American Journal of Infection Control 000 (2022) 1–5

Contents lists available at ScienceDirect

American Journal of Infection Control

journal homepage: www.ajicjournal.org

Major Article

An unheard voice: infection prevention professionals reflect on their experiences during the covid-19 pandemic

Paula A. Pintar MSN, RN, ACNS-BC, CIC, FAPIC [c,*], Natalie S. McAndrew PhD, RN, ACNS-BC, CCRN-K [a,b]

[a] College of Nursing, University of Wisconsin-Milwaukee, Milwaukee, WI
[b] Froedtert & the Medical College, Froedtert Hospital, Milwaukee, WI
[c] Infection Prevention & Control Froedtert Health, Froedtert & the Medical College of Wisconsin, Milwaukee, WI

Key Words:
Infection prevention professional
Moral distress
Mixed methods
COVID-19 pandemic

Background: The COVID-19 pandemic required a shift away from the evidence-based practices known to infection prevention professionals' (IPP). Relaying these guidelines to beleaguered front line staff contributed to the experience of moral distress and burnout among IPPs.
Methods: A mixed methods design was used to explore the experiences of IPPs during the COVID-19 pandemic. An electronic survey was sent to a convenience sample from the Wisconsin APIC membership. A subset of this sample completed additional semi-structured interviews.
Results: A total of 61 IPPs responded to the survey, 18 agreed to interviews with 11 completions. Most respondents identified as female (n=58, 95.0%) and White (n=55, 90.1%). More than half of the respondents (n=39, 63.9 %) reported they experienced moral distress (MD). Themes from one-on-one interviews included: *Feeling depleted, challenges to IPP role, validation of IPP expertise, value of peer support.*
Conclusions: We found that IPPs endured significant distress and exhaustion during the COVID-19 pandemic regardless of their practice setting. The long-term effects on the IPP profession must be examined. IPPs are susceptible to high levels of stress and anxiety similar to other frontline healthcare workers. IPPs deserve recognition for their service during the pandemic and should have access to resources that can support their well-being.

INTRODUCTION

The initial phases of the SARS-CoV-2 pandemic was a time of clinical uncertainty and shortages of personal protective equipment (PPE) which required a shift away from the evidence-based practices foundational to the work of infection prevention professionals (IPP). IPPs were challenged to deliver rapidly changing guidance across their institutions about PPE use that contradicted best practice. IPPs were overwhelmed by the content, frequency and volume of their communication needed to ensure the safety of frontline staff.[1] Infection prevention and control departments were positioned front and center of the pandemic and IPPs had to work around the clock to write practice protocols that reflected emerging guidance from the Centers for Disease Control and Prevention (CDC). The pandemic created interruptions to the global supply chain that filtered down to create critical PPE shortages and led to purchasing substandard substitutions in healthcare facilities. These shortages caught most healthcare facilities off guard. Staff delivering patient care did not have adequate protection. To address this issue, guidelines were created to preserve the limited supply of PPE.[2] Frequently, IPPs were confronted with frontline staff who were frustrated with the rapidly changing guidelines and questioned their validity. Relaying these guidelines to beleaguered front line staff and auditing compliance contributed to the experience of moral distress and burnout among IPPs. Moral distress is defined as knowing what one considers the right ethical course of action but being in a situation in which it is nearly impossible to take that action.[3,4] IPP's were in a situation of having the knowledge of how to act but were prevented from acting accordingly due to pandemic related practice constraints.

While the current IPP workforce experienced other pandemics, such as SARS in 2003 and H1N1in 2009, they had never been confronted with such a rapid and pervasive spread of disease, as well as high mortality rate. Inaccuracies spread through social media encouraged non-adherence to infection prevention measures and fueled

* Address correspondence to Paula A. Pintar, MSN, RN, ACNS-BC, CIC, FAPIC, Infection Prevention & Control, Froedtert Health, Froedtert & Medical College of Wisconsin, Milwaukee, WI 53226.
E-mail address: Paula.pintar@froedtert.com (P.A. Pintar).
Funding: We have no funding for this study.
Conflict of interest: We have no conflict of interest to disclose.

https://doi.org/10.1016/j.ajic.2022.11.021

controversies in the hospital and the community at large, further burdening IPPs.

There are numerous research studies highlighting the stress and anxiety of front-line health care workers during the height of the pandemic.[5,6] To date there are few studies reporting the experiences of IPPs and the implications of delivering guidance that was contrary to their education and training. The purpose of this study was to explore the experiences of IPPs during the height of the COVID-19 pandemic.

