"The little lights in this dark tunnel": Emotional support of nurses working in COVID-19 acute care hospital environments

Original Research

Jennifer Lapum¹, Megan Nguyen², Sannie Lai³, Julie McShane³, Suzanne Fredericks¹

¹Daphne Cockwell School of Nursing, Ryerson University, Ryerson University, Toronto, Ontario, Canada; ²Dalla Lana School of Public Health, University of Toronto, Toronto, Ontario, Canada; ³Toronto General Hospital, University Health Network, Toronto, Ontario Canada

Corresponding author: J. Lapum (jlapum@ryerson.ca)

ABSTRACT

Background: Working on the frontlines of hospitals during the COVID-19 pandemic has been challenging and distressing for nurses. The troublesome nature of these emotions have surfaced because of uncharted territory related to this virus, compromised work conditions, unfavourable patient outcomes, and the witnessing of suffering and loss. Although there has been renewed emphasis on how to emotionally support nurses, the nature of support needed is somewhat unknown considering that healthcare professionals have not experienced a pandemic of this magnitude in their lifetime. We explored how nurses were emotionally supported and how they can be better supported while working in COVID-19 acute care hospital environments. Methods: In this narrative study, semistructured interviews were conducted with 20 registered nurses working in hospitals in the Greater Toronto Area and working on units caring for COVID-19+ patients. Results: Our findings reflected three main narrative themes. The organic emergence of support was a narrative theme that included camaraderie and emotion-focused coping strategies. Intentional forms of support were a narrative theme that included mental health support, information support, and resource support. The social justice nature of support was a narrative theme that included advocacy and recognition and compensation. Conclusion: These findings highlight the importance of how hospital and government leaders should employ a multifold approach in the provision of emotional support for nurses. Some strategies relevant to clinical practice include demonstrating visible presence with regular rounding of units by leaders, and transparent communication about information and resources. Other strategies are on-site psychological support and legitimate support of mental health sick days as well as lobbying governments for financial compensation for the risky work involved in being a frontline provider and appropriate provision of personal protective equipment. While emotionally supporting nurses, these types of resources can act as "little lights in this dark tunnel" of COVID-19 and illuminate a path forward.

KEYWORDS

Emotions; mental health; nursing; nurses; COVID-19; psychosocial support; narrative

FUNDING SOURCE

This work was supported by the FCS COVID-19 Rapid Response Research Grant, Ryerson University.

BACKGROUND

In March of 2020, COVID-19 was declared a global pandemic (World Health Organization, 2020). Despite the feelings of uncertainty and fear reverberating around the world (Smith et al., 2020), nurses have been at the frontline caring for patients who test

positive as well as supporting their families during this formidable time (Rosa et al., 2020). The acute care hospital environment has been uniquely challenging for nurses considering the dynamic nature of the state of science as well as the emotional trauma 29

experienced (Lapum et al., 2020). This pandemic has highlighted the role of the nurse as indispensable to the functioning of the healthcare system (El-Masri & Roux, 2020), but also raised questions about how nurses are best supported. In this study, we explored how nurses were emotionally supported and how they can be better supported while working in COVID-19 environments in hospitals.

Hospital work environments during the pandemic have been demanding for healthcare professionals. In these environments, nurses are at the frontlines spending sustained periods of time with patients and deeply engaged in their emotional care as well as their families (Lapum et al., 2020; Rosa et al., 2020). They are working in compromised work environments (Thorne, 2020) wherein their own personal safety is at risk (Catania et al., 2020). This has included limited access to resources including personal protective equipment (PPE) and medical supplies and equipment (Bagnasco et al., 2020; Catania et al., 2020; Gujral et al., 2020; Rosa et al., 2020; Sim, 2020; Smith et al., 2020). Additionally, the nature of transmission of COVID-19 was unclear during the first wave creating a significant amount of uncertainty. As a result, frontline providers such as nurses were at highest risk for infection (Sim, 2020). Because many countries are not collating data, there is minimal information related to healthcare workers' infection rates and deaths, but it has been suggested that hundreds of thousands of workplace infections have occurred, with hundreds of nurses dying (Freer, in press; Huang et al., 2020; International Council of Nurses, 2020; Pan American Health Organization, 2020; Sim, 2020; Zeng et al., 2020). Rising infection rates and the need for self-isolation have also resulted in increased workload and substandard nurse-patient ratios (Sim, 2020; Stokes-Parish et al., 2020). These types of environments have had a significant emotional impact upon nurses.

The emotional impact has been multifold for nurses working in these environments. The emerging literature has reflected feelings of uncertainty, fear, anger, helplessness, psychological distress, anxiety, and depression (Bagnasco et al, 2020; Iheduru-Anderson, 2020; Labrague & de los Santos; Shreffler et al., 2020). Nurses are experiencing intense moral distress when their own values concerning patientcentred care are at odds with COVID-19 work environments that require rapid triage (Rosa et al., 2020) as well as changes to care models, rationing of resources, and sometimes limiting of contact with patients. Because of situations of helplessness interwoven with death and loss of contact with family due to social restrictions, nurses are at risk for psychological and trauma-related symptoms over the long term (Lapum et al, 2020; Shahrour & Dardas, 2020). Existing research has indicated that the intensity and persistent emotions that nurses are experiencing are akin to post-traumatic stress disorder (Blekas et al.; Carmassi et al.; Lapum et al., 2020). The impact of these emotional and traumatic experiences has led to feelings of isolation (Iheduru-Anderson, 2020) and emotional and physical exhaustion (Dykes & Chu, 2020; Gao et al., 2020; Gujral et al., 2020; Sagherian et al., 2020).

There is renewed emphasis on how to emotionally support nurses through intensely traumatic experiences such as pandemics. The potential consequences of not supporting nurses during these times are well known and include compassion fatigue, burn-out, and intentions to leave the profession (Gujral et al., 2020). Leaders in healthcare environments need to collaborate on how to support nurses over the short and long term (Bagnasco et al., 2020). However, first we need to better understand how nurses were emotionally supported and how better to support them moving forward. As underscored in this research, it is our hope that this support will offer "little lights in this dark tunnel" of COVID-19 (participant quote).

