Research

Are healthcare professionals in Jordan willing to work and provide care for COVID-19 patients?

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Abstract

Introduction

The outbreak of the novel coronavirus (COVID-19) has overwhelmed healthcare systems and exposed healthcare providers (and their families) to a high risk of infection and death. This study aimed to assess the willingness of healthcare providers in Jordan to report for duty and provide care to COVID-19 patients.

Methods

An online questionnaire was developed including questions about demographics, willingness to report to work and provide care to COVID-19 patients, and potential associated factors.

Results

A total of 253 participants completed the survey (mean age 33.8 years, 58.6% male). The sample included physicians (14.9%), nurses (61.1%) and paramedics (23%). Most participants (96.4%) were willing to come to work during the pandemic, although only 64.7% showed a willingness to provide care to COVID-19 patients. Being male (OR 3.21; 95% CI: 1.75-5.90) or having adequate training on COVID-19 (OR 5.16; 95% CI: 2.32-11.46) were the major predictors for willingness to care for COVID-19 patients, whereas concerns for family safety (OR 0.25; 95% CI: 0.14-0.47) or lack of information about COVID-19 (OR 0.43; 95% CI: 0.23-0.80) were the major predicting barriers for willingness to care for COVID-19 patients.

Conclusion

Although most participants were willing to report for duty, less than two-thirds were willing to care for COVID-19 patients. Being male and receiving training are associated with willingness; whereas concern for family is associated with less willingness to care for COVID-19 patients.

Keywords:

coronavirus; COVID-19; health personnel; pandemics; reporting for duty

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Introduction

The outbreak of the novel coronavirus (COVID-19) has reinforced the dangerous potential of pandemics to quickly spread across the globe. The COVID-19 pandemic had shown high infection and mortality rates (1,2) that have overwhelmed the healthcare systems of many countries (3-5). As of 2 July 2021, this highly contagious virus had infected over 183 million people resulting in over 3.9 million deaths (5). Among these are a disproportionate number of healthcare professionals (HCPs) (6-9).

HCPs remain in the frontline combating the COVID-19 pandemic, risking their lives – and the lives of their families – to provide care to patients (10,11). As such, HCPs potentially have a higher risk of infection, and these risks increase in situations where there is limited availability of personal protective equipment (PPE) and staff shortages, leading to increased exposure duration. In such situations, some HCPs may choose to abandon their work or refuse to provide care to infected patients to protect themselves and their families (12).

The COVID-19 pandemic highlights the concerns about healthcare workers' preparedness and willingness to report to work during highly contagious outbreaks. Unlike natural disasters, healthcare workers are reported to be less willing to report for duty during emerging infectious diseases (13-15). A review by Connor found that HCPs' willingness to respond to pandemics varied greatly, from 25% to 82% (15). Research studies in this area are generally based on hypothetical pandemic scenarios and ask for the potential reaction in response to such situations (16). Perception studies using pandemic scenarios have weaknesses in predicting people's actual behaviour in potential hazards due to difficulties in developing real hypothetical scenarios.

Limited research studies have explored the readiness of HCPs in real pandemics. This study assessed participants' responses during the COVID-19 pandemic and aimed to evaluate HCPs' readiness in Jordan to work in a situation where a high influx of patients with COVID-19 disease could enter the workplace. The study also assessed the associated factors related to a willingness to work with COVID-19 patients.

Methods

Design

An online questionnaire was created explicitly for COVID-19 response willingness and was based on previous research studies (17,18). To ensure face and content validity, the questionnaire was designed and assessed by an expert panel of professors and practitioners in medicine, paramedicine and nursing. This online questionnaire included 23 items addressing the following: demographics (eight items); attitude towards working during the COVID-19 pandemic (two items); self- and family-related factors (six items); and concerns for working during the COVID-19 pandemic (seven items).

To examine participants' attitudes (second section), participants were asked about their willingness to report for duty in a hypothetical situation where a high influx of COVID-19 patients were reported in their workplace. The choices were 'willing' and 'unwilling'. Similar choices were available when participants were asked about their willingness to provide direct care to COVID-19 patients.

The third and fourth sections were 6-point Likert-type scales (1-6). These are a series of statements related to work during the COVID-19 pandemic. Participants were asked to select from 1 to 6 with 1 representing 'strongly disagree' and 6 representing 'strongly agree' for the third section. For the fourth section, 1 represents 'not at all concerned' and 6 represents 'extremely concerned'. The questionnaire was pilot tested on 10 participants, and then modified according to participants' feedback. The expert panel approved the final version of the questionnaire.

