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Psychological impact of COVID-19 on staff working in paediatric and adult critical care

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Preliminary account of results from this study have been published in the College of Anaesthesiologists of Ireland Safety and Quality Newsletter July 2020; Quality and Safety Newsletter.

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Editor—The current pandemic caused by the novel coronavirus, severe acute respiratory syndrome-related coronavirus-2 (SARS-CoV-2), may have placed critical care staff at increased risk of psychological distress arising from increased workloads, risk of infection and infecting others, difficulties around personal protective equipment (PPE), and moral distress arising from challenges around decision-making with regards to resource allocation and end of life care.^{1–3} Little research has focused on the experiences of paediatric ICU (PICU) staff despite those working in PICU facing challenges such as anticipating the admission of adult coronavirus disease 2019 (COVID-19) patients, staff redeployment to adult hospitals, risk of staff infection from asymptomatic children, and the emergence of paediatric inflammatory multisystem syndrome. The primary objective of our study was to investigate the degree of psychological distress on staff working in both paediatric and adult ICUs in

the setting of the current COVID-19 outbreak. We also sought to evaluate coping strategies and the uptake of currently available staff supports.

We conducted a cross-sectional, observational study at four sites, comprising two adult ICUs and two PICUs. Ethical approval was granted by the National Research Ethics Committee (application number 20-NREC-COV-005). Data collection was between May 7, 2020 and June 5, 2020 by means of online and written questionnaires for staff who did not have access to work e-mails ([Supplementary Appendix S1](#)). All staff within the participating ICUs were eligible to take part. We assessed psychological distress and coping strategies using the Trauma Screening Questionnaire (TSQ),⁴ selected components from Measure of Moral Distress for Healthcare Professionals,⁵ and the Brief COPE tool.⁶ Qualitative data were collected from free-text responses, which are to be published separately (Feeley and colleagues,

unpublished observations). Results were analysed by univariate analyses initially. A multiple logistic regression model was used to explore relationships between positive TSQ scores and the variables age, gender, ethnicity, marital status, exposure to COVID-19 cases, staff redeployment, staff quarantine, moral distress scores, and coping strategies. Variables were selected using a backward elimination process with a P-value cut-off of 0.2. Data analysis was performed using Stata 14 (StataCorp, College Station, TX, USA).

We recruited 408 participants consisting of 17.4% ($n=71$) doctors, 66.9% ($n=273$) nurses, and 15.7% ($n=64$) other professions. Overall response rate was 59.0%. Professional and demographic characteristics of participants are shown in [Supplementary Appendix S2](#). Fourteen percent (95% confidence interval [CI] [10.9–17.9%]) of participants scored at risk of post-traumatic stress disorder (PTSD). Mean (standard deviation [SD]) score for moral distress (range 0–64) was 7.8 (11.0). Breakdown of measures of psychological outcomes are shown in [Table 1](#). Moral distress scores were highest in response to the statement ‘working with team members who were not as competent as patient care requires’ (mean [SD] 3.1 [4.5]). Greater moral distress scores (odds ratio [OR] 1.03, 95% CI 1.02–1.06, $P=0.005$) and use of maladaptive coping strategies (OR 1.18, 95% CI 1.11–1.26, $P<0.0001$) were predictive of PTSD risk.

Participants were most commonly stressed about passing coronavirus to family (42.7% [37.9–47.7%] rated as extremely stressful), becoming ill with coronavirus (22.1% [18.2–26.5%]), and shortages of PPE (21.3% [17.5–25.6%]). Those working in adult ICU were significantly more stressed compared with PICU staff with regards to staff shortages (11.8% [8.1–17.1%] vs 6.5% [3.7–11.1%], $P=0.001$) and shortages of equipment (18.8% [13.9–24.7%] vs 10.7% [7.0–16.0%], $P=0.011$). Those working in PICU were significantly more stressed compared with adult ICU staff about redeployment (18.6% [13.7–24.8%] vs 14.8% [10.5–20.4%], $P=0.016$) and treating patients outside their trained role (16.4% [11.4–22.0%] vs 14.3% [10.1–19.8%], $P=0.0001$). Nurses were significantly more stressed compared with doctors and other professions about staff shortages (18.4% [14.1–23.6%] vs 10.0% [4.8–19.6%] vs 1.7% [0.2–11.5%], $P=0.02$), shortages of PPE (27.5% [22.4–33.2%] vs 5.7% [2.2–14.3%] vs 12.3% [6.0–23.6%], $P=0.01$), equipment shortages (19.8% [15.4–25.1%] vs 4.3% [1.4–12.5%] vs 5.3% [1.7–15.1%], $P=0.004$), becoming ill with COVID-19 (27.6% [22.5–33.3%] vs 12.9% [6.8–22.9%] vs 8.6% [3.6–19.1%], $P=0.03$), being redeployed (21.0% [16.5–26.4%] vs 8.6% [3.9–17.8%] vs 6.9% [2.6–17.0%], $P=0.001$), and treating patients outside their trained role (20.6% [16.1–26.0%] vs 2.9% [0.71–10.8%] vs 5.3% [1.7–15.1%], $P=0.0001$) ([Supplementary Appendix S3](#)).

