

COVID-19 Knowledge, Awareness, and Perceived Stress among Jordanian Healthcare Providers

Emad Aborajooh,¹✉ Mohammed Qussay Al-Sabbagh,² Baraa Mafrachi,²
Muhammad Yassin,³ Lana Alhalaseh,⁴ Rami Dwairi,⁵ Nakhleh E Abu- Yaghi,⁶
Yahya AL-Khazraji⁷ and Mohammad Abufaraj⁸

Abstract

Background: Healthcare providers (HCPs) are frontline workers during the COVID-19 pandemic. They are prone to an increased risk of infection and psychological stress.

Aims: To measure levels of knowledge, awareness, and stress about COVID-19 among HCPs.

Methods: This cross-sectional study of 397 HCPs utilized an internet-based validated questionnaire to evaluate knowledge about COVID-19, the availability of personal protective equipment (PPE), future perceptions, and psychological distress. Univariate and multivariate ordinal logistic regression analyses were used to evaluate factors associated with the degree of knowledge and psychological stress.

Results: Overall, 24.4% showed excellent knowledge, while 54.4% and 21.2% demonstrated good and poor knowledge, respectively. Social media (61.7%) and medical papers (57.7%) were the most commonly used sources of information. Being a female ($\beta=0.521$, 95% CI 0.049–0.992), a physician ($\beta=1.421$, 95% CI 0.849–1.992), or using published literature to gain knowledge ($\beta=1.161$, 95% CI 0.657–1.664) were positive predictors of higher knowledge levels, whereas having higher levels of stress ($\beta=-0.854$, 95% CI -1.488 to -0.221) and using social media ($\beta=-0.434$, 95% CI -0.865 to -0.003) to gain information were negative predictors of knowledge levels. The availability of PPE was significantly associated with lower psychological stress ($p=.01$).

Conclusion: Institutions have to provide free evidence-based resources for HCPs about COVID-19, and PPE should be secured to reduce the amount of psychological stress associated with treating COVID-19 patients, as well as to improve their knowledge and the subsequent care provided.

Keywords: COVID-19, healthcare providers, Jordan, knowledge, perceived stress

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¹ Department of General Surgery and Anesthesia, Faculty of Medicine, Mutah University, Kerak, Jordan.

² School of Medicine, University of Jordan, Amman, Jordan.

³ King Hussein medical center, Jordan Royal Medical Services, Amman, Jordan.

⁴ Department of Family and Community Medicine, School of Medicine, University of Jordan, Amman, Jordan

⁵ Department of Internal Medicine, Faculty of Medicine, Mutah University, Kerak, Jordan.

⁶ Department of Special Surgery, Ophthalmology Division, School of Medicine, The University of Jordan, Amman, Jordan

⁷ Department of Special Surgery, Jordan University hospital, University of Jordan, Amman, Jordan.

⁸ Department of Special Surgery, Jordan University hospital, University of Jordan, Amman, Jordan. Department of Urology, Medical University of Vienna, Vienna, Austria.

✉Corresponding author: emad_aborajooh@yahoo.com

INTRODUCTION

An outbreak of severe viral pneumonia of unknown origin was reported in December 2019 in Wuhan City, Hubei Province, China. A few days later, the etiology of this outbreak was identified to be a novel coronavirus that was named Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV2) [1]. SARS-CoV2 is a positive-sense single-stranded RNA virus [2]. It belongs to the coronavirus family, which was responsible for the Severe Acute Respiratory Syndrome (SARS-CoV) and Middle East Respiratory Syndrome Coronavirus (MERS-CoV) outbreaks of the past two decades [3].

SARS-CoV2 causes a clinical syndrome called coronavirus disease 2019 (COVID-19), which presents with fever, sore throat, fatigue, cough, and dyspnea. Droplet transmission from person to person is the most likely route of spreading this infection [1]. At the time of writing this manuscript, there is no evidence-based targeted therapies or vaccines, apart from symptomatic and supportive management [4]. The outbreak was declared a global pandemic by the World Health Organization (WHO) on March 11, 2020 [1]. As of April 16, 2020, more than two million confirmed cases and 131,000 deaths had been documented in 212 countries [5].

