

Bond University
Research Repository



"I was prepared to become infected as a frontline medical staff": a survey of Australian emergency department staff experiences during COVID-19

Scott, Anna Mae; Murray, Amanda; Jones, Mark; Keijzers, Gerben; Glasziou, Paul

Published in:
Emergency Medicine Australasia

DOI:
[10.1111/1742-6723.13943](https://doi.org/10.1111/1742-6723.13943)

Licence:
CC BY-NC-ND

[Link to output in Bond University research repository.](#)

Recommended citation(APA):
Scott, A. M., Murray, A., Jones, M., Keijzers, G., & Glasziou, P. (2022). "I was prepared to become infected as a frontline medical staff": a survey of Australian emergency department staff experiences during COVID-19. *Emergency Medicine Australasia*, 34(4), 569-577. <https://doi.org/10.1111/1742-6723.13943>

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

For more information, or if you believe that this document breaches copyright, please contact the Bond University research repository coordinator.

ORIGINAL RESEARCH

‘I was prepared to become infected as a frontline medical staff’: A survey of Australian emergency department staff experiences during COVID-19

Anna Mae SCOTT ¹, Amanda MURRAY,¹ Mark JONES,¹ Gerben KEIJZERS^{2,3,4} and Paul GLASZIOU¹

¹Institute for Evidence-Based Healthcare, Bond University, Gold Coast, Queensland, Australia, ²Department of Emergency Medicine, Gold Coast University Hospital, Gold Coast, Queensland, Australia, ³Faculty of Health Sciences and Medicine, Bond University, Gold Coast, Queensland, Australia, and ⁴School of Medicine, Griffith University, Gold Coast, Queensland, Australia

Abstract

Objective: To identify challenges faced by Australian hospital healthcare staff during the COVID-19 pandemic.

Methods: We conducted an online survey (30 June–15 August 2020) of healthcare staff from Australian emergency and infectious disease departments. Participants were contacted via professional organisations and asked about preparedness, personal protective equipment (PPE), information flow, patient care, infection concerns, workload and mental health. We calculated the proportion of answers to yes/no and Likert-style questions; free-text responses were analysed thematically.

Results: Respondents ($n = 162$) were 23–67 years old, 98% worked in EDs, 68% were female, 87% from Queensland, and most worked as nurses (46%) or specialists (31%). Respondents felt their workplace was prepared for the pandemic (79%), had sufficient information about PPE (83%); none were sent home because of PPE shortages. Eighty-five percent received sufficient information from official bodies and 50% were aware

of the National COVID-19 Clinical Evidence Taskforce guidelines. Most (83%) had sufficient information to provide optimal patient care, but 24% experienced unfair/abusive patient behaviour. Most (76%) were concerned about becoming infected by patients, 67% about infecting patients, and 78% about infecting someone at home. Workload decreased for 82% but 42% looked after more patients. Fifty-seven percent experienced additional work-related stress: 60% reporting experiencing anxiety and 53% experiencing burnout, with 36% and 46% continuing to experience these, respectively. Key challenges included: emotional, workplace/organisational, family/loved ones and PPE factors.

Conclusion: The Australian system provided sufficient information and PPE. Staff experienced considerable stress, infection concerns and emotional challenges, which merit consideration in preparing for the future.

Key words: COVID-19, emergency service, hospital healthcare staff, infection, mental health.

Key findings

- Among 162 healthcare staff from Australian EDs, 79% felt their workplace was prepared for the pandemic.
- Infection concerns were common, with 76% concerned about becoming infected by patients, 78% about infecting someone at home, and 67% about infecting the patients.
- Respondents experienced considerable stress, and emotional and workplace challenges.

Introduction

The first case of the COVID-19 was reported in late 2019.¹ COVID-19 was subsequently declared by the World Health Organization a pandemic on 11 March 2020.² COVID-19 has since impacted the global economy, closed schools and workplaces, and restructured social interactions via lockdowns, limits on gatherings, and social distancing requirements.^{3,4} It has also placed an unprecedented strain on healthcare systems, altering service delivery and healthcare utilisation.^{5–7}

Healthcare staff on the frontline of dealing with COVID-19 have faced considerable challenges, including mortality rates ranging from 0 to 0.44 per 100 000,⁸ increased prevalence of anxiety and depression,⁹ workplace reorganisations (such as reassignment of staff to different units, or provision of care via telehealth),^{10,11} possibility

Correspondence: Dr Anna Mae Scott, Institute for Evidence-Based Healthcare, Bond University, Robina, QLD 4226, Australia. Email: ascott@bond.edu.au

Anna Mae Scott, PhD, Assistant Professor; Amanda Murray, BA, Research Assistant; Mark Jones, PhD, Associate Professor; Gerben Keijzers, MBBS, PhD, Senior Staff Specialist, Emergency Physician; Paul Glasziou, MBBS, PhD, Professor.

