after sending out the invitations and the link to the survey. We believe that this high response rate could be due to the fact that COVID-19 was a serious, essential, and important topic for HCPs, for which they might have felt that participating in such studies may help in improving the body of knowledge regarding this pandemic.

The reported level of COVID-19 pandemic-related knowledge, attitudes, and practices was sufficient (93%, 97%, and 95%, respectively), which contradicts earlier work evaluating the HCPs' knowledge, attitudes, and practices in the UAE [14]. They mentioned that HCPs demonstrated an insufficient level of knowledge and attitude, but good prevention and control practices. This may relate to the fact that this study was conducted in the late phase of the COVID-19 pandemic. It may also simply reflect the COVID-19 atmosphere that extended for a relatively long period, where people and HCPs focused on and sought to learn about this pandemic. Having a sufficient knowledge level is a prerequisite to building preventive practices and formulating positive attitudes toward COVID-19 [16, 18-20].

It is worth noting that the findings of this study were comparable to those of a small number of other studies conducted among HCPs in the United Arab Emirates [11, 13, 14], which revealed a comparable level of knowledge, a modest attitude, and practice levels. Also, comparable results were reported among the general public in an Arabic-speaking country [21].

The findings showed that compared to Muslims, Christians had a higher level of knowledge, attitudes, and practices regarding COVID-19. The findings are consistent with other studies carried out in Nigeria [20] and Ethiopia [18, 22]. The reason is unclear; however, it might be connected to traditional and cultural practices like prayer and post-mortem care. Also, those with master's degrees or higher also scored higher on COVID-19 pandemic practice tests than participants with bachelor's degrees. This finding is in line with the literature [23, 24], which found that education level is a strong indicator of knowledge domain regarding COVID-19. It is therefore assumed that having better access to information and having higher education may result in an appropriate perception and comprehension of COVID-19 information and, as a result, better knowledge of COVID-19. This suggests that HCPs may be more motivated to understand and provide the highest level of care if they have access to information and a higher educational level.

It was discovered that participants from military healthcare settings had less knowledge than those from the public and private sectors. This outcome is consistent with research conducted among Saudi citizens and reported by Baig et al. [25]. This can be a result of the heavy workload in military hospitals. Because of their heavy workload, HCPs may be less motivated to learn new things and complete their assigned responsibilities [26-28]. Additionally, compared to other professions, physicians were shown to have a better degree of knowledge, attitudes, and practices about the COVID-19 pandemic. This finding is consistent with two studies carried out in Egypt [29] and Uganda [20], which could be attributed to physicians' lower patient exposure rates compared to other HCPs. As a result, there may be more time to study about and implement the infection control procedures for COVID-19 into the right and precise practice if there is less exposure. Finally, it is important to note that those working day shifts reported greater knowledge levels and easier access to information than those working night or rotating shifts. As reported in the literature, unstable work schedules might have a negative impact on HCPs' knowledge, attitudes, and practices regarding COVID-19 [18, 30].

The majority of participants also reported that news outlets, seminars, workshops, and official health organizations were their primary sources of information regarding the epidemic. Studies carried out in China [16] and India came to similar conclusions [31]. This outcome might be explained by the seriousness, significance, and impact of the epidemic on society, which led HCPs to look for the most dependable sources. The majority of subjects (91.7%) had both prior COVID exposure and quarantine, as well as prior viral infection. This might demonstrate that HCPs are more likely than other professions to contract the COVID-19 virus due to their close interaction with infected patients [8, 31, 32].

4.1. Implications and Recommendations

The results of the current study have a variety of implications and recommendations for health organizations and healthcare managers through developing ongoing educational and training programs regarding infectious diseases and how to deal with all kinds of isolations for both working (HCPs) and students in all kinds of healthcare colleges, particularly those who work on rotating shifts, in order to ensure that they have the highest level of knowledge, attitudes, and practices regarding

COVID-19. The ultimate goal is to maintain safety and health in order to provide the highest level of care for patients. In addition, those who are actively

For healthcare practitioners to be properly prepared for infection prevention in the workplace, periodic assessments, like the one carried out in this study, are essential. Healthcare facilities should provide HCPs with online access to relevant information sources, such as official health organizations and research databases, so they can stay current. Equipping HCPs with the necessary knowledge should start at the lower level in their schools so that they are trained for such situations [33, 34].

In order to reduce stress and possibly enhance attitudes and practices among HCPs, managers could consider offering more flexible schedules and accommodating working conditions. This can lead to high levels of dedication, productivity, and care provided. The use of a qualitative research design may also be necessary to provide comprehensive information from the perspective of the HCPs.

4.2. Strengths and Limitations

This investigation into HCPs' knowledge, attitudes, and practices about COVID-19, as well as a comparison of them depending on participant demographics, may be the first of its kind in Abu Dhabi. This study consequently helped us understand more about the knowledge, attitudes, and practices around the COVID-19 epidemic. However, one of the study's drawbacks was the use of a convenience sample, which would limit how broadly the results can be applied. Another drawback of using self-reported questionnaires to gather data is that their veracity depends on the study participants' honesty. Finally, it was challenging to compare the study results with those of other studies due to the dearth of published research papers highlighting characteristics that affect HCPs' knowledge, attitudes, and practices about the COVID-19 pandemic.

5. Conclusion

With reference to the COVID-19 pandemic, the majority of HCPs in the current survey showed high levels of knowledge, favorable attitudes, and strong infection control measures. The findings of this study demonstrated excellent levels of knowledge, attitude, and practice. This may suggest that healthcare professionals may react to illnesses more appropriately in the future. Furthermore, it was discovered that a number of parameters significantly differed in the knowledge, attitudes, and practices of the HCPs regarding COVID-19. By implementing ongoing educational, training, and assessment programs, healthcare administrators and policymakers should focus on these characteristics to increase and sustain the highest level of HCPs' knowledge, attitudes, and practices addressing COVID-19. To ensure that citizens are given accurate information regarding the COVID-19 epidemic, the authorities must also keep an eye on and provide guidance to the mainstream media and social media.

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Table 1.
Demographic profile of the participants (N=209).

Variable	Mean (SD)	Range	n (%)
Age	36.4 (5.0)	28- 57	
Income monthly (UAE Dirham)*	19883.1 (10193.8)	8000- 55000	
Period of experience (years)	12.9 (4.2)	28-May	
Gender			
Male			237 (81.7)
Female			53 (18.3)
Marital status			
Married/ Living with partner.			197 (67.9)
Single			87 (30.)
Divorced			6 (2.1)
Religion			
Muslim			204 (70.3)
Christian			86 (29.7)
Education level			

Bachelor's degree			229 (79.0)
Master's degree or higher.			61 (21.0)
Type of profession			
Nursing			188 (64.8)
Paramedic			32 (11.0)
Physician			69 (23.8)
Type of facility			
Hospital			219 (75.5)
Primary health care center			71 (24.5)
Type of hospital/healthcare center			
Governmental			145 (50.0)
Private			89 (30.7)
Military			56 (19.3)
Duty shift			
Day			117 (40.3)
Night			7 (2.4)
Rotating			166 (57.2)
Sars-CoV-2 exposure or infection status			
Past illness with the virus.			15 (5.2)
Not exposed to a confirmed infected case, Past illness with the virus			6 (2.1)
Past exposure, quarantine, Past illness with the virus			266 (91.7)
Past exposed, quarantine, currently ill with the virus.			3 (1.0)
Primary source of information			
Social media, News media, Seminar and workshop			98 (33.8)
Official health organizations, News media, Seminar and workshop			95 (32.8)
Official health organizations, News media, Scientific journal, internet			97 (33.4)