METHODS

We based our study methodology on Lieblich et al.'s (1998) narrative inquiry approach, which privileges the storied quality of human experience and understanding this experience through narrative accounts. Specifically, we employed the categorical content and categorical form of narrative inquiry (Lieblich et al., 1998). A categorical approach is focused on how components of participants' stories can enhance understanding of a specific phenomenon (Lieblich et al., 1998) such as nurses' accounts of emotional support while working in COVID-19 acute care hospital environments. This inquiry focus upon emotions is theoretically grounded in narrative. We draw upon Kleres (2010) work that theorizes how emotions are "narrative in nature" (p. 188) and that the telling of a story and its components constitute these emotions. This is in align with our constructivist approach in which the

meaning of a narrative is co-constructed during the telling of the story.

Recruitment occurred from July to October 2020. We recruited registered nurses working in acute care hospitals located in the Greater Toronto Area and working on units caring for COVID-19+ patients. Social media and listservs from selected hospital units were used to facilitate recruitment outreach using a convenience sampling method. We conducted individual, semi-structured interviews through a combination of audio and/or video-enabled Zoom calls. Interview questions were broad to invite storytelling, and included items such as: What helped support you in situations that affected you the most emotionally? How do you think you could have been better supported in these situations? Interviews were recorded and transcribed verbatim.

Using a group approach, we analyzed data based on Lieblich and colleagues' (1998) method of categorical content and form analysis. Therefore, our analytic focus was on the content of nurses' stories (i.e., what they shared in terms of the context, what happened, and who was involved) as well as how their narratives were recounted with regard to form and nonlexical components of speech (e.g. vocal intonation, tone, pitch etc.) (Lieblich et al., 1998).. This process involved individually reading the transcript to get an overall sense of the narrative account followed by a group reading of the transcript where we began to identify sections of text that were relevant to the research question. In line with Lieblich's approach, when identifying sections of text, we examined both the content and the form which informed our analytical discussions in terms of how we coded these sections of text and then how related codes were combined into several narrative themes. The team collaboratively established the narrative coding structure using an ongoing iterative and dialogical approach. It is these narrative themes that become the organizing structure to represent the study's findings.

Ethics Consideration

We obtained research ethics board approval from the initial hospital recruitment site and from the principal investigators' university. Free and informed consent was provided before participation in the study.

RESULTS

This research included 20 registered nurses from six different hospital institutions in which all nurses were working with COVID-19+ patients and all but one nurse was working on COVID-19 designated units specifically. Sixteen were considered bedside nurses and four were in nurse leadership positions on these units. We specifically do not identify the leadership positions to protect participants' identity. Seventeen nurses were female and three were male. They participated in study interviews that were up to 90 minutes in length. Three themes were identified including: the organic emergence of support, intentional forms of support, and the social justice nature of support.

Organic Emergence of Support

There was an organic emergence of emotional support that was not necessarily formalized. This type of support included camaraderie and emotionfocused coping.

Camaraderie

Camaraderie was a form of support that appeared as a spirit of community and the sharing of emotional experiences which organically emerged among colleagues during the pandemic. Several nurses remarked "we're all in this together" (P05, P08) and explained how they supported one another: "We looked after each other ... people came together in a way that I haven't seen. Everybody supporting each other ... what do you need? What can I do for you?" (P04). Another nurse explained feeling "safe" because of "having your colleagues support each other and making sure we're doing our [PPE] checks" (P11). The emotional nature of the pandemic brought about a camaraderie that was more than the norm. One nurse's narrative reflected the importance of "support[ing] each other emotionally ... so that we're not burnt out at the end of this. I'm taking care of my colleague and my colleague has my back as a nurse. That was really important" (P11). The linguistic phrasing "has my back" suggests that nurses were willing to support one another no matter how difficult the situation. And this support was described as essential "to get the job done. And make sure our patients are taken care of and go above and beyond" (P27). The emotional support embedded in the feeling of camaraderie was evident. One nurse

The support that nurses gave and received was also

related to the sharing of a unique experience.

Nurses' narratives reflected how the camaraderie transpired because their experiences were akin to one another. Nurses commented that their colleagues "understand" (PO2) because "[we are] living the same experience ... [and] share the same feelings" (PO6) and as a result, they are "the only people who kind of get this ... they're kind of like my sisters and brothers" (PO3). The familial reference to describe their colleagues highlighted the intimacy of the support. Nurses described how "colleagues were the biggest help ... we were able to vent to each other and totally understand and validate how we're feeling" (PO6). This sharing of experiences led to mutual understanding and united nurses in a way that transcended their differences:

There were times where everyone was just so emotionally exhausted but also scared that team members would come together and pray and people would join that prayer, whether they believed in whatever religion ... it was a way to bond ... talking about our emotional struggles and what we were all going through and how we were going to get through it. If we talked about home stresses, everybody understood. If we talked about a heartbreaking patient story, everybody understood, because we were all going through it together (P27).

The "sharing of stories" was a positive support for nurses and described as "therapeutic, allows us to decompress, voice our concerns, and move on" (P11). One nurse's excerpt highlighted how this type of support enhanced their capacity to engage in emotional management: "they know what's going on, and can help me understand my emotions and kind of get through it, really helpful" (P17). It was commonly noted that camaraderie not only brought them "closer as a team" (P28), but they also found it "reassuring ... you're not alone" (P06) and it "validated" their feelings as they realized that "I wasn't the only one feeling all that" (P28). The phrasing "all that" suggests that there was a considerable emotional burden that nurses were attempting to cope with. In addition to camaraderie, nurses' narratives reflected emotion-focused coping.

Emotion-focused Coping

Another form of support that organically emerged is emotion-focused coping which refers to strategies focused on regulating emotions. Because of the isolating nature of physical distancing, nurses referred to the importance of "stay[ing] connected" (P15) with others. They commonly described "checking" in on family and friends (P15) and noted that "spending time with family makes this process a whole lot less isolating" (P11). The support they received from family and friends was an important component of their coping. One nurse commented "that was a big emotional part, having them care for me ... I really appreciated it" (P08). Another nurse said "when I could be around my husband and kids like I know that I would feel a whole lot better" (P03). Another nurse described how their unit received letters from children in school about how "we are heroes ... everyday we would feature a letter ... which was really nice" (P04). The support from family, friends, and society facilitated nurses' emotionfocused coping.