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

Accepted 13 January 2022

of or actual loss of employment,¹² shortages of personal protective equipment (PPE),^{13,14} sufficiency of and rapid changes to information and guidance^{15,16} and morally challenging decisions around fair allocation of scarce resources to patients (e.g. ventilators).¹⁷

Australia has historically experienced a relatively low burden from epidemics and pandemics.¹⁸ At the time of the survey (July–August 2020), Australia was in the second wave of the pandemic, reaching a peak of 3416 confirmed weekly cases (during the week of 3 August) and over 16 000 COVID-19 cases were reported during the survey period. The cases decreased to 150 or fewer per week from mid-September 2020 to mid-June 2021.¹⁹ However, in the interest of proactive preparedness for future pandemics, it is important to identify the issues faced by the Australian hospital healthcare staff. We therefore surveyed healthcare staff of emergency and infectious disease departments in Australian hospitals, to identify the challenges they faced during COVID-19.

Methods

Respondents

Participants were healthcare staff from EDs and Infectious Disease (ID) departments in Australian hospitals. No age, sex or other restrictions were applied. The survey was 'open', that is anyone could complete it. However, as it was directed at hospital healthcare staff, we had anticipated that respondents would be over 18 years.

Survey dissemination

To disseminate the survey, we contacted organisations, including: National COVID-19 Clinical Evidence Taskforce, Australasian College for Emergency Medicine, College of Emergency Nursing Australasia, The Australasian College of Physicians, Australasian Society for Infectious Diseases, and Australian Public Hospitals Emergency and Infectious Disease Departments. We asked each organisation to disseminate the information about the survey to their

membership, via email lists and social media networks. We also disseminated information about the survey via email and social media through our University's and Institute's networks and social media.

The survey was opened on 30 June 2020 and closed on 15 August 2020.

Survey instrument

The survey was adapted from a survey of European general practitioners about their experiences during COVID-19.²⁰ It was adapted to the Australian context, and piloted (for face validity and estimated time to complete), with three hospital healthcare staff otherwise unaffiliated with the project.

The questions were predominantly four-point Likert-style or yes/no questions, with optional free-text questions (Appendix S1). Question sequence was non-adaptive (i.e. questions shown to the respondent did not depend on answers to previous questions), but respondents were able to return to prior answers to change them.

Survey questions focused on issues pertaining to personal protective equipment (PPE), information flow, patient care, infection concerns, workload impacts, impact on mental health, biggest challenges encountered, and what helped or could help with dealing with those challenges.

The survey was hosted on the SurveyMonkey platform.

Analyses

For the Likert-style and yes/no questions, we calculated the proportion of answers in each category using Excel. Fisher's exact tests were used to compare the proportions of responses to questions by age (under 40 years old *vs* 40 or older), profession (nurses *vs* other professions) and sex (male *vs* female respondents). Data were analysed using SAS version 9.4 for Windows. Free-text responses were analysed thematically by two authors, using an inductive approach.

Ethics approval and informed consent

Bond University Human Research Ethics Committee provided approval

(AS200522). The first page of the survey provided information about the survey, privacy, data protection and consent. Participants consented by clicking on the survey link. We provided our contact information, for participants who wished to withdraw their participation (none of the participants withdrew).

Results

Responses and respondents

We received 162 individual responses. Median time to complete the survey was 10 min (interquartile range 5–20 min).

Respondents ranged from 23 to 67 years old (mean and median: 38 years old), with 68% of respondents being female. Nearly all were from Queensland (87%), with the remainder from other states and territories, except South Australia or Australian Capital Territory (both 0%). Respondents were from cities with over 500 000 (66%), or between 100 000 and 500 000 inhabitants (21%). Nearly all (98%) worked in EDs; nurses (46%) and specialists (31%) were the most commonly identified professions (Table 1).

Overall preparedness

Overall, 79% of 149 respondents felt that their workplace was well- or generally well-prepared for the pandemic. There were no differences in responses by age (under 40 *vs* 40 or older, $P = 1.00$), profession (nurses *vs* other professions, $P = 0.43$) or sex (male *vs* female, $P = 0.08$).

Personal protective equipment (PPE)

Of 148 respondents, 80% received training on how to use PPE (e.g. facemask, glasses, etc.) prior to the pandemic. There were no differences in responses by age ($P = 1.00$), profession ($P = 0.22$), or sex ($P = 0.65$).