Setting and sampling

HCPs, including frontline physicians, nurses and paramedics who provide direct care to patients in northern Jordanian hospitals and pre-hospital settings were invited to participate in this study. The online questionnaire link was shared with approximately 400 potential participants over social media (eg. Facebook, Messenger, WhatsApp) groups of medical professionals. Data collection took place from 1 April 2020 to 10 April 2020. At the onset of data collection (1 April), the virus had infected 278 patients, resulting in five deaths in Jordan (5). There were also some reported cases among HCPs in assigned hospitals. During this time, the number of COVID-19 cases was increasing, patients were in hospital isolation, and exposed people were quarantined. To contain the outbreak, the country had implemented one of the strictest lockdowns in the world (19). Measures taken included social distancing, contact tracing and testing of exposed people, enforcing a strict curfew, and preparing hospitals and training healthcare personnel.

Data analysis

Continuous variables were reported as means and standard deviation (SD), whereas categorical variables were reported as frequencies and percentages. Participants' responses in the Likert scale questions were dichotomised into two categories: disagree (ie. first three choices) indicating a negative attitude; or agree (ie. the last three choices) indicating a positive attitude. Chi-square tests for independence and Fisher's exact test were used to assess relationships between variables with a p-value of 0.05 to determine the statistical significance. All variables that showed significant relationships with the willingness to care for COVID-19 patients were included in the final regression model. This resulted in 15 items in the full model, including four demographic items (gender, age, marital status, job). Binary logistic regression was conducted using a backward stepwise method to identify the predictors of willingness to care for COVID-19 patients, with a p-value of 0.05 to determine the statistical significance. All analyses were performed using SPSS version 25 (Chicago, Illinois).

Results

A total of 253 online questionnaires were completed resulting in a response rate of 63.2%. Table 1 describes the demographics of the study participants. Participants mean age was 33.8 (SD $\pm$ 7.3) years with a mean working experience of 10.8. (SD $\pm$ 7.4) years. Most participants were men (58.6%), married (69.8%), with children (65.7%), with a bachelor degree or higher (82.3%), certified as nurses (61.1%), and working in government hospitals (63.9%).

Table 1. Demographics of the study participants

Demographic		n=253 (%)*
Gender	Male	146 (58.6)
	Female	103 (41.4)
Age (years)	Mean (SD)	33.8 (7.3)
Marital status	Single	65 (26.1)
	Married	174 (69.9)
	Other	10 (4.0)
Have children	Yes	163 (65.7)
	No	85 (34.3)
Education	Diploma or below	44 (17.7)
	Bachelor degree or higher	205 (82.3)
Job title	Physician	37 (14.9)
	Nurse	154 (61.1)
	Paramedic	57 (23)
Workplace	Government	159 (63.9)
	Private	58 (23.3)
	Civil defence	32 (12.9)
Experience (years)	Mean (SD)	10.8 (7.4)

Note: *missing cases were excluded and the valid percent used

Participant readiness to work during the COVID-19 pandemic

Participants were asked about their willingness to report to work in a situation where a high number of COVID-19 cases were reported in their workplace. Figure 1 indicates that most participants (96.4%) were willing to report to work. Responses also suggest that just below two-thirds (64.7%) of participants were willing to provide care to COVID-19 patients.

Table 2 shows the relationship between participants' willingness to care for COVID-19 patients regarding their demographic information. It demonstrates that male participants were more willing than females to provide direct care to COVID-19 infected patients ($p < 0.001$). The rest of the demographic variables shows no statistically significant differences in willingness to care for COVID-19 patients.

Self and family-related factors

Participants were asked about their knowledge, training and compliance with using PPE when contacting patients. They were also asked about the potential effect of their work on family safety (Table 3). Although most participants perceived that they had 'adequate knowledge and training for disease outbreaks' (62.8%) and that they 'comply with using PPE' (81.8%), only about one quarter (26.9%) received 'adequate training for COVID-19'.