On March 2, Jordan confirmed its first case of COVID-19. Following this, self-isolation, social distancing, and home quarantine were adopted to mitigate and control its spread [6]. Health care providers (HCPs), however, were exempted from this mass quarantine to deal with urgent cases, critical patients, and the emergent situation. HCPs are the frontline defense against COVID-19. Thus, they are more prone to catch the infection and spread it to their patients, colleagues, and society [7]. Moreover, during pandemics, HCPs are more vulnerable to psychological distress, fatigue, and heavy workload that may adversely affect their mental health [8]. Research from Jordan measuring the response of frontliners to the COVID-19 outbreak is scarce. A report from the University of Jordan looking into the preparedness of HCPs for such an outbreak highlighted significant challenges and insufficiencies. Doctors concerned about

dealing with COVID-19 patients and those who enjoyed strict institutional protocols for dealing with the pandemic had higher knowledge and preparedness scores [9]. Therefore, it is vital to ensure that HCPs are properly aware of this virus, transmission, and precautionary measurements. In this study, we aim to evaluate the knowledge, awareness, and psychological impact of COVID-19 among Jordanian HCPs.

METHODS

Study settings

The Hashemite Kingdom of Jordan is a lower to middle-income country with a population of 10.2 million (2020). The Jordanian populace is unevenly distributed geographically, with almost two-thirds (62%) living in the center of the kingdom [10]. In 2019, the average gross domestic product (GDP) per capita was 4,552 USD. The annual growth rate of the population is 1.9%, and, based on that, according to the Department of Statistics (DoS) on the national population and housing census, Jordan's population has increased by nearly 87% over a decade. According to Internet World Stats (IWS), there were 8,700,000 internet users in December 2017. Facebook was by far the most popular website, with more than 53.5% of the Jordanian population having Facebook accounts [6].

Study design and sampling

This cross-sectional study utilized an internet-based survey (Google Forms) which was distributed via Facebook and Twitter pages, groups, and profiles between 6–12 April (after the execution of the national lockdown). The targeted respondents were Jordanian HCPs (including interns, general physicians, residents, specialists, consultants, staff nurses, practical nurses, dentists, pharmacists, laboratory personnel, and technicians) from all 12 Jordanian provinces. Participants were encouraged to share the questionnaire with their colleagues, creating a snowball sample. Participants were included if they worked as HCPs, lived in Jordan, and gave informed consent (Figure 1). To detect a moderate effect size with a statistical power of 0.8, a minimum sample size of 122 was required. A total of 397 participants filled out the questionnaire.