During the pandemic, respondents had sufficient information on the type and use of PPE (83%), on how much PPE they need (74%),

TABLE 1. *Participant characteristics*

Demographics	
Age (<i>n</i> = 152)	
Range (years)	23–67
Mean, median (years)	38.4 (38)
Sex (<i>n</i> = 162)	
Female	110 (68%)
Male	50 (31%)
Other	2 (1%)
State (<i>n</i> = 156)	
ACT	0 (0%)
VIC	5 (3%)
NSW	9 (6%)
QLD	136 (87%)
NT	2 (1%)
WA	2 (1%)
SA	0 (0%)
TAS	2 (1%)
Municipality size where your hospital is located (<i>n</i> = 154)	
Fewer than 5000	2 (1%)
5000–19 000	4 (3%)
20 000–99 000	15 (10%)
100 000 or more	32 (21%)
500 000 or more	101 (66%)
Which department do you work in? (<i>n</i> = 161)	
ED	158 (98%)
Infectious Disease Department	3 (2%)
What is your profession? (<i>n</i> = 162)	
Nurse	75 (46%)
Specialist (any level)	50 (31%)
Registrar	21 (13%)
Other profession (specify)†	9 (6%)
Junior doctor	7 (4%)
Doctor	0 (0%)

†Other (*n* = 9): allied health non-specified (*n* = 4), physiotherapist (*n* = 2), pharmacist (*n* = 1), social worker (*n* = 1), occupational therapist (*n* = 1).

on how much PPE they had on hand (82%) and on where to obtain PPE (79%). None (0%) were sent home because of PPE shortages. There were no differences in responses by age, profession or sex (Table 2).

Information flow

The majority of respondents received sufficient information from official bodies such as the Department of Health, one of the Professional Colleges or another professional

organisation (85%), were easily able to contact healthcare authorities (85%), and used digital channels such as WhatsApp or email to share information with colleagues (81%). Fewer nurses than other professionals used the digital channels ($P = 0.01$). Respondents were split in their views on whether information was available to the patients sooner than staff (49% *vs* 51%), although significantly more nurses than other professionals felt this way ($P = 0.03$) (Table 3).

Half (50%) were aware of the living guidelines from the National COVID-19 Clinical Evidence Taskforce; 27% used the Taskforce's site to stay informed, and 14% submitted questions to the Taskforce, with significantly more nurses than other professions doing so ($P = 0.05$) (Table 3).

Patient care

Respondents felt they had sufficient knowledge to provide optimal care to patients (83%). Very few contacted quarantined patients at home to monitor them (5%), and one-third reported having less personal contact with patients because of the pandemic (36%) (Table 4). Male respondents reported less personal contact with patients ($P = 0.04$) (Table 4). A considerable proportion (41%) of all respondents reported less touching of patients. One (24%) in four experienced unfair or abusive patient behaviour during the pandemic. Significantly more nurses than other professions ($P < 0.001$), and more women than men ($P < 0.01$), experienced this (Table 4).

Eighty-one percent of respondents received timely guidelines on dealing with suspected COVID-19 cases and 77% found them sufficiently detailed. Eighty-two percent felt they had sufficient information on dealing with suspected cases. Ninety-four percent of respondents reported that patients were questioned about risk factors, and 88% indicated that precautions were taken in their workplace (e.g. separate waiting rooms, dedicated areas) to ensure suspected cases did not come into contact with

TABLE 2. PPE during the COVID-19 pandemic

Questions	Yes/generally yes	No/generally no	Differences in responses		
			Age	Profession	Sex
I had sufficient information on the type (and how to use) of personal protective equipment I needed ($n = 149$)	124 (83%)	25 (17%)	$P = 0.26$	$P = 1.00$	$P = 0.34$
I had sufficient information on how much equipment I need ($n = 149$)	111 (74%)	38 (26%)	$P = 0.70$	$P = 0.26$	$P = 0.84$
I had enough protective equipment on hand ($n = 148$)	121 (82%)	27 (18%)	$P = 0.66$	$P = 0.68$	$P = 0.24$
I knew where I could get hold of personal protective equipment ($n = 148$)	117 (79%)	31 (21%)	$P = 0.14$	$P = 1.00$	$P = 0.66$
My colleagues or I were sent home because we did not have enough protective equipment ($n = 139$)	0 (0%)	139 (100%)	n/a	n/a	n/a