METHODS

Study design/sample

We used a mixed methods design to explore the experiences of IPPs during the COVID-19 pandemic. We administered an electronic survey (Survey Monkey®) to a convenience sample of the membership of the Wisconsin Association of Professionals in Infection Prevention (APIC). The survey was distributed through the four Wisconsin APIC chapters whose members work in healthcare across multiple settings, such as acute care, long-term care, and public health. To further explore their survey responses we conducted semi-structured interviews with IPP's who volunteered their contact information on the survey.

Instruments

The principal investigator (PI) developed a survey to determine IPP levels of moral distress and professional respect with responses on a Likert-type scale. Survey content was peer-reviewed by two certified IPP and members of the National APIC Research committee. A semi-structured interview guide was used to explore IPP experiences in depth.

Procedure

The survey was distributed to all active members of the Wisconsin-based APIC chapters (277 active members) through their chapter leaders from July 12 to August 9, 2021. An informational page about the study preceded the survey. Completion of the survey signified voluntary consent to participate in the study. Those providing their contact information were contacted to schedule interviews. The PI conducted the interviews remotely through secure Zoom from July 29, 2021 – August 19, 2021. A semi-structured interview guide was used to provide general structure to the interview process. The guide included questions to elicit personal responses, feelings, and experiences of how the COVID-19 pandemic affected the IPP from the point in which the pandemic started in March 2020. The principal investigator contacted each respondent by email or telephone to schedule the interview. A separate verbal informed consent was obtained with each participant along with demographic questions. Each interview was audio/video recorded and transcribed within 24 hours of completion.

Ethics

All participants engaged in an informed consent process. The study was approved through the Medical College of Wisconsin and Froedtert Hospital Institutional Review Board (PRO00039934).

Data analysis

An inductive approach to qualitative content analysis[7,8] was used to analyze the interview data. The PI reviewed all video/audio recordings within 8 hours following the interview sessions, taking notes and documenting observations. The written and audio transcripts were re-reviewed by the PI on three separate occasions, and each time the PI took notes and highlighted information in order to extract nuances of the participants' experiences. Coding was completed by the PI and reviewed/audited by the second author. These researchers then collaboratively developed themes and subthemes. An audit trail was created documenting the analytic process and decisions made.

RESULTS

A total of 61 IPPs responded to the survey out of the 4 Wisconsin based APIC chapters reflecting a 22% response rate. IPP characteristics and responses to the survey questions are summarized in Table 1. Most respondents identified as female (n=58, 95.0%) and White (n=55, 90.1%). Of those who reported their age (n=59), most respondents were in the age bracket of 31 to 40 years (n = 17, 27.8%) and 41 to 50 years (n = 21, 34.4%). Almost half (n = 30, 49.1%) were board certified in infection control (CBIC) and half had been working in the IPP field 5 years or less (n=32, 53%). More than half of the respondents (n=39, 63.9 %,) reported they experienced moral distress (MD) during their work as an IPP during the peak of the pandemic. Many continued to experience MD as an IPP after the peak (n=34, 56%). More than half felt they were looked upon as a trusted partner of the front line patient care team during the pandemic (n=48, 78%).

One-on-one interviews

Eighteen survey respondents volunteered to participate in an interview and eleven completed the interview session. Interview sessions ranged from 45-60 minutes. Four themes and 13 subthemes were identified (Table 2). Themes included: *Feeling depleted, challenges to IPP role, validation of IPP expertise, value of peer support*. The themes uncovered in the one-on-one interviews and open-ended comments from the survey confirmed and expanded upon the closed-ended survey question findings.

Theme 1. Feeling Depleted

IPP professionals felt depleted and "burned out" by their responsibilities. Participants expressed fear for front line staff members who had to reuse and extend PPE use. They also reflected on the stress of ensuring that the frequently updated and sometimes conflicting PPE guidelines were implemented correctly. *" I didn't realize how burnt out I was until things kind of started to settle down and I actually could step back and really think about it and look at my life and realize that "Oh my God! (H)."*

1a. Overwhelming workload and stress

Participants described the stress of shouldering a dramatically increasing workload. An IPP shared, "It was overwhelming most days, at best. At first, you think that it's not even real and it's not going to hit us. It's not going to be that bad. And then it just kind of blew up and went crazy" (Q). One participant described feeling "like I had a little PTSD, that is, just sometimes things kind of triggered emotions that I had during that exhausting time" (H). Those who held leadership positions avoided venting to their IPP staff so as not to contribute to their burden.