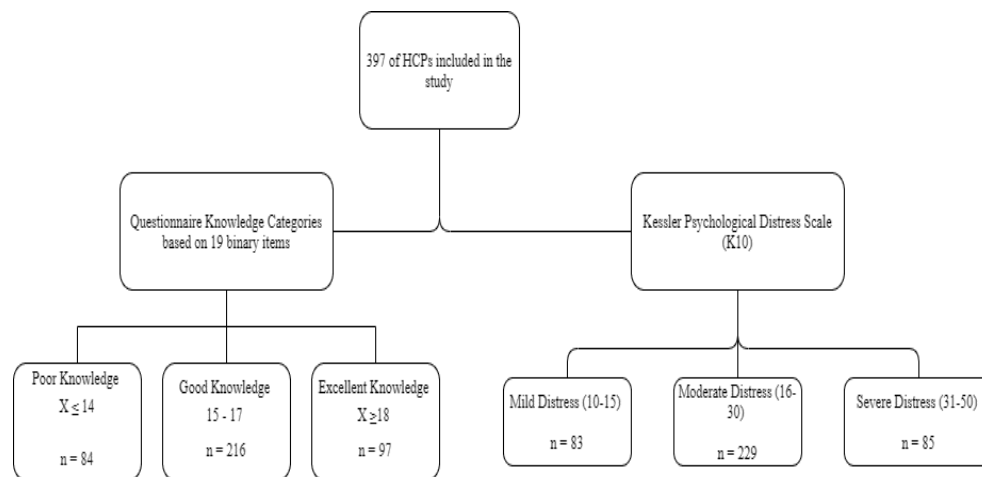


Figure 1: Participant Recruitment and Categorization

Instrument development and validation

The study instrument was based on the currently available evidence in the literature and the latest WHO recommendations [11]. The validity of the questionnaire content was determined after consensus among the authors. The questionnaire was distributed in the English language since it is the language of medical education in Jordan and the formal tool of communication among HCPs. The questionnaire was designed to inquire about sociodemographic variables and to measure knowledge, availability of personal protective equipment (PPE), future perceptions, and psychological distress (Tables 3 and 4).

COVID-19 knowledge questions

Knowledge was assessed using 19 binary questions about presenting symptoms, transmission route, incubation period, preventative measures, diagnosis, treatments, and awareness. A scoring system of 19 points was applied first, and then the participants were stratified into three categories based on the tertiles into poor knowledge (≤ 14 points), good knowledge (15–17 points), and excellent knowledge (≥ 18 points). The perceived stress was measured by the Kessler Psychological Distress Scale (K10), as it is shown to have high reliability and validity in assessing psychological distress among general and clinical populations from different cultural backgrounds [12]. The cut points of 10–15, 16–

30, and 31–50 points were used for mild, moderate, and severe psychological distress, respectively. A pilot study was conducted on 40 participants who were not included in the main study to assess the internal consistency of the questionnaire. Cronbach's α values of the subscales were 0.94 and 0.81 for K10 and the knowledge scale, respectively.

Statistical analysis

Data were analyzed using STATA (Stata Statistical Software: Release 16. College Station, TX: Stata Corp LLC). The associations of demographic variables with knowledge components and K10 score were evaluated using the Kruskal-Wallis test for polychotomous variables and the Wilcoxon Rank-Sum test (Mann-Whitney U test) for dichotomous variables. A univariate and multivariate logistic regression analyses were used to assess the impact of sociodemographic factors, accreditation to deal with COVID-19 cases, the presence of clear guidelines in the workplace, and the availability of PPE factors on the degree of HCPs' knowledge. A p -value of less than 0.05 was considered statistically significant.

Ethical considerations

Ethical approval was granted from the Institutional Review Board (IRB) at Jordan University Hospital. The study objectives, nature of participation, and privacy of data handling were explained on the first page. An online consent form was obtained from all

participants before accessing the questionnaire.

RESULTS

Sociodemographic characteristics of the participants are reported in Tables 1 and 2. The mean age of the study participants was 34.4

years, ranging from 23 to 71 years. Most of the participants were males (66.5%), married (63.5%), and living in the capital and other central provinces (56.2%). Physicians represented the majority of the included participants, followed by nurses.

Table 1: Baseline characteristics of the participants according to the knowledge score