TABLE 3. Information flow during the pandemic

Questions	Yes/generally yes	No/generally no	Differences in responses		
			Age	Profession	Sex
<i>At the beginning and during the COVID-19 pandemic...</i>					
I received sufficient information from official bodies (e.g. Dept of Health, Colleges, etc.) ($n = 149$)	126 (85%)	23 (15%)	$P = 1.00$	$P = 0.82$	$P = 0.14$
My colleagues and I were easily able to contact the relevant health care authorities (e.g. government or public health advice, etc.) ($n = 149$)	126 (85%)	23 (15%)	$P = 0.64$	$P = 0.50$	$P = 0.46$
I use various digital channels (e.g. e-mail, WhatsApp) to share information with my colleagues so that we can support each other ($n = 139$)	112 (81%)	27 (19%)	$P = 0.67$	$P = 0.01$ Nurse: 71% Other: 89%	$P = 0.06$
Important information was available to patients via public media sooner than it was officially provided to hospital staff by responsible institutions (e.g. State Health Dept., Colleges, etc.) ($n = 139$)	68 (49%)	71 (51%)	$P = 0.86$	$P = 0.03$ Nurse: 59% Other: 40%	$P = 1.00$
<i>Flow of information during the pandemic</i>					
I was aware of the 'living' guidelines by the National COVID-19 Clinical Evidence Taskforce ($n = 149$)	74 (50%)	75 (50%)	$P = 0.87$	$P = 0.87$	$P = 0.46$
I used the National COVID-19 Clinical Evidence Taskforce site to stay informed ($n = 148$)	40 (27%)	108 (73%)	$P = 1.00$	$P = 0.58$	$P = 0.68$
I used the National COVID-19 Clinical Evidence Taskforce to submit questions about the clinical care of my patients ($n = 148$)	20 (14%)	128 (86%)	$P = 0.34$	$P = 0.05$ Nurse: 20% Other: 8%	$P = 0.19$

Bold values indicate significant differences ($P < 0.05$).

TABLE 4. Interaction with patients in the context of COVID-19

Questions	Yes/ generally yes	No/generally no	Differences in responses		
			Age	Profession	Sex
I am convinced that I knew enough to provide optimal care for my patients during the pandemic ($n = 139$)	115 (83%)	24 (17%)	$P = 0.48$	$P = 0.65$	$P = 0.33$
I contacted patients who were quarantined at home in order to monitor the progression of the disease ($n = 139$)	7 (5%)	132 (95%)	$P = 0.24$	$P = 1.00$	$P = 1.00$
I had less personal contact with patients as a result of the pandemic ($n = 138$)	50 (36%)	88 (64%)	$P = 0.46$	$P = 0.38$	$P = 0.04$ Male: 50% Female: 31%
I avoided touching patients when examining them (e.g. use of stethoscope was discouraged) ($n = 137$)	56 (41%)	81 (59%)	$P = 0.29$	$P = 0.12$	$P = 0.45$
I was treated unfairly or abusively by patients during the COVID-19 pandemic ($n = 137$)	33 (24%)	104 (76%)	$P = 0.22$	$P < 0.001$ Nurse: 41% Other: 10%	$P < 0.01$ Male: 10% Female: 31%
<i>Dealing with possible or suspected cases</i>					
I received guidelines on how to deal with suspected cases of COVID-19 in a timely manner ($n = 149$)	121 (81%)	28 (19%)	$P = 0.67$	$P = 1.00$	$P = 1.00$
The guidelines on how to deal with suspected cases of COVID-19 were sufficiently detailed ($n = 149$)	115 (77%)	34 (23%)	$P = 1.00$	$P = 0.56$	$P = 0.52$
I had sufficient information on how to deal with suspected cases ($n = 148$)	121 (82%)	27 (18%)	$P = 0.67$	$P = 0.68$	$P = 0.24$
Before a patient enters our hospital, he or she is screened for possible symptoms (e.g. temperature measurement) or questioned about risk factors (e.g. travel, contact with known positive cases, etc.) ($n = 139$)	131 (94%)	8 (6%)	$P = 0.69$	$P = 1.00$	$P = 0.43$
Precautions were taken to ensure that suspected cases did not come into contact with other patients in the hospital (e.g. separate waiting rooms, appointments at different times, dedicated clinics, wards, areas) ($n = 139$)	122 (88%)	17 (12%)	$P = 1.00$	$P = 0.19$	$P = 1.00$
<i>Testing guidelines and availability of tests</i>					
I found the testing guidelines (e.g. when to test, or not to test) to be clear ($n = 149$)	87 (58%)	62 (42%)	$P = 0.61$	$P = 0.51$	$P = 0.36$
Too little testing was being done ($n = 138$)	34 (25%)	104 (75%)	$P = 0.83$	$P = 0.24$	$P = 0.08$
Medical staff should have been able to decide who got tested and who did not ($n = 138$)	73 (53%)	65 (47%)	$P = 0.11$	$P = 0.24$	$P = 0.85$
I had adequate access to tests (either conducted them myself, or could arrange them) ($n = 148$)	131 (89%)	17 (11%)	$P = 0.06$	$P = 0.31$	$P = 0.15$

Bold values indicate significant differences ($P < 0.05$).

others. Half of the respondents found the testing guidelines to be clear (58%), and one-quarter (25%) felt that too little testing was done. Respondents were split on whether the medical staff should (53%) or should not (47%) decide who was tested; 89% of respondents had adequate access to tests (Table 4).

