

Health Care Workers' Attitudes Toward Patients With COVID-19

Joseph Ottolenghi,¹ Rodney A. McLaren, Jr.,^{2,*} Cecilia Bahamon,³ Mudar Dalloul,³ Sandra McCalla,² and Howard Minkoff^{2,4}

¹Department of Obstetrics and Gynecology, Maimonides Medical Center, Brooklyn, New York, USA, ²Division of Maternal-Fetal Medicine, Department of Obstetrics and Gynecology, Maimonides Medical Center, Brooklyn, New York, USA, ³Department of Obstetrics and Gynecology, SUNY Downstate Medical Center, Brooklyn, New York, USA, and ⁴School of Public Health at SUNY Downstate Health Sciences University, Brooklyn, New York, USA

Background. Early in the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic, before the routine availability and/or use of personal protective equipment, health care workers were understandably concerned. Our aim was to explore health care workers' attitudes toward patients infected with SARS-CoV-2 at the time of the nation's first surge in 2 highly affected hospitals in New York.

Methods. We performed a cross-sectional, self-administered survey study of health care workers. The survey consisted of 17 multiple-choice questions including demographic information, ethics, and willingness to care for patients with SARS-CoV-2 infection. Subgroup analyses were performed using the Fisher exact test.

Results. Of 340 health care workers approached, 338 (99.4%) consented to the survey; 163 (48.7%) were registered nurses and 160 (48.3%) lived with children. While 326 (97.3%) workers were concerned about putting their family/coworkers at risk of infection after caring for a patient with SARS-CoV-2, only 30 (8.9%) were unwilling to treat a patient with SARS-CoV-2 infection. Registered nurses were more likely than other health care workers to think it was ethical to refuse care for SARS-CoV-2-infected patients, worried more often about contracting infection, and felt that SARS-CoV-2 added to their stress level ($P = .009$, $P = .018$, $P < .001$, respectively). A similar contrast was seen when comparing workers who live with children with those who did not.

Conclusions. Levels of stress and concern were extremely high. In spite of that, the overwhelming majority of workers were willing to treat patients with SARS-CoV-2 infection. Registered nurses and health care workers who live with children were more likely to think it is ethical to refuse care for SARS-CoV-2-infected patients.

Keywords. attitudes; children; COVID-19; ethics; health care providers; nurses; SARS-CoV-2 infection.

A novel coronavirus disease, coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection, emerged in December 2019, with initial cases reported from Wuhan, China. It has since been declared a pandemic, with 110 763 898 cases and 2 455 331 deaths worldwide as of February 21, 2021 [1]. In the United States alone, there have been over half a million deaths.

Health care workers are at increased risk of exposure and infection with SARS-CoV-2, as evidenced by reports since the earliest wave of the epidemic [2]. Although subsequent reports from the United States did not uniformly confirm those initial reports [3, 4], early in the pandemic, before the effectiveness

of personal protective equipment (PPE) was certain and when its availability was not uniform, many health care workers were understandably concerned. That concern was likely exacerbated when health care workers were caring for patients with suspected or confirmed COVID-19. In the prior Ebola epidemic, we reported that a quarter of health care workers were unwilling to care for patients with Ebola and that they believed that it was ethical to refuse to do so [5]. Link and colleagues reported similar findings even earlier in regard to the AIDS epidemic [6]. Our aim was to explore health care workers' attitudes toward patients infected with COVID-19 in 2 urban health centers in New York during the early months of the pandemic, when personal protective equipment was not always readily available. In addition, we compared their responses with responses to a similar questionnaire regarding Ebola, in order to assess any evolution in health care workers' attitudes since the HIV and Ebola epidemics.

METHODS

We performed a cross-sectional, self-administered survey study of a convenience sample of health care workers from multiple departments in 2 medical centers in New York. Institutional review board (IRB) approval was acquired at both medical centers,

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Correspondence: Rodney McLaren, Jr., MD, Division of Maternal-Fetal Medicine, Department of Obstetrics and Gynecology, Maimonides Medical Center, 967 48th Street, Brooklyn, NY 11219 (rmclaren624@gmail.com).

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and informed consent was obtained from participants before receiving the survey. The study was performed between March 25, 2020, and June 5, 2020, during the first wave of COVID-19 in New York City. Participants were recruited from the wards on which they worked.