Variable	Category	Total n (%)	Knowledge Score			p-value
			Poor n (%)	Good n (%)	Excellent n (%)	
	Total Sample	397 (100)	84 (21.2)	216 (54.4)	97 (24.4)	
Gender						0.1
	Male	264 (66.5)	52 (19.7)	142 (53.8)	70 (26.5)	
	Female	133 (33.5)	32 (26.1)	74 (55.6)	27 (20.3)	
Age (Years)						0.5
	23–30	160 (40.3)	43 (26.8)	77 (48.2)	40 (25.0)	
	31–40	160 (40.3)	26 (16.3)	98 (61.2)	36 (22.5)	
	≥41	77 (19.4)	15 (19.5)	41 (53.2)	21 (27.3)	
Marital status						0.5
	Unmarried	145 (36.5)	34 (23.5)	77 (53.1)	34 (23.4)	
	Married	252 (63.5)	50 (19.8)	139 (55.2)	63 (25.0)	
Residency						0.01
	Middle	223 (56.2)	42 (18.8)	122 (54.7)	59 (26.5)	
	North	40 (10.1)	5 (12.5)	50 (50.0)	15 (37.5)	
	South	134 (33.7)	37 (27.6)	74 (55.2)	23 (17.2)	
Occupation						<0.001
	Doctors	243 (61.2)	27 (11.1)	136 (56.0)	80 (32.9)	
	Nurses	73 (18.4)	28 (38.4)	38 (52.0)	7 (9.6)	
	Others	81 (20.4)	29 (35.8)	42 (51.8)	10 (12.4)	
Specialty						0.03
	Internal medicine	76 (33.3)	10 (13.2)	41 (53.9)	25 (32.9)	
	General surgery	93 (40.8)	12 (12.9)	52 (55.9)	29 (31.2)	
	Obstetrics and gynecology	20 (8.8)	1 (5.0)	14 (70.0)	5 (25.0)	
	Pediatrics	12 (5.7)	1 (8.3)	9 (75.0)	2 (16.7)	
	Other	27 (11.8)	11 (40.7)	12 (44.4)	4 (14.8)	

Table 2 shows that most of the participants had a moderate (57.7%) amount of distress, and females were more likely to have severe stress. Increasing age was significantly associated

with lower stress. There was no statistically significant difference in the amount of stress between the different groups of HCPs or departments.

Table 2: Baseline characteristics of the participants according to the Kessler Psychological Distress Scale

Categories	Total n (%)	Kessler Psychological Distress Scale			p-value
		Mild n (%)	Moderate n (%)	Severe n (%)	
	397 (100)	83 (20.9)	229 (57.7)	85 (21.4)	
Gender					<0.001
Male	264 (66.5)	64 (24.2)	153 (58.0)	47 (17.8)	
Female	133 (33.5)	19 (14.3)	76 (57.1)	38 (28.6)	
Age (Years)					<0.001
23–30	160 (40.3)	26 (16.2)	95 (59.4)	39 (24.4)	
31–40	160 (40.3)	32 (20.0)	91 (56.9)	37 (23.1)	
≥41	77 (19.4)	25 (32.5)	43 (55.8)	9 (11.7)	
Marital status					0.2
Unmarried	145 (36.5)	25 (17.2)	86 (59.3)	34 (23.5)	
Married	252 (63.5)	58 (23.0)	143 (56.6)	51 (20.2)	
Residency					0.2
Middle	223 (56.2)	50 (22.4)	117 (52.5)	56 (25.1)	
North	40 (10.1)	10 (25.0)	27 (67.5)	3 (7.5)	
South	134 (33.7)	23 (17.2)	85 (63.4)	26 (19.4)	
Occupation					0.5
Doctors	243 (61.2)	50 (20.6)	137 (56.4)	56 (23.0)	
Nurses	73 (18.4)	14 (19.2)	43 (58.9)	16 (21.9)	
Others	81 (20.4)	19 (23.5)	49 (60.5)	13 (16.0)	
Specialty					0.2
Internal medicine	76 (33.3)	11 (14.5)	47 (61.5)	18 (23.7)	
General surgery	93 (40.8)	26 (28.0)	50 (53.8)	17 (18.2)	
Obstetrics and gynecology	20 (8.8)	4 (20.0)	10 (50.0)	6 (30.0)	
Pediatrics	12 (5.7)	1 (8.3)	7 (58.3)	4 (33.3)	
Other	27 (11.8)	6 (22.2)	17 (63.0)	4 (14.8)	

COVID-19 knowledge (Tables 3 and 4)