When it comes to family influence, most participants (90.1%) perceived that their 'families are at higher risk of contracting diseases than others', and almost half (49.0%) believe that their 'concern for family safety could influence their decision on care for COVID-19 patients'. Additionally, when asked about 'who comes first', family safety obtained the highest score (47.6%), followed by work obligation (39.3%), and self-safety was last (13.1%). A higher proportion of the willing participants believed that they had adequate training for disease outbreaks and

Figure 1. Participant responses for willingness to report to work and provide care to COVID-19 patients

Table 2. Participant demographics comparing willingness and unwillingness to care for COVID-19 patients

Demographic		Willingness to provide care to COVID-19 patients			p-value**
		Total n=253 (%)*	Willing 163 (64.7)	Unwilling 89 (35.3)	
Gender	Male	146 (58.6)	108 (74.0)	38 (26.0)	<0.001
	Female	103 (41.4)	53 (51.5)	50 (48.5)	
Age (years)	18-29	80 (31.6)	45 (56.3)	35 (43.8)	0.15
	30-39	115 (45.5)	78 (67.8)	37 (32.2)	
	40+	57 (22.9)	40 (70.2)	17 (29.8)	
Marital status	Single	65 (26.1)	38 (58.5)	27 (41.5)	0.21
	Married	174 (69.9)	119 (68.4)	55 (31.6)	
	Other	10 (4.0)	5 (50.0)	5 (50.0)	
Have children	Yes	163 (65.7)	108 (66.3)	55 (33.7)	0.31
	No	85 (34.3)	53 (62.4)	32 (37.6)	
Education	Diploma or below	44 (17.7)	31 (70.5)	13 (29.5)	0.40
	Bachelor or higher	205 (82.3)	131 (63.9)	74 (36.1)	
Job title	Physician	37 (14.9)	24 (64.9)	13 (35.1)	0.94
	Nurse	154 (61.1)	101 (65.6)	53 (34.4)	
	Paramedic	57 (23)	36 (63.2)	21 (36.8)	
Workplace	Government	159 (63.9)	96 (60.4)	63 (39.6)	0.06
	Private	58 (23.3)	40 (69.0)	18 (31.0)	
	Civil defence	32 (12.9)	26 (81.3)	6 (18.8)	
Experience (years)	4 or less	58 (22.9)	33 (56.9)	25 (43.1)	0.53
	5-9	60 (23.7)	40 (66.7)	20 (33.3)	
	10-19	85 (33.6)	56 (65.9)	29 (34.1)	
	20+	49 (19.8)	34 (69.4)	15 (30.6)	

Note: *missing cases were excluded and the valid percent used; **chi-square test for independence

Table 3. Participant responses for self and family factors about their willingness to care for COVID-19 patients

Variable	Agreement	Willingness to provide care to COVID-19 patients			
		Total n=253	Willing n (%)	Unwilling n (%)	p-value*
I have adequate knowledge and training for disease outbreaks	Disagree	94 (37.2)	53 (57.0)	40 (43.0)	0.035
	Agree	159 (62.8)	110 (69.2)	49 (30.8)	
I received adequate training for COVID-19	Disagree	185 (73.1)	105 (57.1)	79 (42.9)	<0.001
	Agree	68 (26.9)	58 (85.3)	10 (14.7)	
I'm compliant with using PPE	Disagree	46 (18.2)	26 (56.5)	20 (43.5)	0.13
	Agree	207 (81.8)	137 (66.5)	69 (33.5)	
Families of healthcare providers are at higher risk of infection than the general population	Disagree	25 (9.9)	15 (60.0)	10 (40.0)	0.37
	Agree	228 (90.1)	148 (65.2)	79 (34.8)	
Concern for family safety could influence my decision on caring for COVID-19 patients	Disagree	129 (51.0)	101 (78.9)	27 (21.1)	<0.001
	Agree	124 (49.0)	62 (50.0)	62 (50.0)	
Who comes first?	Self-safety	33 (13.1)	19 (57.6)	14 (42.4)	0.007
	Family safety	120 (47.6)	68 (57.1)	51 (42.9)	
	Work obligation	99 (39.3)	76 (76.8)	23 (23.2)	

*chi-square test for independence

COVID-19, disagreed with family influence on their decision on caring for COVID-19 patients, and prioritised work obligation over self and family safety ($p<0.05$).

Concerns about working during the COVID-19 pandemic
Participants were asked about their concerns about working during the COVID-19 pandemic. Table 4 describes the level of concerns of participants about their willingness to care for COVID-19 patients. Interestingly, the highest concern (87.7%) was about 'infecting family members', whereas less than one-third (32.4%) of participants were concerned about 'dying from infection'. Most participants (59.7%) were concerned about caring for COVID-19 patients.