The survey was anonymous and consisted of 16 multiple-choice questions and was similar to a prior survey that we administered during the Ebola epidemic [5]. The first 5 questions concerned demographics, including the participant's age, gender, occupation, department, and living situation. The next 10 questions assessed the participant's perspective on the health care system's level of readiness, the ethics of caring for patients with COVID-19, influenza, and HIV, and their willingness to care for patients with COVID-19. The final question followed a vignette and assessed the willingness of the participant, who did not have PPE, to aid an unconscious child of unknown COVID status who needed rescue breaths during CPR. We piloted the survey on 6 participants to time its completion and assess its readability. Those surveys were not included in the analysis. The average time to complete the surveys was 5 minutes. They were administered by 3 authors (R.M., J.O., C.B.). A convenience sample of health care workers were recruited on various units including units designated as COVID as well as non-COVID units at both hospitals. Health care workers (physicians, fellows, residents, physician assistants, registered nurses, and midwives) answered the questions confidentially and returned them to the authors. Participants were recruited from various departments, including Anesthesiology, Emergency Medicine, Internal Medicine, Obstetrics and Gynecology, Pediatrics and Surgery.

Based on 2 prior studies evaluating attitudes toward HIV and Ebola that demonstrated that 25% of health care workers were unwilling to care for infected patients [5, 6], a sample size of 289 participants was needed in order to demonstrate a 25% prevalence of unwillingness to care for such patients, with a $\pm 5\%$ 95% CI.

Data were presented as frequencies. Subgroup analyses were planned. We compared the responses between registered nurses and other workers as registered nurses generally spend more time with patients than other workers [7]. We also compared the responses between workers who lived with children and workers who did not. Fisher exact tests were performed. Logistic regression was also performed to adjust for gender, as females are more prevalent in the nursing profession [8]. Statistical significance was set at a P value of $<.05$. All analyses were performed on Stata 15.1 (StataCorp LLC, College Station, TX, USA).

RESULTS

Of 340 health care workers approached, 338 (99.4%) consented to and completed the survey. Participants' demographics are shown in Table 1. Most workers were 31–40 years of age. The gender breakdown was male ($n = 50$ [15.6%]) and female

($n = 270$ [84.4%]). Of the 338 workers, 163 (48.7%) were registered nurses, 61 (18.2%) were resident physicians, 50 (14.9%) were attending physicians, and 61 (18.2%) were other. In regard to domestic situation, of the 338 workers, 160 (48.3%) workers lived with family and children, 90 (27.2%) lived with family but no children, and 78 (23.6%) lived alone.

The survey answers are summarized in Table 2. A majority of workers ($n = 265$ [78.4%]) worried about contracting SARS-CoV-2 infection from a patient, and this concern added to their stress level ($n = 271$ [81.1%]). While 326 (97.3%) workers were concerned about putting their family/coworkers at risk of infection after caring for a patient with SARS-CoV-2, only 30 (8.9%) were unwilling to treat a patient with SARS-CoV-2 infection. In addition, only 37 (11.1%) workers thought it was ethical to refuse to provide care for patients with COVID-19.

Table 3 demonstrates the difference in survey answers between registered nurses and other health care workers. Registered nurses were more likely than other health professionals to think it was ethical to refuse care for SARS-CoV-2-infected patients, were more worried about contracting infection, and were more likely to feel that SARS-CoV-2 added stress due to fear of infection, even when adjusting for gender ($P = .009$, $P = .018$, $P < .001$, respectively). However, there was no difference between registered nurses and other workers when asked whether

Table 1. Demographics of Health Care Workers

Demographics	No. (%)
Age	
<24 y	5 (1.5)
25–30 y	69 (21.1)
31–40 y	107 (32.7)
41–50 y	65 (19.9)
51–60 y	58 (17.7)
>60 y	23 (7.0)
Gender	
Male	50 (15.6)
Female	270 (84.4)
Occupation	
Attending physician	50 (14.9)
Resident physician	61 (18.2)
Registered nurse	163 (48.7)
Others ^a	61 (18.2)
Department	
Anesthesiology	30 (9.1)
Emergency Medicine	5 (1.5)
Internal Medicine	37 (11.2)
Obstetrics and Gynecology	164 (49.6)
Pediatric	49 (14.8)
Surgery	32 (9.7)
Living situation	
Not living with family	78 (23.6)
With family—no children	90 (27.2)
With family—with children	160 (48.3)

^aIncluded physician assistants, nurse practitioners, fellows, and midwives.