Table 3 illustrates the percentage of correct responses to the knowledge items. Most of the participants had a good amount of knowledge (54.4%), and the mean knowledge score was 15.9 ± 2.2 . Ninety-seven (24.4%), 216 (54.4%), and 84 (21.2%) demonstrated excellent, good, and poor knowledge, respectively. Half of the participants (50.4%) incorrectly believed that COVID-19 is an airborne disease. The majority

of the study HCPs were aware of COVID-19 symptoms, transmission, prevention, diagnosis, and treatment. Most of the participants were up to date with the recently published guidelines and recommendations, yet 25.4% (101) were unaware of the recent BCG vaccine study. There was a statistically significant correlation between PPE training and increasing knowledge about COVID-19 ($p=.01$).

Table 3: Frequency of responses to the knowledge items

Statement	Percentage of correct answers (%)
Coronavirus type and genome mutations	
1. Coronavirus is a positive single stranded RNA virus	80.6
2. Coronavirus mutations led to emerging SARS and MERS in the past	90.2
3. Coronavirus genome mutation causing the current pandemic is called COVID-19 or nCoV-19 or SARS-CoV2	82.9
4. Wuhan City, Hubei Province, China, is where the first case was reported	40.8
Transmission and incubation period	
5. COVID-19 is caused by zoonotic pathogens that can be transmitted via animal-to-human and human-to-human	83.6
6. Based on the available evidence, the mode of human-to-human transmission of COVID-19 is airborne	49.6
7. Asymptomatic cases of COVID-19 can transmit disease	95.5
8. Incubation period for COVID-19 ranges from 2–14 days but several reports document longer periods	97.7
Preventive measures	
9. According to WHO guidelines: hand washing, covering mouth and nose during coughing and avoidance of sick contact are helpful preventive measures	98.5
10. Children less than 14 years have low risk of a severe disease so social distancing is not needed	71.8
11. Until now, there is no specific vaccine available	95.5
Symptoms, diagnosis and treatment	
12. PCR for COVID-19 by nasopharyngeal swab is an acceptable method for diagnosis but false negative rate is about 35%	80.1
13. Fever, dry cough, difficulty breathing, body aches, nasal congestion, sore throat or diarrhea are the most common symptoms of COVID-19	96.5
14. Although most cases of COVID-19 have mild symptoms, but it could lead to pneumonia, respiratory failure and death with highest mortality rate in elderly and those with comorbid diseases	98.5
15. Till now there is no specific treatment available	96.0
Awareness of newly released reports and recommendations	
16. Chloroquine, Lopinavir, Ritonavir, Remdesivir, Azithromycin, Tocilizumab and COVID-19 convalescent plasma are all being tested as treatment options, but effectiveness is awaiting approval	88.7
17. BCG vaccine has been studied as being a protective measure and lessens the course of disease but till now not recommended by the WHO or FDA	74.6
18. COVID-19 may relapse and cause new outbreaks	85.6
19. All elective surgical procedures should be postponed at the time of the pandemic	83.4

Table 4 illustrates the frequency of participant responses to the sources of knowledge and PPE. Social media and recently published articles were the most frequently used sources of information to gain knowledge about COVID-19, while colleagues, friends, and family members were the least cited sources of information. Further, almost half of the respondents were either working in

accredited hospitals or had clear guidelines for dealing with COVID-19 cases. Regarding the availability of advanced PPE, only 33.5% and 26.7% reported that N95 masks and disposable eye protectors or face shields were currently available in their workplaces. Their availability was significantly associated with lower levels of psychological stress ($p=.01$).