Respondents generally reported ordering from 0 to >200 tests in total during the pandemic up to that point (corresponding to the period from March 2020 until 15 August 2020), with one respondent (who worked in a fever clinic) ordering >500 tests. Similarly, the number of swabs reported to have been conducted by the respondents for the same time period ranged from 0 to >100, and among respondents who knew the number of positive tests, 20 positives were the highest number reported (2% of responses). Those responding 'unsure' about tests' positive results (29%) cited patient transfer, lack of follow-up, or not being informed of the result, as reasons for this (Appendix S2, Table A2.1).

Infection concerns

Most respondents were concerned about becoming infected by a patient (76%), and about infecting someone they live with (78%). Two-thirds worried about unknowingly infecting a patient (67%), with significantly more under-40s reporting this ($P = 0.007$). Very few respondents (3%) moved out of their home to avoid endangering others (Table 5).

Workload impact

Many respondents reported changes at work: 74% reported that colleagues ceased working because they belonged

to a vulnerable group (e.g. were pregnant, or older), 42% looked after more patients, although 82% of respondents reported that their caseload decreased (Appendix S2, Table A2.2).

Compared to the same time in 2019, 9% of respondents reported low or very low workload, 51% reported moderate workload and 40% reported high or very high workload. Respondents most commonly spent: between 41 and 60% of their working time (i.e. approximately one-half) on COVID-19-related activities, 0 and 20% of working time on video/phone interactions (e.g. non-clinical teaching or research, which was conducted over zoom, skype or similar software), 0 and 20% of working time on coordination/organisation activities and 0 and 20% on other activities (recreational, family or other work-related activities) (Appendix S2, Table A2.3).

Impact on mental health

Over half experienced additional work-related stress (57%), with a significantly higher proportion of over-40s ($P = 0.05$) and professions other than nurses ($P = 0.02$) reporting this. Well-being was affected for approximately half (47%) respondents, with more non-nursing-professionals stating this ($P = 0.04$). One-third (31%) were concerned about the pandemic's effect on own mental health (69%);

41% were offered mental health support, with significantly more under-40s reporting this (Table 6).

Among mental health concerns, most commonly, anxiety (60%) and burn-out (53%) were reported. Considerable numbers of respondents report continuing to experience anxiety (36%) and burnout (46%) (Appendix S2, Table A2.4). Free text responses ($n = 35$) raised concerns about impact on families, infection and lack of recognition, although some identified positive impacts on well-being or workplace, such as the pandemic uniting the staff together and the collegial nature of the workforce (Appendix S2, Table A2.5).

Biggest challenges during the pandemic

One hundred and eight respondents provided free-text answers. Respondents were challenged emotionally (28 comments), mentioning, for example, 'anxious staff and patients' or 'fear of getting infected'. Respondents also cited workplace or organisational issues (19 comments), including 'changing speciality', or, generally, 'organisational b*!(&chit'. Comments ($n = 18$) also raised issues pertaining to loved ones; some mentioned 'making sure my children and family were safe', or 'moving my life away from my 80 year Mother whom I care for'. Finally, respondents shared challenges around PPE

TABLE 5. Infection concerns

Questions	Yes/ generally yes	No/ generally no	Differences in responses		
			Age	Profession	Sex
I was afraid that my colleagues and I could catch COVID-19 from a patient ($n = 137$)	104 (76%)	33 (24%)	$P = 0.83$	$P = 1.00$	$P = 1.00$
I was worried that people I live with could catch COVID-19 from me ($n = 137$)	107 (78%)	30 (22%)	$P = 0.67$	$P = 0.54$	$P = 0.50$
I was worried that I may unknowingly infect my patients ($n = 137$)	92 (67%)	45 (33%)	$P = 0.007$ <40: 79% ≥40: 55%	$P = 0.72$	$P = 0.43$
I moved out of my home in order to avoid endangering people I live with ($n = 137$)	4 (3%)	133 (97%)	$P = 1.00$	$P = 1.00$	$P = 0.09$

Bold values indicate significant differences ($P < 0.05$).