1b. Working in a whirlwind

The pace of new infections and deaths was relentless. "It's like, you got on a carnival ride and you expected to do one round and then it never stopped and you couldn't get off. I'm sure many people felt this way, but it was a whirlwind (N).

1c. Loss of joy in work

Participants discussed how navigating the pandemic changed how they felt about their job. "Initially, I loved it (being an IPP). I loved the job, I loved learning it. But now, I'm over it (P)."

Table 1
IPP demographic results and responses by survey questions. Items rated on a 7-point Likert scale (1 = strongly agree and 7 = strongly disagree). All respondents N=61.

Survey question	N = 61	%
Age		
18-22	0	0
23-30	1	1.60%
31-40	17	27.80%
41-50	21	34.40%
51-60	10	16.30%
61 or older	10	16.30%
Prefer not to answer	2	3.20%
Ethnicity		
Hispanic or Latino or Spanish	2	3.20%
American Indian or Alaskan native	1	1.60%
Asian	1	1.60%
Native Hawaiian or Other Pacific Islander	0	0
Black or African American	1	1.60%
White	55	90.10%
Two or more races	0	0
Not listed	0	0
Prefer not to answer	1	1.60%
Prefer to describe	0	0
Gender		
Male	3	4.90%
Female	58	95.00%
Education		
ADN or Associate Degree	5	8.20%
Diploma	0	0
BSN, BA, BS	33	54.10%
MSN, MN, MS, MA	16	26.20%
DNP	0	0
PhD	1	1.60%
Did not respond	6	9.80%
Certification in Infection Control		
Yes	30	49.10%
No	21	34.40%
Planning to certify within the year	13	21.30%
No plans to certify	2	3.20%
Responded to more than one option	5	8.20%
Year working in Infection control		
<1 year	3	5.00%
1-2 yrs.	9	15.00%
3-5 yrs.	20	33.30%
6-10 yrs.	12	20.00%
11-16 yrs.	6	10.00%
17-20 yrs.	4	6.60%
21 yrs. or more	6	10.00%
Missing	1	1%
Are you a Fellow of the Association for Professionals in Infection Control & Epidemiology (FAPIC)		
Yes	4	6.60%
No	56	93.30%
Missing	1	1%
I understand the term "Moral distress."		
Strongly agree	18	30.00%
Agree	31	50.00%
Neither agree nor disagree	1	1.60%
Disagree	2	3.20%
Strongly disagree	3	5.00%
Missing	6	10.00%
I have experienced moral distress in my role as an IPP during the COVID-19 pandemic.		
Strongly agree	15	24.00%
Agree	12	20.00%
Somewhat agree	12	20.00%
Neither agree nor disagree	1	1.60%
Somewhat disagree	4	7.00%
Disagree	6	10.00%
Strongly disagree	5	8.00%
Missing	6	10.00%
I have experienced moral distress often (more than 2 times/ month) during the COVID-19 pandemic in my role as an Infection Preventionist since the pandemic start date in March 2020.		
Strongly agree	22	36.00%
Agree	15	24.50%
Somewhat agree	5	8.00%
Neither agree nor disagree	2	3.20%
Somewhat disagree	0	0
Disagree	7	11.00%
Strongly disagree	4	6.50%
Missing	6	9.80%
I continue to feel moral distress in my role as an IPP even though the peak of the pandemic has passed.		
Strongly agree	8	13.00%
Agree	15	25.00%
Somewhat agree	11	18.00%
Neither agree nor disagree	1	1.60%
Somewhat disagree	2	3.20%
Disagree	8	13.00%
Strongly disagree	9	15.00%
Missing	7	11.00%
During the peak of the COVID-19 pandemic (March 1, 2020 to May 1, 2021) in Wisconsin) my moral distress was related to PPE supplies.		
Strongly agree	11	18.00%
Agree	6	9.80%
Somewhat agree	15	25.00%
Neither agree nor disagree	3	5.00%
Somewhat disagree	3	5.00%
Disagree	10	16.00%
Strongly disagree	6	10.00%
Missing	7	11.00%
During the peak of the COVID-19 pandemic, I felt I was a trusted partner of the front-line patient care team?		
Strongly agree	20	33.00%
Agree	13	21.00%
Somewhat agree	8	13.00%
Neither agree nor disagree	2	3.20%
Somewhat disagree	7	11.00%
Disagree	4	6.50%
Strongly disagree	1	1.60%
Missing	6	10.00%
I feel respected by the front-line patient care team in my role as an IPP.		
Strongly agree	16	26.00%
Agree	27	44.00%
Neither agree nor disagree	5	8.00%
Disagree	5	8.00%
Strongly disagree	2	3.20%
Missing	6	10.00%
	N	**%**
During the peak of the COVID-19 pandemic, I was recognized as the expert by my organization's leaders?		
Strongly agree	12	20.00%
Agree	26	42.00%
Neither agree nor disagree	7	11.00%
Disagree	6	10.00%
Strongly disagree	4	6.50%
Missing	6	10.00%

Table 2
Themes, subthemes, and supportive quotations.