Table 4: Frequency of responses to sources of knowledge and personal protective equipment

Statement	Positive responses n (%)
Source of Knowledge	
Social media (Facebook, Twitter, WhatsApp, etc.)	245 (61.7)
Conventional media outlets (newsletter, internet, TV)	175 (44.1)
Released papers in the medical or health care journals	229 (57.7)
Friends, colleagues and family	124 (31.2)
Personal Protective Equipment Availability	
Disposable gloves	358 (90.2)
Long-sleeved cuffed gowns	172 (43.3)
Disposable eye protection or face shields	106 (26.7)
Surgical masks	287 (72.3)
N95 masks	133 (33.5)
Alcohol-based hand sanitizers	322 (81.1)
Is your hospital accredited to diagnose and treat COVID-19?	186 (46.9)
Clear guidelines to deal with suspected cases in the workplace?	226 (56.9)
Have you received training on how and when to use PPE?	175 (44.1)

Table 5 shows the multivariate ordinal logistic regression model of HCP knowledge predictors. Being a female ($\beta = 0.521$, 95% CI 0.049–0.992) and working as a physician ($\beta = 1.421$, 95% CI 0.849–1.992) were significant predictors of higher knowledge levels. Participants with higher perceived stress showed a lower level of knowledge ($\beta = -0.854$, 95% CI -1.488 to -0.221).

Regarding the source of information, using released papers (published literature) was a predictor of higher knowledge levels ($\beta = 1.161$, 95% CI 0.657–1.664). On the other hand, using social media ($\beta = -0.434$, 95% CI -0.865 to -0.003), and conventional media ($\beta = -0.884$, 95% CI -1.358 to -0.409) were negative predictors of knowledge levels.

Table 5: Multivariate ordinal regression analyses of the predictors of level of knowledge

Variable	Categories	β coefficient	95% Confidence Interval	p-value
Gender				
	Male (Ref)			
	Female	0.521	0.049–0.992	0.03
Age(Years)				
	23–30 (Ref)			
	31–40	0.153	-0.381–0.687	0.6
	≥ 41	0.230	-0.443–0.902	0.5
Marital status				

Variable	Categories	β coefficient	95% Confidence Interval	p-value
	Unmarried(Ref)			
	Married	0.170	-0.349–0.689	0.5
Residency				
	Middle (Ref)			
	North	0.492	-0.202–1.187	0.2
	South	-0.349	-0.789–0.091	0.1
Occupation				
	Doctors	1.421	0.849–1.992	<0.001
	Nurses	0.017	-0.642–0.677	0.9
	Others (Ref)			
Psychological distress				
	Mild (Ref)			
	Moderate	-0.479	-1.001–0.043	0.1
	Severe	-0.854	-1.488 to -0.221	0.001
Source of knowledge				
	Released paper	1.161	0.657–1.664	<0.001
	Social media	-0.434	-0.865 to -0.003	0.04
	Conventional media	-0.884	-1.358 to -0.409	<0.001
	Friends and Family	0.107	-0.342–0.557	0.5
Availability of PPE		-0.139	-0.561–0.281	0.5

DISCUSSION

In this sample of Jordanian HCPs, three out of four respondents had an acceptable degree of knowledge about COVID-19. Of which, one-fourth showed excellent knowledge, and the remainder had good information. On one hand, being a physician and using scientific papers to gain knowledge about COVID-19 were significantly associated with higher levels of knowledge. Similar findings were also observed by other researchers [13–15].

On the other hand, using social or conventional media platforms to gain information was a negative predictor of knowledge score. Initially, advanced PPEs, including N95 masks and disposable eye protectors or face shields, were not available in most healthcare settings.

The COVID-19 pandemic is a global threat that needs solid knowledge about its cause, transmission, preventive measures, and treatment. Giao et al. examined the knowledge and attitudes of healthcare workers towards the

pandemic in a major city in Vietnam and found that the majority of the respondents had good knowledge, yet some alarming gaps were identified; therefore, educational campaigns were suggested and encouraged [16]. Our study showed that Jordanian HCPs had relatively high knowledge and awareness about COVID-19. In a systematic review of HCP knowledge toward COVID-19, approximately three-fourths of the included participants had good knowledge, which is comparable to our results [17]. This relatively high knowledge level could be attributed to the nature of the pandemic, which created a global concern where most of the information is widely available on the internet and social media platforms [17]. Surprisingly, half of the participants incorrectly believed that COVID-19 is air-borne transmitted. According to the recent reports, the only confirmed route of transmission is by droplets [4]. This false belief might trigger anxiety and make HCPs more fearful about dealing with COVID-19 patients; therefore, correcting this

misconception among HCPs is essential.