Other forms of emotion-focused coping included mechanisms that could become problematic as well as positive strategies. One nurse commented on their own "way of coping ... every night, I go home, I need a drink for this reason. I need a drink for that reason" (P04). Others noted "stress eating" (P05, P22) and "pandemic weight" gain (P22). However, narratives also reflected positive emotion-focused coping referring to one's perspective and engaging in activities and nature. Highlighting the importance of perspective, one nurse remarked "there's always light at the end of the tunnel. No matter how long a tunnel might be, just have to focus on one step at a time" (P12). Narratives suggested that nurses trained themselves to feel an emotion and then release it: "trying not to dwell, taking my moment to be scared and then to let that go because it wasn't helpful ... take a deep breath, go forward" (P25). Another nurse reflected upon the role of faith in emotion-focused support: "my faith ... provides an extra layer of emotional armor" (P20). Nurses also referred to "going outside ... enjoy the weather" as a way to cope" (P11). They indicated that this helped because it allowed them "to go back to work knowing that I've decompressed. Balance between work life, and that personal time to take care of yourself" (P11). Another participant reflected on the importance of self care: "I found little things that clear my mind and get my mind

off work, so that I can feel like a person again ... I had to find ways to feel whole again" (P05). This excerpt suggests that a nurse's personhood is diminished

suggests that a nurse's personhood is diminished during the pandemic because they become so focused on work. It was common for nurses to emphasize the usefulness of "disconnect[ing] from work" (P16) and "actively distracting" themselves "from thinking about the pandemic" (P24). Participants referred to many activities such as "going for runs", "reading books" (P06), and "cooking" (P01) and how these activities were "good outlets" (P06) and "important to handle all those emotions" (P01). The organic forms of support were also complemented by intentional forms of support.

Intentional Forms of Support

There were intentional forms of support that were formalized in the hospital setting including mental health support, informational support, and resource support.

Mental Health Support

Mental health support referred to structured support provided by hospitals. It was noted that hospital leaders reminded nurses of counselling "resources" (P16), "hotlines", and "therapists" to access "if you are dealing with emotional and psychological stress" (P12). Their narratives reflected that having those "resources in place as a security in case you do need it" (P12) and "having that constant support always telling us that they're there for us, made me feel better." Resources varied from hospital to hospital, but one nurse commented that they "had a person come into the unit ... [with] dedicated time slots for people to see her" (P04). Another nurse remarked: "I applaud my organization for the supports they set up. They had psychologists and psychiatrists available ... a quiet place ... just for the quietness" (P28). For those who did reach out for help, they indicated that it was "helpful ... to vent" (P16) and "speak with a social worker ... to cope with the stressors that I was dealing with at work ... helped me identify ways to destress" (P27). However, there seemed to be resistance in reaching out for help.

Although most nurses recognized that it would have been "beneficial" and "good for mental health" (P05, P06) to access supports, they almost always noted they "never reached out" (P06). One nurse described it as "an internal battle" in terms of their

own vulnerability as a barrier, explaining "accepting that I'm vulnerable. I don't like accepting that ... if I addressed it, I would know that it is an issue for me. So, I ignored it which is not the best way to deal" (P05). Nurses described both the work involved in reaching out and their own assumption that it would be futile: "Comes down to the effort of reaching out to having a good therapist ... I made the assumption that they're not going to be able to change my situation. All they can really do is lend an ear" (P06). Another nurse referred to almost calling but noted "it never seemed it would make a difference. I felt I knew the questions that they would ask and the things that they would tell me to do" (P25). Although nurses rarely described reaching out for support, one nurse had a revelation during the interview about the benefits of talk therapy:

I'm accumulating that stress and anxiety within me. And then by me not talking about, it is taking a toll on me. I'm actually feeling much better now that I'm actually sharing this with you. It's actually my first time sharing my emotions and the effects of this COVID-19 with someone, I thank you for listening ... this is therapeutic for me (P15).

Although the study interview was not a mental health intervention, it appeared there was an element of talk therapy that emerged for this nurse.

Narratives reflected limited time to access mental health resources as well as the nature of timeliness and ease of accessing these supports. Although emails were sent out with links to wellness and mental health programs, it was noted that "staff didn't have time to use" the support offered (P01) or were too "drained" (P08) to participate. One nurse leader commented that staff "needed a lot of emotional support" and having "trained" individuals "on site" would have been "important" (P01). It was clear that support needed to be offered in a timely fashion at the moment when nurses were struggling. Although management's availability during emotionally difficult situations varied, one nurse noted "they weren't aware of what was happening" and "if they were around and they saw, I would appreciate being pulled aside and asked if I was okay ... allowing me to talk things out ... it's comforting" (P17). The idea of having access to timely support was noted by another nurse who said "a debrief" after someone dies would be helpful (P03). In the COVID-19 context, "when somebody dies you just wrap the

body and move on to the next person" (P03). Having trained counsellors on site was emphasized as important:

Having a person who knows how to tease out people's emotions ... identify, you know what, you need this type of support ... that should be part of that code team, instead of having us calling and seeking that help. ... Having someone constantly available on the unit and dedicated for people's mental health (P04).

Another participant's comment reflected that readily accessible support was needed as opposed to "posters around the unit" with numbers to "call if you need help", this nurse elaborated:

Maybe it's our own reluctance, I don't know anyone who's called. Most of my colleagues are struggling ... a couple have been suicidal ... I've been anxious, but I've never felt like I wanted to hurt myself. But, I don't think there's been a lot of discussion, even (P03).

It was clearly noted that on site mental health supports were essential to nurses.

Nurses' narratives reflected that the type of mental support and how it was offered could be improved. For some, it was a matter of implementing "formal check-ins ... somebody saying, are you okay?" so that nurses felt "cared for" (PO3). It was also suggested that "giving space for how we're feeling" would have been important such as use of a virtual "message board ... where you could share and say, I'm really struggling ... because there really is no time at work to talk about it unless you reach out on your off hours" (PO3). Another nurse remarked on the limitation of daily huddles and management's role:

They did ask how everyone's doing ... I just felt like it wasn't an environment to allow us to speak how we were truly feeling ... having more one-on-one with our management to see how we were doing or something more intimate where you can express it (P05).

Additionally, nurses referred to the need for more formal support for mental health and well being: "we needed professional counseling from a psychologist or psychiatrist" (P30) and "somebody who actually can help you work through anxieties and fears ... [and access to someone who] we didn't have to pay out-ofpocket for" (PO2).