Themes	Subthemes
Feeling depleted	Overwhelming workload and stress
	Working in a whirlwind
	Loss of joy in work
	Feeling helpless
	Lack of drive
Challenges to IPP role	Guilt not being direct provider of care
	Not being heard
	Changing Guidelines
	Lack of recognition and support
	Public disbelief in science
Validation of IPP expertise	Staff, leaders and public recognition of the value of IPP
	Personal recognition of professional growth
Value of peer support	Building peer relationships virtually

1d. Feeling helpless

Participants struggled to feel good about their performance as an IPP as they were "pulled in so many different directions, it was just kind of flying by the seat of your pants" (N). Another shared ". . .Not feeling like I ever made the right decision at the right time, fast enough, good enough. That was hard" (H).

1e. Lack of drive

As the pandemic dragged on and IPPs endured relentless demands, some respondents experienced a lack of professional drive. "There was a while there where I stopped caring. I wanted to just be left alone. I didn't want to hear about it, I didn't want to talk about it. I'm not doing this anymore (K)."

Theme 2. Challenges to IPP Role

IPPs described unprecedented personal and professional challenges while navigating their role during the pandemic.

2a. Guilt not being direct provider of care

IPPs, many of whom had formerly been direct care providers, felt conflicted about seeing their peers delivering care in uncertain situations when they were removed from that frontline risk. *"It hit me, like I feel so bad for the people on the front lines." (P)*

2b. Not being heard

One IPP explained her frustration with feeling invisible while trying to communicate important information. *(J) "I felt like I was screaming at the top of the mountain, and no one was listening."*

2c. Changing guidelines

Due to the complexity of the pandemic, IPPs managed frequent updates and often conflicting guidelines published by the CDC. In turn, staff questioned their leadership. *"Well are you sure you are following the proper guidelines?" (G)*

2d. Lack of recognition and support

IPPs remembered that initially there was a lack of support from institutional leadership for their unique role in the institution. One participant explained that there was a lag time "*for some hospital leadership to defer things to us as specialists . . .and subject matter experts.*" (M).

3e. Public disbelief in science

IPPs shared that as they struggled to address a public health crisis they also had to deal with disruptive public responses to the pandemic that stemmed from divisive politics."(G). Some disbelief in science even came from healthcare professionals, *"I remember the first week where I started getting the slew of conspiracy theories from healthcare workers, and that became very difficult to manage"* (J).

Theme 3. Validation of the IPP Expertise

A positive occurrence shared by the participants was the frequently reported support system of relying on family members, colleagues, or peer connections through their APIC chapter. IPP's that participated in these peer connections relayed that these connections eased stress and formed stronger relationships with peers.

3a. Staff, leaders, and public recognition of the value of IPP

Greater awareness of IPP knowledge and expertise was also identified during the interviews. As the pandemic continued there was realization of the value of the IPP at multiple levels in organizations. *"I think it put a highlight on our department and the role that we can play within the hospital." (M)*

3b. Personal recognition of professional growth

IPP's experienced a sense of personal accomplishment that arose from their ability to connect with the front line staff and dialogue with them on how it was affecting them. *"I still feel happy every time I can change something to make it better."* (J)

Theme 4. Value of Peer Support

IPPs developed a deeper bond with each other through peer support. *"During the height of the pandemic, we were meeting daily. It was very therapeutic. It was kind of like group therapy sessions, where we literally just vented about everything and all of our experiences and what happened and a lot of sharing between ourselves" (N).*

4a. Building peer relationships virtually

Face-to-face meetings within teams and with colleagues in other systems were replaced with virtual meetings. Many IPPs had older technology that didn't include access to computer cameras which decreased personal connection. Over time, reconnecting virtually with peers in our professional organization, APIC, was another source of support that sustained IPPs.