Most of the participants used social media or published articles to learn about COVID-19. Of note, those who relied on published literature had significantly higher knowledge scores compared to those who used social media. This is consistent with several reports published in the literature [15, 18, 19]. These findings could be attributed to the significant burdens that HCPs faced during the pandemic. In particular, time restraint prevented HCPs from exploring the recent advances in COVID-19 scholarly works in addition to the inaccessibility of evidence-based resources, leaving social media a convenient source to obtain information. This points out the importance of providing HCPs with accessible, up-to-date, and reliable resources. Moreover, physicians were more knowledgeable than other HCPs, and this is in line with the literature [13, 14, 19, 20]. Our results highlight the importance of providing continuous medical education resources to all categories of HCPs in Jordan [17, 21], especially nurses, as they presumably have more physical contact with patients than any other category [22, 23].

Despite the availability of basic PPEs in Jordanian healthcare facilities, advanced PPEs were not widely available in most healthcare settings. According to the WHO, N95 masks and disposable eye protectors are strongly indicated as protective measures when treating patients with COVID-19, especially in aerosol-generating procedures [24]. Such PPE has to become more available in hospital settings, not only to limit the spread of infection but also for the better mental health of HCPs.

Our study demonstrates that approximately 80% of the Jordanian HCPs reported moderate or severe distress levels, which is almost double the prevalence of COVID-19-related stress in the general Jordanian population [25]. Recent literature indicates that frontline health workers are more vulnerable to higher degrees of psychosocial distress [8]. Increased levels of distress may have originated from the HCPs' feelings of vulnerability, concerns about their own health, and knowledge about COVID-19's transmissibility, morbidity, and mortality, all of

which might have altered their perceptions of danger [26]. The report by Lai found that among healthcare workers exposed to the pandemic in Wuhan, women, nurses, and frontline healthcare workers were at high risk of developing mental health problems and needed psychological intervention [8]. Our results portray a trend consistent with such an explanation, as HCPs with lower knowledge levels significantly reported higher degrees of stress. Furthermore, shortages of protective equipment and influxes of COVID-19 patients acted as sources of increased HCP concerns since such situations would force frontline workers to provide care under conditions of increased transmission risk due to limited protective gear and overcrowding [26–28]. These Jordanian HCPs displayed parallel behavior as PPE availability was significantly associated with a lower perception of stress.

Our study, however, has several limitations. First, this is a cross-sectional study, and a cause-and-effect relationship cannot be concluded. Moreover, using an internet-based questionnaire might result in the underrepresentation of some groups. Nevertheless, internet connection is widely available in Jordan, especially among HCPs. Online surveys are also an efficient and safe method for data collection during the pandemic. Another potential limitation is the lack of comparison between HCPs working in different departments. The strength of our study is the data collection tool, which was thoroughly developed and validated. Therefore, we believe that our results reflect the knowledge of HCPs in Jordan with good precision.

Conclusion and recommendations

Our results show that these Jordanian HCPs had good medical knowledge about COVID-19, but they had a significant amount of stress. Given the role of PPE in protecting HCPs and alleviating stress, authorities are advised to supply health care facilities with all kinds of PPE. HCPs who relied on scientifically published literature had higher knowledge scores. Therefore, up-to-date, accessible, and evidence-based continuous medical education is recommended for all HCPs to improve knowledge during a pandemic, especially with

emerging new variants, diagnoses, and treatment guidelines. Future research will definitely help shed light on the impact of COVID-19 on the practice of HCPs, taking into consideration their attitudes, beliefs, and concerns.