In moving forth with difficult times in healthcare, such as pandemics, there was the sense that institutions needed to recognize and respond to nurses' need for mental health recovery. One nurse indicated that time-off was not being approved because it was an emergency period, but this was when "it was necessitated because of the increased stress, just to have like a recovery period" (P26). Another nurse noted being "worried about what we do as an organization" to support "mental health" because nurses are experiencing "burnout" (P20). This nurse elaborated about the need for institutions to formally recognize "mental health sick days" as legitimate:

When staff say, I stopped caring, I don't even care anymore. I was like, that's called compassion fatigue. You are so tired. Take the sick day ... don't say that in front of the managers because there are repercussions, which means as an organization, we don't support, ... when you're mentally struggling, are you not sick? (P20).

Intentional support for mental health was important to nurses as well as informational support.

Informational Support

Flow of informational support varied depending on the institution and situation. Although there were changes "daily, sometimes hourly, there was policy behind it" (P27). They explained that changes were being "led by good leaders ... we got frequent updates, whether it was emails, huddles with our manager, that helped with an organized aspect of the chaos" (P27). As reflected in this excerpt, proper flow of information brought an orderliness to what was perceived as chaotic in the early days of COVID-19. However, some nurses were "frustrated because of lack of information" (P28) and felt their "input" should have been sought (P17). Another nurse commented on the importance of "constant communication ... knowledge of what's going on" to support them "to be resilient" (P11). One nurse leader described distributing "information ... [in order] to get people to be malleable and adapt to changes" (P01). It was clear that proper flow of information emotionally supported nurses' resilience. At the start of the

pandemic, nurses "had lots of questions" about safe provision of care:

Everyone was holding a gun to our manager, we want answers ... there came a point where instead of trying to argue ... you know what, we are doing it ... so let's try to communicate more often ... what the plan is, what the uncertainties are. Having that communication allowed us to work as a unit to take care of patients (P12).

One nurse leader addressed staff's concerns "with evidence. Printing out research articles, highlighting results ... being honest, transparent" (P01). Information transparency was underscored as vital to emotionally supporting nurses. One nurse noted that "open forums" with hospital leaders allowed nurses "to ask questions ... clarify concerns ... helps with uncertainty" (P15). It was indicated that some hospitals provided daily updates: "how many COVID positive patients, how many people passed away, how many staff got COVID ... how much PPE's left ... that was the biggest thing, it helped" (P01). Although transparency was important, the constant flow of information was problematic in some ways.

Information overload was challenging in terms of the flow of information. One nurse leader commented: "the hospital wants new things to be implemented to keep everybody safe, but they didn't understand there was information overload" (P01). This nurse elaborated that was "very difficult to filter through hundreds of pages of policies, summarize it, and disseminate it to staff in effective ways ... nobody has time to read. Their expectation of nurses was really high" (P01). Frontline nurses were fully engrossed in caring for patients and families, and then also expected to read about all the changes. One nurse noted it was "hard to cope with the amount of changes ... every day we had huddles on how policies are being changed, standards of practice are being changed, infection control is being changed ... it becomes very stressful to deal" (P05). It also appeared that being an agency nurse added a layer of complexity to responding to the changing information: "things were changing so quickly, dayto-day, and I don't have consistency of knowing the staff, the managers ... there was lots of movement of like materials and I just felt out of sorts, in every unit" (P24). In relation to COVID-19, they also elaborated that their agency "gave no training ... I felt very isolated" (P24). In addition to quantity, there was also

diverse information that affected how they were supported emotionally.

Nurses' narratives reflected that different and sometimes contradicting information influenced the flow of information support: "hospital policies were changing by the hour, we were getting a lot of different and changing information all the time" (P22). They elaborated:

It got very confusing ... frustrating, one person is telling you something, you're getting emails about something else ... it's conflicting when you have supervisors ... who you're looking to for directions and they cannot come to a consensus (P22).

Although the changing information was difficult, the contradictory nature was more challenging: "every day you'd hear something new" (P06) and they referred to "the most unsettling part" as "the discrepancies between organizations. You have CDC recommendations, WHO's ... anxiety was an all time high ... then, it's not until like the next day where we're acting on it" (P06). Specific to the flow of information, some nurses described a "break in communication" in terms of the managers, and they found themselves questioning "what is the right practice?" (P11).

Effective exchange of information or lack thereof prompted nurses to question why "upper management" had not learned from "SARS and other pandemics" (P08). They elaborated:

[this] created a distrust between frontline workers and management ... if they recommended a certain way of protecting ourselves, ... more kind of an evidence-based approach. That would reassure us ... we don't know where they're getting the information from. We don't know how they're building policies, it was very uncertain (P08).

Nurses' narratives reflected how more transparency would have been appreciated about the reasoning behind decisions.

As suggested in nurses' narratives, information transparency would also build trust and enhance feelings of support. One nurse commented feeling "supported by managers and other times, not as much" (P17). They explained: "there were certain things that I would find out from my colleagues, rather than my manager ... almost made us feel unsafe going

into a situation knowing we might not have the entire picture." A lot of feelings of trust/mistrust surrounded lack of transparency about PPE: "We weren't able to find them [PPE] anymore. Management was taking them down. They weren't telling us why ... they never had the conversation with us to tell us and explain why" (P22). There were mixed feelings about management, stating:

Felt like we were being lied to ... they kept saying, "we have a lot of PPE," but we were looking at our supplies and we were like, it doesn't look like we do. They kept covering things up in terms of where they were keeping the N95s. It's not fair. We're the ones that are wearing it so if we don't have the supplies, we want to hear it from you ... just felt that trust was being affected but at the same time that stress did impact our management ... I could see it emotionally, our manager broke down in tears because of the exposure of COVID to one of the nurses (P05).

One nurse leader explicated the mistrust felt by nurses in a context of dynamic information: "a lot of suspicion and mistrust towards the organization, in a context when we did not have enough PPE, did not know the evidence, was it droplet or airborne" (P30). In referring to new policies, they explained there was "anxious trepidation and staff questioned when educators came ... this is going to be how we manage a code blue for people who have respiratory symptoms." It was also clear that a lot of the information support was related to resource support. **Resource Support**

Resource support referred to access to supplies in ways that positioned nurses to feel they were safely functioning as a unit. Their narratives clearly reflected how they were concerned about the lack of resources to protect themselves: "[we] didn't feel like we had adequate resources ... we felt we were more at risk" (P03). They explained that having "an adequate supply of PPE ... would have diminished some of the fear" (P03). Another nurse commented that having resources "readily available" was important "so that people know ... their institution, they all got my back ... instead of us asking for it, and sometimes begging for PPE" (P04). One nurse commented on the emotional response to not having sufficient resources:

[With] so many people getting sick and dying, people needing ventilators, there's only X number of critical

care beds. There's only X number of ventilators. With the amount of people that can get sick, there's obviously not enough resources ... it's a very daunting idea of how the scale can tip. There'll be days going to work or coming home from work, I'll just be driving, and breaking down into tears because of fear (P22).