DISCUSSION

We found that IPPs experienced moral distress, stress, anxiety, and burnout consistent with findings from other studies about the experiences of front line healthcare workers.[9] In contrast, IPPs developed strong teams over the course of the pandemic and felt that their expertise was recognized and received validation of their role publicly and throughout their institutions. To our knowledge, our study was the first to explore the personal and professional IPP experience in depth during the early phase of the pandemic using one-on-one interviews and survey methods. Our findings build on a study conducted by the APIC COVID-19 Task Force which elicited information about PPE availability and management using conservation and reuse strategies.[1] Our results were similar to the APIC Task Force findings that IPPs were challenged by PPE management and providing guidance to the front line healthcare workers. Interestingly the APIC study identified that when there was direct IPP involvement in the development of the PPE use protocols or crisis standards of care (CSC) there was a sense of increased assurance in the safety efficacy of the standards.[1] Similarly, we noted that over time, the organization and direct care providers turned to the IPPs for their expertise and guidance in navigating the pandemic.

Our study not only presents complementary information to that of the APIC Task Force study; it provides a unique perspective by focusing on the psychosocial, holistic view of what it was like to be an IPP during the COVID-19 pandemic. IPPs experienced feeling depleted, overwhelmed, and helpless and experienced a loss of joy in their work. Interviewees explicitly identified anxiety related to PPE access and use. IPPs were unique in that they had to deviate from their training to make recommendations that would best protect healthcare professionals given the shortage of PPE supplies. The pandemic required the implementation of crisis standards of care and the interviewees thought that these management practices were not evidence-based. There was a constant barrage of requests for the IPPs to provide data to back up the CDC's recommendations. Not only were these requests overwhelming and exhausting for the IPPs, these situations contributed to moral distress because IPP did not have data to support these recommendations.[10] The pace that was required to quickly transition, educate and disseminate CSC protocols was out of

the norm for all involved in healthcare, and this indeed triggered stress in the IPP.

The COVID-19 pandemic was a fertile environment to develop "*infodemic*: the global spread of misinformation that poses a serious problem for public health"[11] (p. 2). The study participant's frequently cited their concerns about the inaccurate and contrary information spread on social media platforms and the negative effect it had in combating the spread of the virus. Social media was often tied to strong political opinions that further caused distrust in the work the IPP was doing.[12] There seemed to be no end to the task of refuting misinformation cited by frontline workers, neighbors and family members from social media posts. Concerningly, individuals were more inclined to believe disreputable sources of information rather than the IPP.[11]

IPPs struggled with long work hours trying to balance work/life responsibilities. Many IPPs were working independently and did not have peer support at their facility. IPPs were expected to quickly digest, communicate, and update hospital policies based on evolving CDC guidelines. This overwhelming workload in a stressful environment negatively affected IPPs driving some to leave the profession and healthcare all together. The IPPs were seldom recognized by leadership for working overtime without additional compensation and without administrative or data support services to lessen the burden. Initially, hospital leaders were unaware of the negative and angry comments IPPs endured from stressed front line workers. At the point in which we surveyed IPPs our data revealed that 78% felt they were respected by the front-line patient care team. This may represent a turning point in greater appreciation for the IPP role.

One of the positive outcomes of this study identified was the development of strong and lasting bonds between team members. This contributed to team resiliency fostered by relationship building among their peers in coworker groups and APIC. Delgado and colleagues[13] describe a community of practice (CoP) as a group of people with a shared practice who come together to contribute knowledge based on their experiences and to learn from each other. A CoP is a platform for ongoing dialogue and mutual engagement. The pandemic drove the need for IPPs to develop a safe forum for supporting each other as they faced similar challenges. After face-to-face APIC meetings were suspended during the initial phase of COVID-19, some IPPs in our study organically developed their own CoPs as they shared their experiences and tactics to manage work. For some IPPs, CoPs motivated them to keep moving forward despite daily work stresses. The importance of teams and relationship building in the context of a pandemic cannot be underestimated.

Implications for future research and practice

An important direction for future research is understanding how IPP CoPs within healthcare systems can improve hospital preparedness for future pandemics and additional healthcare crises.[13] The IPP has been somewhat forgotten in healthcare system efforts to address the trauma experienced by frontline healthcare professionals practicing during the pandemic. It is important to develop more comprehensive organizational support for IPPs who continue to face political interference and misinformation on social media platforms related to infection control, as well as heavy workloads related to spikes in infectious disease transmission and newly emerging pathogens. The COVID-19 pandemic has raised awareness of the importance of the IPP professional in health systems. Further studies are needed to identify strategies to rebuild and expand the IPP workforce.