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Conflict of interest

The authors declare that they have no competing interests.

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المعرفة والوعي والضغوط المتصورة بين مقدمي الرعاية الصحية الأردنيين بخصوص كوفيد-19

عماد ابو راجوح¹، محمد قصي الصباغ²، براء مفرجي²، محمد ياسين³، رامي الدويري⁴، لانا الهلسه⁵،
نخلة ابو ياغي⁶، يحيى الخزرجي⁷، محمد ابو فرج⁷

¹ قسم الجراحة العامة و التخدير، كلية الطب، جامعة مؤتة، الكرك، الاردن

² كلية الطب، الجامعة الاردنية، عمان، الاردن

³ مدينة الحسين الطبية، الخدمات الطبية الملكية، عمان، الاردن

⁴ قسم الباطني، كلية الطب، جامعة مؤتة، الكرك، الاردن

⁵ قسم طب الاسرة و المجتمع، كلية الطب، الجامعة الاردنية، عمان، الاردن

⁶ قسم الجراحة الخاصة، شعبة العيون، كلية الطب، الجامعة الاردنية، عمان، الاردن

⁷ قسم الجراحة الخاصة، مستشفى الجامعة الاردنية، الجامعة الاردنية، عمان، الاردن

الملخص

الخلفية والأهداف: مقدمو الرعاية الصحية (HCPs) هم : عمال الخطوط الأمامية وسط جائحة كورونا و هم عرضة لزيادة خطر الإصابة والضغط النفسي. وقياس مستويات المعرفة والوعي والتوتر حول مرض كورونا بين مقدمي الرعاية الصحية. **المنهجية:** هذه الدراسة مقطعية تحتوي على 397 من موظفي الرعاية الصحية الذين استخدموا استبياناً معتمداً على الإنترنت لتقييم المعرفة حول مرض كورونا ، وتوافر معدات الحماية الشخصية (PPE) ، والتصورات المستقبلية، والضيق النفسي. تم استخدام تحليلات الانحدار اللوجستي الترتيبي أحادي المتغير ومتعدد المتغيرات لتقييم العوامل المرتبطة بدرجة المعرفة والضغط النفسي. **النتائج:** بشكل عام ، أظهر 24.4% معرفة ممتازة ، بينما أظهر 54.4% و 21.2% معرفة جيدة وسيئة ؛على التوالي. كانت وسائل التواصل الاجتماعي (61.7%) والأوراق الطبية (57.7%) أكثر مصادر المعلومات استخداماً. العوامل التي تنبأت إيجابياً بمستوى المعرفة هي: أن تكون أنثى ($\beta = 0.521$, 95% CI 0.049- 0.992)، طبيب ($\beta = 1.421$, 95% CI 0.849- 1.992) ، أو تستخدم المؤلفات المنشورة لاكتساب المعرفة . ($\beta = 1.161$, 95% CI 0.657- 1.664) في حين أن العوامل التي ارتبطت سلبياً بمستوى المعرفة كانت وجود مستويات أعلى من الإجهاد ($\beta = -0.854$, 95% CI -1.488- -0.221) واستخدام وسائل التواصل الاجتماعي للحصول على معلومات . ($\beta = -0.434$, 95% CI -0.865- -0.003) ارتبط توافر معدات الوقاية الشخصية بشكل كبير مع انخفاض الضغط النفسي. ($P = .01$)

الاستنتاجات : يتعين على المؤسسات توفير مصادر معلوماتية مجانية قائمة على الأدلة لمقدمي الرعاية الصحية حول مرض كورونا، ويجب تأمين معدات الوقاية الشخصية لتقليل مقدار الإجهاد النفسي المرتبط بعلاج مرضى كورونا وتحسين معرفتهم وكذلك الرعاية اللاحقة المقدمة.

الكلمات الدالة: كوفيد-19، مقدمي الرعاية الصحية، الاردن، معرفة، الضغط الملحوظ.