It was common for nurses to note how "we were promised" after SARS to never be in this place again in terms of lack of PPE (P03). Nurses often exclaimed "nothing was learned from SARS. That's more of provincial planning as opposed to specific to my organization. If there was more preparedness regarding healthcare as a whole within the province and Canada, that would have been much better." (P27). It was also noted that it was not just about insufficient PPE, but also improper practices being advocated related to its use.

The degree of feeling emotionally supported was influenced by the continued inappropriate mask policy use that is not supported by evidence: "the mask policy [was] only having two masks ... these are single use masks, and knowing that that's a financial decision by the hospitals and not one that's backed in science is troubling" (P24). Some nurses described "we didn't have much resources, less gowns, less masks" (P16) while others noted "our unit was not short on resources, we didn't have to reuse our N-95s longer than that day" (P22). This last nurse's statement appears contradictory considering that they were referring to sufficient resources despite wearing a single-use mask all day. The restriction of access to PPE became an issue in terms of resource support:

They locked up the N-95s ... saying, you could only use one per shift. You have to write out a reason why you took it out because we're going to audit it ... why do I have to provide a reason to protect myself ... people were saying "oh, you guys chose to do this job, you have to deal with whatever happens." I chose to do this job, because I was passionate about it. And I thought the place that I worked in would support me better. I didn't sign up to work with less PPE (P16).

It was clear that many nurses "didn't feel like they [the hospital] prioritized first contact persons who are actually caring for COVID patients" (P16). This nurse elaborated:

I felt like they were thinking, how can we save resources so we can better spread it out in the future? ... Our manager came and said, this is an article that says you can use your N-95 for two days. We were like, what? Use the same mask that came in contact with other things? It didn't feel safe. Their logic didn't make sense. We had a bin in the back of the hospital, throw away your N-95 here ... they're going to reuse it? We're going to get someone else's mask that they washed or disinfected ... made me feel more stressed. Who's making these calls? Are they having nurses on decision-making teams? Are they having experienced people making these decisions? It didn't seem fair. It made it more upsetting, it made me not want to come to work (P16).

The inappropriate massaging of evidence to reconcile the PPE shortages failed to reflect the reality of risk nurses were exposed to, significantly undermining the value of their work. Nurses' accounts of resource support also revealed the social justice nature of support.

Social Justice Nature of Support

The social justice nature of support related to the emotional experience involves the fair, compassionate, and equal rights of nurses. The social justice nature included advocacy and recognition and compensation.

Advocacy

Advocacy involved speaking up for self and interceding on behalf of others. One nurse described their manager as a "nurse's nurse ... we know they have our back ... our manager wants to appease us first and then deal with upper management" (P02). Although it is important to note that study participants came from different units and hospitals and thus, the feeling of support and advocacy varied: "I wouldn't say I'm happy to work for this hospital because I didn't feel like they had our backs through this whole thing and it's sad ... they didn't make us feel safe" (P16). This nurse explained that they would have felt more supported if the hospital said "you signed up to work with us, we have your backs, here are your resources. If you need anything, contact us. I never felt that support." (P16). Another nurse indicated having a manager who "was fully supportive of us using our PPE the way we thought fit. She's been

hugely supportive, and that means everything to us. I don't think we could have gotten through without this manager" (PO2). Another nurse referred to their manager "fight[ing] for us to be treated right within the hospital and for us to receive proper PPE, and make sure that we're doing okay in our role ... I felt really well supported" (P17). In addition to PPE, it was also noted how nurse leaders advocated for human resource support: "we have a resource nurse so we always have somebody to do admissions. That has increased morale ... we feel a little bit more supported ... our manager advocated, like pushed for that" (PO3). As reflected in nurses' narratives, the role of advocacy among managers really acted to emotionally support nurses.

The nurse leaders' narratives demonstrated ways they advocated for their staff nurses. In referring to nurses that did not typically work on the unit, one leader noted that "we made sure that the nurse was supported ... once their shift was done ... I emailed their manager to say ... can you reach out to this person to make sure they're emotionally okay?" (PO4). Another nurse leader advocated and arranged for information sessions with upper management:

Staff are very upset because they feel like [hospital leadership] are not even on these units. And so how are you supposed to make these decisions? You don't even assess or get feedback ... we had the IPAC doctor come. It was like a roundtable where nurses asked all types of questions. Why do we need N-95 for this and not that? So every single question they could think of, they asked, and they addressed it. Then we had the VP of nursing come and answer a bunch of really tough questions from staff. It was really effective, but they only did it once. My suggestion was having people who make the really tough decisions, come and be candid, be honest (P01).

In addition to advocacy, the social justice nature of emotional support involved recognition of nurses.

Recognition and Compensation

Recognition involves the active acknowledgement of nurses or lack of acknowledgement as something valid in the context of hospital leadership. One nurse explained that as a result of COVID-19, it appeared that "society appreciated healthcare more ... and the importance of nursing" (P01). Another nurse

elaborated upon how this recognition emotionally supported them and acted as "the little lights in this dark tunnel":

We were called healthcare heroes and we were quick to be called superheroes ... that kind of reinforced the fact that we were important in this fight ... community support that we got was very helpful. Like, not having to wait for groceries, on the one day off that I have that week, after working 70 hours because we had to pick up over time because we were so short. Like those kinds of things helped, and helped us survive (P27).

It was also noted how the emotional impact was acknowledged by leaders. When their patient died, one nurse recalled that their charge nurse was "supportive" and told them to: "step away from the unit, take a break for yourself. That helped me understand that I don't have to put my emotions away ... I can just let it be, and focus on myself" (P12). One nurse leader noted that "it takes listening to their [nurses'] feelings, acknowledging that they're scared" (P01) and making sure "we recognize and acknowledge the staff so that they don't feel abandoned" (P04).

Nurses' narratives reflected several ways where hospital leadership could have better acknowledged the work that nurses were doing. One nurse commented on the importance of the "visibility ... of senior leadership" visiting the nurses on "the frontlines" to "build up morale":

If our VP would come to the units once a week to simply say, you guys are doing a great job and we may not have all the answers, but this is what we're doing to get them ... face-to-face definitely helps people cope emotionally and is a good resource (P30).