TABLE 6. *Impact on own mental health*

Questions	Yes	No	Differences in responses		
			Age	Profession	Sex
I suffered from additional work-related stress ($n = 136$)	77 (57%)	59 (43%)	$P = 0.05$ <40: 49% ≥40: 67%	$P = 0.02$ Nurse: 46% Other: 66%	$P = 0.45$
My overall physical and emotional well-being was affected ($n = 137$)	65 (47%)	72 (53%)	$P = 0.07$	$P = 0.04$ Nurse: 38% Other: 56%	$P = 1.00$
The effect on my mental health was a concern to me ($n = 137$)	43 (31%)	94 (69%)	$P = 0.34$	$P = 0.14$	$P = 0.11$
I was offered mental health support from the hospital ($n = 137$)	56 (41%)	81 (59%)	$P = 0.03$ <40: 50% ≥40: 31%	$P = 0.08$	$P = 0.57$

Bold values indicate significant differences ($P < 0.05$).

(11 comments), including ‘fear of limited PPE’, and compliance (‘staff only wearing a mask instead of all PPE’) (Appendix S2, Table A2.6).

What helped/could have helped you to deal with the challenges?

Workplace/organisational factors were most commonly mentioned (31/94 comments), such as the presence of leadership (‘clear plan from the management’) and staff relationships (‘our department did a good job in trying to help employees’). Information/communication aspects (22 comments) mentioned, included needing ‘more consistent information from government and professional bodies’, but some praised ‘open communication between nursing staff’. PPE issues (13 comments) highlighted that ‘assurance from management that we would not run short of PPE’ would have been helpful, as would ‘unified decision making regarding PPE’. Finally, support from loved ones (10 comments) was considered helpful, with respondents identifying ‘family and friend support’ and opportunity for ‘facetime with family’ (Appendix S2, Table A2.7).

Discussion

Our survey of 162 Australian hospital healthcare staff found that the large majority considered their

workplace to have been well-prepared for the pandemic, had sufficient information and amounts of PPE and knew enough to provide optimal care to patients. However, they were concerned about becoming infected with and transmitting COVID-19, half suffered from additional stress, and many continue to experience burnout and anxiety. Challenges included: emotional factors, workplace or organisational issues, issues pertaining to loved ones and PPE. Workplace or organisational factors, information/communication aspects, PPE and support from loved ones were most helpful for dealing with those challenges. This is consistent with an Australian survey, which found that education on and access to PPE, would increase willingness to work in a pandemic.²¹

Our findings echo those from a survey of Melbourne hospital staff, conducted during the first wave of the pandemic (April–May 2020).⁶ It similarly identified among the biggest challenges: workplace and organisational issues (e.g. changed working conditions, management), and emotional factors (uncertainty, need for mental support). Respondents also identified communication and information issues – in particular, conflicting messages – as key challenges,⁶ similarly to our findings. The issues around inconsistent and rapidly changing

information, lack of communication, workflow and staffing changes and concerns about the self as well as loved ones were, similarly, identified as among the key COVID-19-related challenges by Australian emergency nurses, emergency physicians and paramedics surveyed between June and September 2020.²²

Respondents in our survey were very concerned about transmitting the virus to others (78%). This is similar to the findings of a study of over 4000 Japanese healthcare workers (84%).¹⁵ Forty-six percent of respondents continue to suffer with burnout – higher than the 32% identified by a systematic review of issues facing frontline healthcare workers in epidemics and pandemics.²³ The proportion of respondents reporting anxiety in our survey (36%) is higher than that study (25%), and it is also higher than the proportion reported in a study of Australian nurses working in the New South Wales acute care sector (18%).²⁴ The discrepancy may be explained by the different timings of the surveys. Our survey was conducted during the second wave of the pandemic in Australia, while the survey in New South Wales was conducted during the post-second wave period (September to November 2020). This interpretation is strengthened by the findings of a study of Australian workers in a

COVID-19 hospital, which found that psychological distress was reported by significantly more respondents during the first wave of the pandemic than in its aftermath.²⁵

Our finding, that 57% of respondents reported additional work-related stress, is consistent with the finding that 56.5% of nurses and midwives experienced anxiety working in New South Wales between May and June 2020.^{24,26} Although healthcare workers are considered at greater risk for developing PTSD,²⁷ reassuringly, only 1% of our respondents reported this – lower than the 20% found by a review of mental health-related disorders among healthcare workers during COVID-19.²⁸ The difference may be partially explained by the lower numbers of COVID-19 cases in Australia. The corollary of the above is that the key priorities for policymakers and hospital executives revolve around staff safety, clear and consistent communication to staff as well as the provision of mental health support for staff – particularly because mental health issues are often under-recognised in this group.²⁹