A higher proportion of the willing participants were less concerned about becoming infected, dying from infection, and less concerned about the lack of COVID-19 related information, treatment and vaccine. Overall, a higher proportion of the willing participants were less concerned about working during the COVID-19 pandemic ($p<0.05$). Additionally, women were more concerned about dying of infection than men (26.0% for men vs. 39.8% for women; $p=0.02$).

Predictors of willingness to care for COVID-19 patients

Table 5 shows a multivariate logistic regression analysis to identify the predictors of willingness to care for COVID-19 patients. It was found that being male or receiving adequate training for COVID-19 were significant predictors of willingness to care for COVID-19 patients. Conversely, barriers to a willingness to care for patients with COVID-19 were a lack of adequate information about the COVID-19 pandemic and a concern for family safety.

Table 5. Predictors of willingness to care for COVID-19 patients

Predictor	Multivariate OR (95% CI)	p-value
Gender (male)	3.21 (1.75-5.90)	<0.001
I received adequate training for COVID-19	5.16 (2.32-11.46)	<0.001
Lack of information about COVID-19	0.43 (0.23-0.80)	0.008
Concern for family safety could influence my decision on caring for COVID-19 patients	0.25 (0.14-0.47)	<0.001

Ethical approval

This study was approved by the Institutional Review Board at Jordan University of Science and Technology (IRB No.: 47/132/2020).

Discussion

Our findings indicate that most HCPs were willing to report to work when a high number of COVID-19 patients are reported in the workplace. However, less than two-thirds of participants were willing to care for COVID-19 infected patients, and only one-quarter of participants received adequate training regarding COVID-19. Willingness to provide care for COVID-19 patients was associated with being male and being adequately trained to deal with COVID-19 patients. On the other hand, concern for family safety and lack of information about COVID-19 were associated with unwillingness to care for COVID-19 patients.

Table 4. Participant responses for concern statements and their associations with the willingness to care for COVID-19 patients

Variable	Concerned Yes/No	Willingness to provide care to COVID-19 patients			
		Total n=253	Willing n (%)	Unwilling n (%)	p-value*
Becoming infected and getting ill	No	97 (38.3)	69 (71.9)	27 (28.1)	0.04
	Yes	156 (61.7)	94 (60.3)	62 (39.7)	
Dying from infection	No	171 (67.6)	123 (72.4)	47 (27.6)	<0.001
	Yes	82 (32.4)	40 (48.8)	42 (51.2)	
Infecting family member	No	31 (12.3)	23 (76.7)	7 (23.3)	0.10
	Yes	222 (87.7)	140 (63.1)	82 (36.9)	
Lack of information about COVID-19	No	106 (41.9)	78 (73.6)	28 (26.4)	0.008
	Yes	147 (58.1)	85 (58.2)	61 (41.8)	
Shortage in PPE	No	46 (18.2)	34 (73.9)	12 (26.1)	0.09
	Yes	207 (81.8)	129 (62.6)	77 (37.4)	
No treatment or vaccine for COVID-19	No	64 (25.3)	50 (79.4)	13 (20.6)	0.003
	Yes	189 (74.7)	113 (59.8)	76 (40.2)	
Overall concern about working during COVID-19 pandemic	No	102 (40.3)	82 (80.4)	20 (19.6)	<0.001
	Yes	151 (59.7)	81 (54.0)	69 (46.0)	

*chi-square test for independence

The findings are promising, indicating that most participants are willing to report to work in a situation where a high number of COVID-19 cases are reported in their workplace. Previous studies are diverse in their results (10,13,14,20-28). A systematic review by Connor found that studies showed between 25% to 82% of healthcare workers are willing to work during pandemics compared with 83% to 90% during natural disasters (15). A more recent study found that 89.2% of emergency residents are eager to work during pandemics (20). However, to the best of our knowledge, there are a lack of studies assessing HCPs and their willingness to report to work during the COVID-19 pandemic.

Our study indicated that less than two-thirds (64.7%) of participants were willing to provide direct care to COVID-19 patients. A recent study on COVID-19 in China found that 77.1% of participants were willing to work with COVID-19 infections (27). The Chinese study also found that 64.6% of participants finished COVID-19 training programs. The reluctance of many participants in our study to work with infected COVID-19 patients, despite being willing to come to work, can be explained by the lack of knowledge and training on COVID-19 and infectious diseases in general. Our study supports this as the findings demonstrate that those who received appropriate training on COVID-19 were five times more likely to be willing to care for patients with COVID-19. Unfortunately, just over half of the study participants believed they have adequate knowledge and training on disease outbreaks. Only one-quarter of our sample received appropriate training tailored to COVID-19 infection.