Another nurse commented that acknowledgement from the senior hospital leaders was "lacking" (P04). This nurse elaborated:

Why can't we have our directors, our VPs, CEOs come in and acknowledge ... from a commitment perspective, if you think of the long-term and if you wanted people to stay in the hospital and give their best. ... it's like a slap in the face, ... you didn't even thank us, visit us ... and people don't even know now, like it's going to be months from now, people won't even know that this unit, and these nurses cared for COVID patients (P04).

Although senior leadership may have avoided visiting staff because of concerns about crosscontamination between units, it was clear that some form of acknowledgement of the commitment of these nurses would have had an influential short- and long-term impact.

A lack of recognition from the government was generally reflected in narratives. Although there were expressions of gratitude from government leaders, one nurse remarked "talk about the hypocrisy of being called healthcare heroes ... people are running out of PPE" (P26). Another nurse noted "we're a dime a dozen ... if they cared ... we wouldn't have to sign out N-95s every time we use one. It's disgusting and it's just exhausting, like you're not worthy" (P02). An important demonstration of recognition is that nursing "needs to be valued financially" (P24). One nurse noted that provincial pandemic pay "pushed us all to work harder and felt us all to be recognized" (P27). However, the general sentiment around pandemic pay was guite negative. One nurse said, "they want to save healthcare money on the nurse's back, it's always been that way. And I'm tired of it ... makes me want to leave the profession" (P02). The impact of nurses not being acknowledged with appropriate pandemic pay is summed up by one nurse:

It's all good for the government, politically to praise us, bang some pans or whatever the heck they want. But when it comes down to the meat of it, when our government [limits pandemic pay] ... it tells me that they don't care about nurses, that what they're saying to the general public in terms of how we're heroes ... it's bullshit ... makes me very angry. You feel like, why am I doing this? Very disheartening ... that is what put us over the edge, the fact that we are completely and utterly not valued. To be given a contract that reflects the seriousness of the things that we deal with, would have been huge ... we're risking everything. So what could have been done? Pay us what we're worth (PO2).

The impact of acknowledging nurses for their commitment and work was highlighted by one nurse: "[it] would also make people a bit more resilient and more adaptable" (P04) during a time that not only

needed nurses, but needed nurses who were emotionally supported.

DISCUSSION

In this study, we explored how nurses were emotionally supported and how they can be better supported while working in COVID-19 acute care hospital environments. Although there is no panacea for emotional support of nurses working in these environments, an important starting point is to provide light to illuminate a path forward. Our study findings indicate that there was a deep gratitude for the many "little lights in this dark tunnel" that supported nurses during these emotional and traumatic experiences. The implications of these findings suggest a multifold approach is needed to support nurses including prompt and appropriate interventions. This support includes nurturing organic forms of support, enhancing intentional forms of support, and further activating the social justice nature of support.

In the early days of a pandemic, such as COVID-19, it is essential to systematize a responsive plan that implements intentional forms of both information and resource support. The findings from our study highlight how transparency and flow of information act to emotionally support nurses' resilience. Our research expands on Rosa et al. (2020) who indicated that transparent communication was important to assuage nurses' fears. Part of transparency is ensuring honest communication in which resource support is evidence informed and nurses have access to appropriate PPE – and this does not mean two masks per shift. Like Prestia (2020) noted, it is important to provide truthful and timely information particularly during difficult times such as when there is a shortage of PPE. Our study findings indicate that transparency and honesty in communication surrounding information and resource support is key.

We would be remiss in not discussing the social justice nature of support in terms of the importance of advocacy and recognition during emotionally-laden situations such as COVID-19. Our study findings indicate that recognition of nurses' dedication to the frontlines was valued and nurse leaders played an instrumental role in this type of emotional support. Others have highlighted the important role of courage and advocacy among nurse leaders so that those at the frontline are supported (Daly et al., 2020; Markey et al., 2020). However, our work highlights how this recognition also needs to include advocacy and action so that nurses' risky work is appropriately compensated. As others have found, nurses are the ones at the frontline who are most at risk for infection, exposed to distressing patient and family suffering, and experiencing a trauma that is described as some as immeasurable (Rosa et al., 2020). Our research highlights how authentic recognition involves advocacy as well as the presence of leadership.

The presence of leadership in its many forms is vital to help nurses feel supported and navigate their emotions during emotionally-charged times such as the COVID-19 pandemic. Similar to Raderstorf and colleagues (2020), we found that maximizing physical presence of leadership on COVID-19 units was vital so that recognition of nurses' work, their emotions, and connecting with them was optimized. Our work aligns with Rosa et al. (2020) noting that regular rounding by nurse and hospital leaders ensures that nurses feel seen, validated, and also provides opportunity for their concerns to be articulated and addressed. Although this physical presence may sometimes be restricted, consistent communication and information and resource transparency becomes even more important during these times. As Bookey-Bassett (2021) and Shahrour and Dundas (2020) noted, it is important that leaders are accessible to nursing staff. Similar to others, we also found that this presence of leadership is linked with advocacy for personal safety measures as paramount (Daly et al., 2020; Shahrour & Dardas, 2020). The active presence of leaders provides opportunities for nurses to be supported in terms of their resilience and ability to thrive in their daily work (Daly et al., 2020). Additionally, there is a positive ripple effect of effective leadership and support that flows from leader to staff and beyond (Prestia, 2020). Our study findings reflect how this ripple effect can also be reciprocal in which the resilience of all of those involved, particularly in emotionally difficult situations such as those caused by the pandemic, is nurtured.

The findings of our study reflect how organic forms of support also act to emotionally support nurses. The unique emotional support from other nurses in the form of camaraderie was notably meaningful to nurses particularly when they were lacking support from leadership. The sharing of these unparalleled

experiences validated their feelings and lessened the sense of isolation. Similar to other research, we found that nurses felt like they were in it together in terms of fighting this pandemic as a team (Catania et al., 2020). In addition to camaraderie, emotion-focused coping is valuable to the support of nurses. Our study highlights that engaging in activities that create "good" feelings and counteract some of the difficult feelings is important to emotionally support nurses. Others have found that emotion-focused coping such as humour and religious activities can have a positive affect on healthcare providers (Phua et al., 2005). In fact, our research highlights how prayer brought nurses together at the start of a shift no matter what their religion or if they were religious. Our research also underscores the importance of outdoor activities as part of emotion-focused coping. This may be of special relevance with COVID-19 considering its isolating nature across the globe.