Limitations

At the time the survey was conducted, a systematic review of the impact of COVID-19 on the mental health of healthcare workers identified the lack of studies outside of China as a research gap.³⁰ Therefore, a strength of this research is its focus on Australian hospital healthcare staff. Other strengths include: piloting the survey for face validity, and inclusion of free-text options, to capture issues beyond the survey questions. The limitations include the concentration of respondents in Queensland, although findings from a survey in Victoria identified similar issues and challenges.⁶ At the time of the survey, the vaccination rollout had not started and restrictions were less varied among states with a focus on pandemic preparedness. As such we believe our findings reflect attitudes for many Australian ED staff at the time of the survey.⁶ Other limitations include the survey's timing, which

occurred during the second wave of COVID-19 (concentrated in Victoria),³¹ and may have decreased the number of responses, and very few responses overall (162) and in particular, from the Infectious Disease departments (3/162). Finally, we did not invite intensive care unit staff to participate, as they would have been exposed predominantly to the most severe cases and their views would non-randomly differ from the views of our respondents.

Conclusion

The results of this survey have some lessons. First, the survey respondents considered the Australian system to have generally responded well with information provision and updates to healthcare workers. Second, most considered there was adequate provision of resources such as tests and PPE. Less attended to, were the high levels of stress felt by healthcare workers, who were concerned about getting infected but generally saw that as part of their professional role – as one respondent noted, they were 'prepared to become infected as a front line medical staff – it's what we do, we look after people'. However, they were also concerned about passing infection on to their households, with a small group moving out of home. These issues may be worth considering in preparing for future health crises in Australia.

Acknowledgements

The authors would like to thank Andrea Siebenhofer and Alexander Avian for sharing their survey instrument with them, and all of their respondents, for very generously sharing with them their views, experiences and time. Open access publishing facilitated by Bond University, as part of the Wiley – Bond University agreement via the Council of Australian University Librarians.

Competing interests

GK is a section editor for *Emergency Medicine Australasia*.

Data availability statement

Deidentified data are available from the authors on reasonable request.

References

1. Lu R, Zhao X, Li J *et al*. Genomic characterisation and epidemiology of 2019 novel coronavirus: implications for virus origins and receptor binding. *Lancet* 2020; **395**: 565–74.
2. Cucinotta D, Vanelli M. WHO declares COVID-19 a pandemic. *Acta Biomed*. 2020; **91**: 157–60.
3. Zaka A, Shamloo SE, Fiorente P, Tafuri A. COVID-19 pandemic as a watershed moment: a call for systematic psychological health care for frontline medical staff. *J. Health Psychol*. 2020; **25**: 883–7.
4. Shanafelt T, Ripp J, Trockel M. Understanding and addressing sources of anxiety among health care professionals during the COVID-19 pandemic. *JAMA* 2020; **323**: 2133–4.
5. Denning M, Goh ET, Tan B *et al*. Determinants of burnout and other aspects of psychological well-being in healthcare workers during the Covid-19 pandemic: a multinational cross-sectional study. *PLoS One* 2021; **16**: e0238666.
6. Digby R, Winton-Brown T, Finlayson F, Dobson H, Bucknall T. Hospital staff well-being during the first wave of COVID-19: staff perspectives. *Int. J. Ment. Health Nurs*. 2021; **30**: 440–50.
7. Moynihan R, Sanders S, Michaleff ZA *et al*. Impact of COVID-19 pandemic on utilisation of healthcare services: a systematic review. *BMJ Open* 2021; **11**: e045343.
8. Erdem H, Lucey DR. Healthcare worker infections and deaths due to COVID-19: a survey from 37 nations and a call for WHO to post national data on their website. *Int. J. Infect. Dis*. 2021; **102**: 239–41.
9. Fernandez R, Sikhosana N, Green H *et al*. Anxiety and depression among healthcare workers during the COVID-19 pandemic: a systematic umbrella review of the global evidence. *BMJ Open* 2021; **11**: e054528.