Limitations and strengths

As this study was only open to APIC members within a single state in the Midwest, it may only capture a small subset of IPP's experiences during the COVID-19 pandemic. The participants were mostly female and largely working in inpatient acute care facilities and therefore the results cannot be generalized to IPPs working in other practice areas. Participant self-selection may have resulted in a sample of IPPs that did not fully represent the range of experiences of IPPs practicing during the pandemic. A strength of our study was the focus on the experiences of IPP's who were practicing in multiple settings including long term care, public health, and acute care.

CONCLUSION

We found that IPPs endured significant distress and exhaustion during the COVID-19 pandemic regardless of their practice setting. Although this was not the first respiratory pandemic experienced by this generation of IPPs, it was the most deadly pandemic and was complicated by PPE shortages, as well as the growing mistrust in science due to the influence of misinformation on social media platforms. The long-term effects on the IPP profession must be examined. This study highlights the need to create a better infrastructure of support for IPP's who bring specialized knowledge and expertise critical to current and future pandemics. IPPs are susceptible to high levels of stress and anxiety similar to other frontline healthcare workers. These professionals deserve recognition for their service during the pandemic and need access to resources that can support their well-being.

Acknowledgments

We express our deep appreciation to the infection control professionals who shared their stories. We would also like to thank Maryann Moon, MSN, APRN, ACNS-BC, APNP, Associate Chief Nursing Officer for supporting access to research resources and ongoing guidance through this project.

References

1. Rebmann T, Alvino RT, Holdsworth JE. Availability and crisis standards of care for personal protective equipment during fall 2020 of the COVID-19 pandemic: a national study by the APIC COVID-19 task force. *Am J Infect Control*. 2021;49:657–662. https://doi.org/10.1016/j.ajic.2021.03.015.
2. Centers for Disease Control & Prevention. Optimizing the supply of PPE and other equipment during shortages. COVID-19. Published September 23, 2022. https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/index.html.
3. Jameton A. *Nursing Practice: The Ethical Issues*. Prentice-Hall; 1984.
4. American Association of Critical-Care Nurses. Moral distress in times of crisis. Published 2020. https://www.aacn.org/nursing-excellence/healthy-work-environments/~/media/aacn-website/policy-and-advocacy/stat-20_position-statement_moral-distress.pdf.
5. Sun N, Wei L, Shi S, et al. A qualitative study on the psychological experience of caregivers of COVID-19 patients. *Am J Infect Control*. 2020;48:592–598. https://doi.org/10.1016/j.ajic.2020.03.018.
6. Yau B, Vijh R, Prairie J, McKee G, Schwandt M. Lived experiences of frontline workers and leaders during COVID-19 outbreaks in long-term care: a qualitative study. *Am J Infect Control*. 2021;49:978–984. https://doi.org/10.1016/j.ajic.2021.03.006.
7. Miles MB, Huberman MA, Saldaña J. *Qualitative Data Analysis: A Methods Sourcebook*. 4th ed. SAGE Publications; 2020. Accessed March 3, 2021; http://ussagepub.com/en-us/nam/qualitative-data-analysis/book246128.
8. Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res*. 2005;15:1277–1288. https://doi.org/10.1177/1049732305276687.
9. Ardebili ME, Naserbakht M, Bernstein C, Alazmani-Noodeh F, Hakimi H, Ranjbar H. Healthcare providers experience of working during the COVID-19 pandemic: a qualitative study. *Am J Infect Control*. 2021;49:547–554. https://doi.org/10.1016/j.ajic.2020.10.001.
10. Alsuhaibani M, Kobayashi T, McPherson C, et al. Impact of COVID-19 on an infection prevention and control program, Iowa 2020-2021. *Am J Infect Control*. 2022;50:277–282. https://doi.org/10.1016/j.ajic.2021.11.015.
11. Bridgman A, Merkley E, Loewen PJ, et al. The causes and consequences of COVID-19 misperceptions: understanding the role of news and social media. *HKS Misinfo Review*. 2020. https://doi.org/10.37016/mr-2020-028.
12. Sahni H, Sharma H. Role of social media during the COVID-19 pandemic. *Int J Acad Med*. 2020;6:6.
13. Delgado J, Siow S, de Groot J, McLane B, Hedlin M. Towards collective moral resilience: the potential of communities of practice during the COVID-19 pandemic and beyond. *J Med Ethics*. 2021;47:374–382. https://doi.org/10.1136/medethics-2020-106764.