Access to appropriate and comprehensive forms of mental health resources are fundamental to the emotional support of nurses. Similar to our research, it has been commonly noted that psychological support plays an important role in the therapeutic support of nurses (Gao et al., 2020; Shahrour & Dardas, 2020; Viswanathan et al., 2020). However, the need for psychological support is not something new as others have underscored its importance particularly since the SARS epidemic (Smith et al., 2020). Researchers have found, the psychological distress and trauma that nurses are experiencing is intensified for frontline providers during COVID-19 (Jackson et al., 2020; Lai et al., 2020; Labrague & de los Santos, 2020; Lapum et al, 2020; Reger et al., 2020). In our study, nurse leaders specifically noted how frontline staff were struggling and they recognize that they should not be the ones attempting to provide counselling. Like others, we found that institutions must engage in the provision of psychosocial support of nurses to reduce stress and support their well-being (Catania et al., 2020; Shahrour & Dardas, 2020). Rosa and colleagues (2020) noted that "healing from the effects of the pandemic can't rest on the shoulders of those at the frontlines" (p. 33). This statement closely aligns with our findings in that many times nurses are suffering in silence and often will not reach out for help. This finding is critical in how institutions must actively reach out to nurses in terms of providing on-site psychological support and possibly require formalized one-on-one check-ins to assess whether additional support is needed. This type of support can help nurture resilience particularly during high-demand situations such as COVID-19 (Henshall et al., 2020) and ensure that nurses know that their well-being matters (Rosser et al., 2020).

CONCLUSION

There was deep gratitude shown for what could be described as the many little lights in a dark tunnel that acted to emotionally support nurses during COVID-19. However, it was also troubling and traumatic particularly during the times when these lights did not seem to flicker - when nurses were emotionally drained and did not feel supported and as such felt isolated. And there were times when these lights shined a little brighter helping to illuminate the path forward and support nurses' emotional journey and resilience. In moving forth, strong beams of light are needed during some of the darkest times of pandemics. And it is clear that nurse leaders, hospital leaders, and government leaders as well as frontline nurses themselves can be instrumental in the provision of this emotional support. REFERENCES

- Bagnasco, A., Zanini, M., Hayter, M., Catania, G., & Sasso, L. (2020). COVID 19—A message from Italy to the global nursing community. *Journal of Advanced Nursing*, 76(9),2212-2214. https://doi.org/10.1111/jan.14407
- Blekas, A., Voitsidis, P., Athanasiadou, M., Parlapani,
 E., Chatzigeorgiou, A., Skoupra, M.,
 Syngelakis, M., Holeva, V., & Diakogiannis, I.
 (2020). COVID-19: PTSD symptoms in Greek
 health care professionals. *Psychological Trauma: Theory, Research, Practice and Policy,* 12(7),812-819.
 https://doi.org/10.1037/tra0000914
- Bookey-Bassett, S., Purdy, N., van Deursen, A. (2021). Safeguarding and inspiring inpatient nurse managers' dual roles during COVID-19. *Canadian Journal of Nurse Leaders. 33*(4), 20-28.
- Canadian Institute for Health Information (2020, September). COVID-19 cases and deaths among health care workers in Canada. https://www.cihi.ca/en/covid-19-cases-anddeaths-among-health-care-workers-incanada

- Carmassi, C., Foghi, C., Dell'Oste, V., Cordone, A., Bertelloni, C., Bui, E., & Dell'Osso, L. (2020, Epub). PTSD symptoms in healthcare workers facing the three coronavirus outbreaks: What can we expect after the COVID-19 pandemic. *Psychiatry Research*, 292, 1-10. https://doi.org/10.1016/j.psychres.2020.11 3312
- Catania, G., Zanini, M., Hayter, M., Timmins, F., Dasso, N., Ottonello, G., Aleo, G., Sasso, L., & Bagnasco, A. (2020, early view). Lessons from Italian front-line nurses' experiences during the COVID-19 pandemic: A qualitative descriptive study. Journal of Nursing Management, 1-8. https://doi.org/10.1111/jonm.13194 Daly, J., Jackson, D., Anders, R., & Davidson, P. (2020). Who speaks for nursing? COVID-19 highlighting gaps in leadership. *Journal of Clinical Nursing*, 29(15-16), 2751-2752. https://doi.org/10.1111/jocn.15305.
- Dykes, S., & Chu, C. (2020). Now more than ever, nurses need to be involved in technology design: Lessons from the COVID-19 pandemic. *Journal of Clinical Nursing*, https://doi.org/10.1111/jocn.15581
- El-Masri, M., & Roux, G. (2020). Can COVID-19 mark the rediscovery of nursing. *Canadian Journal of Nursing Research*, 52(3),174-175. https://doi.org/10.1177/084456212092158 3
- Freer, J. (in press). Selfless sacrifice or failed by the state? Remembering nurses who have died from Covid-19. International Journal of Nursing Studies. https://doi.org/10.1016/j.ijnurstu.2020.103 736
- Gao, X., Jiang, L., Hu, Y., Li, L., & Hou, L. (2020). Nurses' experiences regarding shift patterns in isolation wards during the COVID-19 pandemic in china: A qualitative study. *Journal of Clinical Nursing*, 29(21-22), 4270-4280. https://doi.org/10.1111/jocn.15464
- Gujral, H., Rushton, C., & Rosa, W. (2020). Action steps toward a culture of moral resilience in the face of COVID-19. *Journal of Psychosocial Nursing and Mental Health Services*, 58(7), 2-4. https://doi.org/10.3928/02793695-20200617-01

- Henshall, C., Davey, Z., & Jackson, D. (202). Nursing resilience interventions-A way forward in challenging healthcare territories. Journal of *Clinical Nursing*, 29(19-20). 3597-3599. https://doi.org/10.1111/jocn.15276
- Huang, L., Lin, G., Tang, L., Yu, L., & Zhou, Z. (2020). Special attention to nurses' protection during the COVID-19 epidemic. *Critical Care*, 24(1), 1-3.

https://doi.org/10.1186/s13054-020-2841-7

- Kleres, J. (2010). Emotions and narrative analysis: A methodological approach. *Journal for the Theory of Social Behaviour*, 41(2), 182–202. http://doi.org/10.1111/j.1468-5914.2010.00451.x
- Iheduru-Anderson, K. (2020, early view). Reflection on the lived experience of working with limited personal protective equipment during COVID-19 crisis. *Nursing Inquiry*. https://doi.org/10.1111/nin.12382
- International Council of Nurses (2020, June). *More than 600 nurses die from COVID-19 worldwide*. https://www.icn.ch/news/more-600-nurses-die-covid-19-worldwide