Table 2. Health Care Workers' Perspectives and Opinions on COVID-19

Health Care Providers' Perspectives and Opinions	No. (%)
Think that the health care system in your hospital is well equipped to deal with COVID-19 infection	87 (26.3)
How often have you worried about contracting COVID-19 from a patient?	
Never/once in a while	73 (21.6)
Quite often/all the time	265 (78.4)
Has concern of acquiring COVID-19 infection as a result of patient care added to your stress level?	
Not at all/very little	63 (18.9)
Quite a bit/a lot	271 (81.1)
If you had provided care to a patient with COVID-19 infection and you were currently asymptomatic, how concerned would you be that you would put your family/friends/coworkers at risk of COVID-19 infection?	
Not at all concerned	9 (2.7)
Somewhat concerned/very concerned	326 (97.3)
How willing would you be to provide care for a patient with COVID-19 if the care required by the patient is in your field of expertise?	
Always/somewhat willing to treat	268 (79.3)
Neutral	40 (11.8)
Somewhat/very unwilling to treat	30 (8.9)
Think it is ethical to refuse to provide care for COVID-19-infected patients	37 (11.1)
Think it is ethical to refuse to provide care for patients with HIV/AIDS	27 (8.0)
Think it is ethical to refuse to provide care for patients with influenza	27 (8.0)
Agree with a mandated quarantine of asymptomatic health care workers returning from Level 3 Travel Advisory countries	262 (79.2)
Agree with mandated quarantine of asymptomatic health care workers caring for COVID-19-infected patients in the United States	214 (64.5)
Will help a young boy lying on the street, unconscious and blue, by performing rescue breaths during CPR without protective equipment	117 (35.8)

Abbreviation: COVID-19, coronavirus disease 2019.

they would perform rescue breaths on a young boy without protective equipment (registered nurses, 34.2%, vs other workers, 38%; $P = .604$).

Table 4 presents the differences in survey answers between health care workers who were living with children and those who were not. Workers living with children were more likely to worry about contracting SARS-CoV-2 infection, felt added stress because of fear of infection, and thought it was ethical to refuse to provide care for patients with SARS-CoV-2 infection than workers living without children ($P = .005$, $P = .006$, $P = .016$, respectively). After adjusting for gender, workers with children were also more likely to think it was ethical to refuse care for patients with HIV ($P = .049$), though very few people in either group would refuse to provide care (10% vs 5%).

Differences between registered nurses living with children and registered nurses living without children are presented in Table 5. There were no differences in attitudes about the ethics of refusing care to patients with SARS-CoV-2 infection ($P = .202$). However, registered nurses living with children were more worried about contracting infection compared with registered nurses who lived alone or without children ($P = .002$).

DISCUSSION

We found that 8.9% of health care workers were unwilling to treat a patient with SARS-CoV-2 infection at a time when personal protective equipment was scarce (ie, at the beginning of the pandemic). This is far less than was reported during the HIV and Ebola epidemics and, as such, suggests that the ethics

Table 3. Health Care Workers' Attitudes Between Registered Nurses and Other Workers

	Nurse (n = 163), No. (%)	Physicians, Midlevels, and Trainees (n = 175), No. (%)	P	P ^a
How often have you worried about contracting COVID-19 from a patient?	138 (84.7)	124 (72.1)	.006	.018
Has the concern of acquiring COVID-19 infection as a result of patient care added to your stress level?	149 (92.5)	120 (70.6)	<.001	<.001
Think it is ethical to refuse to provide care for COVID-19-infected patients	25 (15.4)	12 (7.1)	.022	.009
Think it is ethical to refuse to provide care for patients with HIV/AIDS	17 (10.4)	10 (5.8)	.16	.069
Think it is ethical to refuse to provide care for patients with influenza	18 (11.1)	9 (5.3)	.07	.017
Will help a young boy lying on the street, unconscious and blue, by performing rescue breaths during CPR without protective equipment	54 (34.2)	63 (38)	.49	.604

Abbreviation: COVID-19, coronavirus disease 2019.

^aAdjusted for gender.

Table 4. Health Care Workers' Attitudes Between Workers who Live With Children vs No Children

	Living With Children (n = 160), No. (%)	Living Alone or Without Children (n = 178), No. (%)	P	P ^a
How often have you worried about contracting COVID-19 from a patient?	137 (85.6)	119 (70.8)	<.001	.005
Has the concern of acquiring COVID-19 infection as a result of patient care added to your stress level?	139 (88)	124 (74.7)	.003	.006
Think it is ethical to refuse to provide care for COVID-19-infected patients	24 (15.1)	12 (7.2)	.03	.016
Think it is ethical to refuse to provide care for patients with HIV/AIDS	17 (10.6)	9 (5.4)	.10	.049
Think it is ethical to refuse to provide care for patients with influenza	16 (10.1)	10 (6)	.22	.088
Will help a young boy lying on the street, unconscious and blue, by performing rescue breaths during CPR without protective equipment	48 (31.4)	64 (39)	.16	.183

Abbreviation: COVID-19, coronavirus disease 2019.

^aAdjusted for gender.

of care may have evolved over time, perhaps due to experiences with those prior epidemics.