10. Zangrillo A, Beretta L, Silvani P *et al.* Fast reshaping of intensive care unit facilities in a large metropolitan hospital in Milan, Italy: facing the COVID-19 pandemic emergency. *Crit. Care Resusc.* 2020; **22**: 91–4.
11. James S, Ashley C, Williams A *et al.* Experiences of Australian primary healthcare nurses in using telehealth during COVID-19: a qualitative study. *BMJ Open* 2021; **11**: e049095.
12. Halcomb E, McInnes S, Williams A *et al.* The experiences of primary healthcare nurses during the COVID-19 pandemic in Australia. *J. Nurs. Scholarsh.* 2020; **52**: 553–63.
13. Houghton C, Meskell P, Delaney H *et al.* Barriers and facilitators to healthcare workers' adherence with infection prevention and control (IPC) guidelines for respiratory infectious diseases: a rapid qualitative evidence synthesis. *Cochrane Database Syst. Rev.* 2020; **4**: CD013582.
14. Ashley C, James S, Stephen C *et al.* Primary health care nurses' perceptions of risk during COVID-19: a qualitative study. *J. Nurs. Scholarsh.* 2021; **53**: 689–97.
15. Sahashi Y, Endo H, Sugimoto T *et al.* Worries and concerns among healthcare workers during the coronavirus 2019 pandemic: a web-based cross-sectional survey. *Humanit. Soc. Sci. Commun.* 2021; **8**: 41.
16. Shayganfard M, Mahdavi F, Haghghi M, Sadeghi-Bahmani D, Brand S. Sources of health anxiety for hospital staff working during the Covid-19 pandemic. *Int. J. Environ. Res. Public Health* 2021; **18**: 3094.
17. Greenberg N, Docherty M, Gnanapragasam S, Wessely S. Managing mental health challenges faced by healthcare workers during covid-19 pandemic. *BMJ* 2020; **368**: m1211.
18. Rojek AM, Dutch M, Camilleri D *et al.* Early clinical response to a high consequence infectious disease outbreak: insights from COVID-19. *Med. J. Aust.* 2020; **212**: 447–50.e1.
19. World Health Organization. *WHO COVID-19 Dashboard*. 2020. [Cited 2 Feb 2022.] Available from URL: <https://covid19.who.int/>
20. Siebenhofer A, Huter S, Avian A *et al.* COVI-prim survey: challenges for Austrian and German general practitioners during initial phase of COVID-19. *PLoS One* 2021; **16**: e0251736-e.
21. Martinese F, Keijzers G, Grant S, Lind J. How would Australian hospital staff react to an avian influenza admission, or an influenza pandemic? *Emerg. Med. Australas.* 2009; **21**: 12–24.
22. Li C, Sotomayor-Castillo C, Nahidi S *et al.* Emergency clinicians' knowledge, preparedness and experiences of managing COVID-19 during the 2020 global pandemic in Australian healthcare settings. *Australas. Emerg. Care* 2021; **24**: 186–96.
23. Busch IM, Moretti F, Mazzi M, Wu AW, Rimondini M. What we have learned from two decades of epidemics and pandemics: a systematic review and meta-analysis of the psychological burden of frontline healthcare workers. *Psychother. Psychosom.* 2021; **90**: 178–90.
24. Aggar C, Samios C, Penman O *et al.* The impact of COVID-19 pandemic-related stress experienced by Australian nurses. *Int. J. Ment. Health Nurs.* 2021; **31**: 91–103.
25. Stubbs JM, Achat HM, Schindeler S. Detrimental changes to the health and well-being of healthcare workers in an Australian COVID-19 hospital. *BMC Health Serv. Res.* 2021; **21**: 1002.
26. Fernandez R, Lord H, Moxham L, Middleton R, Halcomb E. Anxiety among Australian nurses during COVID-19. *Collegian* 2021; **28**: 357–8.
27. Carmassi C, Foghi C, Dell'Oste V *et al.* PTSD symptoms in healthcare workers facing the three coronavirus outbreaks: what can we expect after the COVID-19 pandemic. *Psychiatry Res.* 2020; **292**: 113312.
28. Marvaldi M, Mallet J, Dubertret C, Moro MR, Guessoum SB. Anxiety, depression, trauma-related, and sleep disorders among healthcare workers during the COVID-19 pandemic: a systematic review and meta-analysis. *Neurosci. Biobehav. Rev.* 2021; **126**: 252–64.
29. Cabarkapa S, King J, Ng C. The psychiatric impact of COVID-19 on healthcare workers. *Aust. J. Gen. Pract.* 2020; **49**: 791–5.
30. De Kock JH, Latham HA, Leslie SJ *et al.* A rapid review of the impact of COVID-19 on the mental health of healthcare workers: implications for supporting psychological well-being. *BMC Public Health* 2021; **21**: 104.
31. World Health Organization. *WHO Coronavirus COVID-19 Dashboard*. 2021. [Cited 2 Feb 2022.] Available from URL: <https://covid19.who.int/>

Supporting information

Additional supporting information may be found in the online version of this article at the publisher's web site:

- Appendix S1.** Survey instrument.
Appendix S2. Additional data.