Jackson, D., Bradbury-Jones, C., Baptiste, D., Gelling, L., Morin, K., Neville, S., & Smith, G. (2020). Life in the pandemic: Some reflections on nursing in the

context of COVID-19. Journal of Clinical Nursing, 29, 13-14, 2041-2043. https://doi.org/10.1111/jocn.15257

- Labrague, L., & de los Santos, J. (2020, early view). Fear of COVID-19, psychological distress, work satisfaction and turnover intention among frontline nurses. *Journal of Nursing Management*, 1-9. https://doi.org/10.1111/jonm.13168
- Lai, J., Ma, S., Wang, Y., Cai, Z., Hu, J., Wei, N., Wu, J., Du, H., Chen, T., Li, R., Tan, H., Kang, L., Yao, L., Huang, M., Wang, H., Wang, G., Liu, Z., & Hu, S. (2020). Factors associated with mental health outcomes among healthcare workers exposed to Coronavirus disease 2019. *JAMA Network Open*, 3(3). https://doi.org/10.1001/jamanetworkopen. 2020.3976
- Lapum, J., Nguyen, M., Fredericks, S., McShane, J., & Lai, S. (2020, online first). "Goodbye ... through a glass door": Emotional experiences of working in COVID-19 acute care

hospital environments. *Canadian Journal of Nursing Research.*

- Lieblich, A., Tuval-Mahiach, R., & Zilber, T. (1998). Narrative Research: Reading, analysis, and interpretation. Sage.
- Markey, K., Ventura, C., O'Donnell, C., & Doody, O. (2020, early view). Cultivating ethical leadership in the recovery of COVID-19. *Journal of Nursing Management*, 1-5. https://doi.org/10.1111/jonm.13191
- Pan American Health Organization (2020, September). COVID-19 has infected some 570,000 health workers and killed 2,500 in the Americas, PAHO Director says. https://www.paho.org/en/news/2-9-2020covid-19-has-infected-some-570000-health-

workers-and-killed-2500-americas-paho

- Phua, D., Tang, H., & Tham, K. (2005). Coping responses of emergency physicians and nurses to the 2003 severe acute respiratory syndrome outbreak. Academic Emergency Medicine, 12(4), 322-328. doi: 10.1197/j.aem.2004.11.015
- Prestia, A. (2020, available online). The remote influence of nursing leadership. *Nurse Leader.*

https://doi.org/10.1016/j.mnl.2020.06.005

- Raderstorf, T., Barr, T., Ackerman, M., & Melnyk, B. (2020). A guide to empowering frontline nurses and healthcare clinicians through evidence-based innovation leadership during COVID-19 and beyond. *Worldviews* on Evidence-based Nursing, 17(4), 254-257. https://doi.org/10.1111/wvn.12451
- Reger, M., Piccirillo, M., & Buchman-Schmitt, J. (2020). COVID-19, mental health, and suicide risk among health care workers: Looking beyond the crisis. *Journal of Clinical Psychiatry*, 81(5), e1-2. https://doi.org/10.4088/JCP.20com13381
- Rosa, W., Schlak, A.E., & Rushton, C. H. (2020). A blueprint for leadership during COVID-19. *Nursing Management*, 51(8), 28-34. https://doi.org/10.1097/01.NUMA.0000688 940.29231.6f
- Rosser, E., Westcott, L., Ali, P. A., Bosanquet, J., Castro-Sanchez, E., Dewing, J., McCormack, B., Merrell, J., & Witham, G. (2020). The need for visible nursing leadership during COVID-19. *Journal of Nursing Scholarship*, 52(5), 459-461. https://doi.org/10.1111/jnu.12587

- Sagherian, K., Steege, L., Cobb, S., & Cho, H. (2020, early view). Insomnia, fatigue and psychosocial well-being during COVID-19 pandemic: A cross-sectional survey of hospital nursing staff in the United States. *Journal of Clinical Nursing*. https://doi.org/10.1111/jocn.15566
- Shahrour, G, & Dardas, L. (2020). Acute stress disorder, coping self-efficacy and subsequent psychological distress among nurses amid COVID-19. Journal of Nursing Management, 28(7), 1686-1695. https://doi.org/10.1111/jonm.13124
- Shreffler, J., Petrey, J., & Huecker, M. (2020). The impact of COVID-19 on healthcare worker wellness: A scoping review. *The Western Journal of Emergency Medicine*, 21(5), 1059–1066. https://doi.org/10.5811/westjem.2020.7.48 684
- Sim, M. (2020). The COVID-19 pandemic: Major risks to healthcare and other workers on the front line. Occupational & Environmental Medicine, 77(5), 281-282. http://doi.org/10.1136/oemed-2020-106567
- Smith, G., Ng, F., & Cheung, W. (2020). COVID-19: Emerging compassion, courage and resilience in the face of misinformation and adversity. *Journal of Clinical Nursing*, 29(9-10),1425-1428. https://doi.org/10.1111/jocn.15231
- Stokes-Parish, J., Elliott, R., Rolls, K., & Massey, D. (2020). Angels and heroes: The unintended consequence of the hero narrative. *Journal of Nursing Scholarship*, 52(5),m 462-466. https://doi.org/10.1111/jnu.12591
- Thorne, S. (2020). Nursing in uncertain times. *Nursing Inquiry*, 27(2), 1-2. https://doi.org/10.1111/nin.12352
- Viswanathan, R., Myers, M., & Fanous, A. (2020). Support groups and individual mental health care via video conferencing for frontline clinicians during the COVID-19 pandemic. *Psychometrics*, 61(5), 538-543.https://doi.org/10.1016/j.psym. 2020.06.014
- World Health Organization (2020, April 27). Archived: WHO timeline - COVID-19. https://www.who.int/news/item/27-04-2020-who-timeline---covid-19

Zeng, C., Hafezi-Bakhtiari, N., Cooper, V., Habibi, M., Riley, P., & Breathnach, A. (2020). Characteristics and transmission dynamics of COVID-19 in healthcare workers at a London teaching hospital. *The Journal of Hospital Infection,* 106(2), 325-329. https://doi.org/10.1016/j.jhin.2020.07.025