Although 8.9% of health care workers thought it was ethical to refuse care to patients with COVID-19, this percentage is much lower than the percentage at the beginning of other notable epidemics. During the beginning of 2 prior epidemics, 25% of health care workers thought it was ethical to refuse care to patients with AIDS [6] and 25.1% thought it was ethical to refuse care to patients with Ebola [5]. In our prior report, when simultaneously evaluating attitudes for Ebola and HIV, we found fewer workers (12.6%) who thought it was ethical to refuse care to patients with AIDS [5], suggesting that workers' attitudes can change, likely due to the greater amount of knowledge about transmission and the increasing availability of treatment over time. However, despite a lack of knowledge about, and treatment for, SARS-CoV-2 infection, workers in the pandemic's epicenter were willing to provide care. This willingness may be related to society's recognition and perception of providers. More than in any prior epidemic, society recognized the sacrifices that health care workers undertook early on in the pandemic, for example, giving nightly cheers and banging pots at 7 PM [9]. Health care workers were also valorized. For example, the media publicized Dr. Li Wenliang, a young Chinese MD, who initially was imprisoned for his warning of the outbreak,

then returned to work and provided care until he succumbed to COVID-19 [10]. Thus, under these circumstances, workers may have been more willing to provide care.

We also found that registered nurses and workers who lived with children were more worried than other workers and workers who did not live with children about contracting the infection and were more likely to think it was ethical to refuse care for patients infected with SARS-CoV-2. As registered nurses spend more physical time with patients than other workers [7], the finding that registered nurses worried more often than other workers was not surprising. In fact, in a recent study evaluating the seroprevalence of SARS-CoV-2 antibodies among workers, registered nurses had significantly higher odds of seropositivity even after adjusting for multiple variables [11]. Registered nurses were shown to have increased risk of depression, distress, and anxiety [12]; thus it is important to ensure that this population is protected by providing services and interventions to enhance physical safety and lower burnout risk [13].

We must acknowledge some limitations. As this study was performed only in hospitals in New York City, the results may not be generalizable to other parts of the country. However, during this time, New York was the epicenter of the COVID pandemic in the United States. Although our prior study on Ebola [5], to which we compared or results, is similar in many

Table 5. Health Care Workers' Attitudes Between Registered Nurses who Live With Children and Registered Nurses who Do Not Live With Children

	Living With Children (n = 93), No. (%)	Living Alone or Without Children (n = 70), No. (%)	P	P ^a
How often have you worried about contracting COVID-19 from a patient?	86 (92.5)	52 (74.3)		.002
Has the concern of acquiring COVID-19 infection as a result of patient care added to your stress level?	87 (93.5)	62 (88.6)		.206
Think it is ethical to refuse to provide care for COVID-19-infected patients	17 (18.3)	8 (11.4)		.202
Think it is ethical to refuse to provide care for patients with HIV/AIDS	11 (11.8)	6 (8.6)		.315
Think it is ethical to refuse to provide care for patients with influenza	11 (11.8)	7 (10.0)		.488
Will help a young boy lying on the street, unconscious and blue, by performing rescue breaths during CPR without protective equipment	27 (30)	27 (39.7)		.206

Abbreviation: COVID-19, coronavirus disease 2019.

^aAdjusted for gender.

respects, there are important differences especially in the disease in question. Ebola is transmitted via bodily fluids, while COVID-19, as of the date of this article, is felt to be transmitted by droplet contact. Thus, there is a theoretically higher risk of infection from caring for patients with COVID-19. In addition, COVID-19 is a novel virus, and health care workers had less knowledge about it than was available in regard to Ebola at the time of the outbreak in the United States. Despite the uncertainty of the course and the spread of the COVID-19 pandemic, the greater willingness of workers to provide care is noteworthy. Finally, the statistically significant differences seen in univariate analyses among registered nurses and health care workers who live with children are limited by the potential impact of measurable and unmeasurable confounding factors, effect modifiers, and interaction terms. However, we adjusted for gender given the reported differences in gender between professions [8].

There are strengths to this study. The participants were caring for patients in the state with the most confirmed cases in the United States at that time, thus allowing us to evaluate workers' attitudes during a time that they would be facing the situation as opposed to it being a hypothetical scenario. We were also able to evaluate a large number of health care workers (n = 338) from different specialties and occupations.

In conclusion, we have found that more than in any recent epidemics, health professionals were willing to fulfill their commitment to patients, even at some peril to themselves. However, there were particular groups that had greater concerns, and those concerns will need to be addressed to avoid health care worker burnout and shortfalls in worker numbers. Examples of needed steps include readily available PPE, education about mitigating risks to families, and improved techniques to deal with worker wellness among those with the greatest exposure to risk. However, even before those solutions were implemented and long before vaccinations became available, health care workers, to a remarkable extent, were willing to "do the right

thing." It is heartening to see the degree to which our colleagues lived up to their oaths in these challenging times.

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Patient consent. Written consent was obtained from all participants. The Maimonides Medical Center IRB and SUNY Downstate Medical Center IRB approved this study.

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