Family safety is essential to HCPs. Our study indicated that participants' concerns for infecting family members (87.7%) was more than the concern of becoming infected themselves or dying from infection (61.7% and 32.4%, respectively). Participants also indicated that the safety of their families is their top priority (46.7%) compared to self-safety (13.1%) and work obligation (39.3%). Participants who perceived that concern for family safety could influence their decision to work during the pandemic are four times less likely to be willing to care for COVID-19 patients. These findings are congruent with previous research studies indicating that family safety was the number one concern for all healthcare professionals during pandemics (14,17,18,20,28-30). A recent study by Shi et al found that the most common reason for unwillingness to work during COVID-19 is the concern of infecting family members (27).

Gender differences can play a role in the concern of infection as well as the willingness to work during pandemics; however, studies vary in their results. A review by Devnani indicated that being male is a predictor of being more willing to work during pandemics (31). In contrast, a recent study on Jordanian paramedics found no significant gender differences to work during pandemic disasters (32). Furthermore, when it comes to working during the COVID-19 pandemic, no gender differences were found in healthcare workers' willingness to care for COVID-19 patients (33-35). Of note, these results contradict our

findings that indicate that men are three times more likely to care for COVID-19 patients than women, whereas women are more likely to be concerned about dying from infection. Interestingly, this is supported by recent studies on gender indicating that, while not detrimental, men are more likely than women to be infected with COVID-19 (36,37). In the context of Jordan's culture, while women are increasingly becoming involved in employment to financially support the family, caring for children at home is still the sole responsibility of the mother. This perhaps makes women more concerned about infection or death than men. Furthermore, although older men were predominately more infected with COVID-19, the older HCPs were more willing than the younger HCPs to provide care to COVID-19 patients (although this was not statistically significant).

This study provides one of the first empirical examinations of HCPs and their attitude towards working and potential behaviour during the COVID-19 pandemic. The healthcare system in Jordan could easily be overwhelmed should a high influx of COVID-19 patients report to hospitals. It is essential to understand the healthcare system's surge capacity during such a pandemic to prepare for this possibility. Knowledge of the healthcare workforce and the potential barriers of reporting for duty and caring for patients under these conditions can help achieve this. The findings of this study may alleviate the concerns of healthcare workers not reporting for duty during pandemics. Still, it highlights the presence of untrained staff who are reluctant to care for COVID-19 patients. Therefore, in responding to a pandemic such as COVID-19, it is inevitable that healthcare agencies focus on their staff's preparedness. This means that healthcare workers need proper just-in-time training on protocols of caring for COVID-19 patients, good use of PPE (including donning and doffing techniques), and adequate triage training. Doing so will empower HCPs; protect them and their families from contracting the infection; improve their readiness to work with such patients; and ultimately improve the healthcare system's capacity. Future studies are needed to compare perceived versus actual absenteeism rates from work in healthcare agencies; explore actual absenteeism rates about associated factors (eg. training, family safety); and understand the reasons why more men than women are willing to care for COVID-19 patients. Future studies could also assess the rates of refusal to provide care for COVID-19 patients and their associated factors.

Limitations

This study has several limitations. The inherent nature of cross-sectional designs and the type of questions may have influenced the way participants answered the questions in favour of the researchers' interest. Due to the nature of the online survey, we could not exclude the possibility of selection bias. However, participants were enrolled mainly through social media to include physicians, nurses and paramedics who work as frontline HCPs. Due to the relatively small sample size, the interpretation of the results should be considered with caution.

Conclusion

This is one of the first studies to examine HCPs' attitudes and potential behaviour towards caring for COVID-19 patients. The study found that most participants were willing to report to work during the COVID-19 pandemic should a high influx of COVID-19 patients report to the workplace, but less than two-thirds were willing to work with these patients. Having adequate training on COVID-19 is the major associated factor for willingness to provide care to COVID-19 patients, whereas concern for family safety is the major barrier to caring for COVID-19 patients. This highlights the importance of just-in-time training of healthcare workers and the protection of their families.

Competing interests

The authors declare no competing interests. Each author of this paper has completed the ICMJE conflict of interest statement.

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