Table 1 Results of Trauma Screening Questionnaire and Measure of Moral Distress for Healthcare Professionals according to selected baseline characteristics. Values expressed as % (95% confidence interval [CI]) and mean (standard deviation [SD]) MMD HP, Measure of Moral Distress for Healthcare Professionals; TSQ, Trauma Screening Questionnaire. *Other professions include allied health professionals, general support staff, and managerial information and communication technology staff. Values in bold represent p values < 0.05.

Characteristic	TSQ \geq 6%, (95% CI)	P-value	MMD HP mean (SD)	P-value
ICU				
Paediatric ICU	13.8 (9.6–19.4)	$P=0.81$	4.8 (7.5)	$P=0.0001$
Adult ICU	14.6 (10.4–20.1)		10.5 (12.8)	
Specialty				
Medical	6.8 (2.8–15.3)	$P=0.07$	9.2 (11.6)	$P=0.05$
Nursing	16.8 (12.9–21.8)		8.1 (11.3)	
Other professions*	11.7 (5.6–22.6)		4.3 (8.1)	
Gender identity				
Men	5.2 (2.0–13.1)	$P=0.01$	8.1 (10.5)	$P=0.63$
Women	16.3 (12.7–20.7)		7.8 (11.1)	
ICU experience (yr)				
<1	12.6 (7.1–21.4)	$P=0.41$	8.2 (11.6)	$P=0.08$
1–5	11.2 (6.5–18.7)		5.8 (9.7)	
6–10	13.0 (6.9–23.2)		7.2 (11.5)	
>10	18.2 (12.7–25.4)		8.9 (10.80)	
Exposure to COVID-19 cases				
None	15.6 (10.4–22.7)	$P=0.870$	5.0 (7.8)	$P=0.0001$
1–5	12.5 (7.0–21.2)		6.7 (11.17)	
6–10	16 (6.1–35.8)		12.0 (13.30)	
11–15	17.8 (9.1–31.8)		9.0 (12.7)	
16–20	13.6 (6.2–27.2)		11.0 (12.8)	
21–40	8.5 (3.2–20.6)		9.7 (11.6)	
>40	18.1 (7.0–39.7)		12.6 (11.0)	
Staff redeployment				
Yes	16.0 (8.2–28.9)	$P=0.711$	13.8 (14.4)	$P=0.0002$
No	14.0 (10.8–18.8)		7.0 (10.2)	
Quarantined				
Yes	14.4 (9.0–22.3)	$P=0.954$	8.5 (11.6)	$P=0.308$
No	14.2 (10.6–18.7)		7.6 (10.8)	

Most commonly used coping strategies were acceptance (mean [SD] Brief COPE scores 5.6 [2.4]), positive reframing (4.3 [2.3]), and self-distraction (4.7 [2.2]). There was low use of substance abuse (2.2 [1.3]) amongst participants. The proportion of participants who cited supports as useful was greatest with regards to peer support (62.4% [57.6–67.3%]), departmental debriefs (51.6% [46.5–56.6%]), and allocation to duties not involving care of COVID-19 patients (42.3% [37.5–47.4%]). Full breakdown is contained in [Supplementary Appendices S4 and S5](#).

Our study shows that numerous work- and non-work-related factors including the busy clinical environment, fears of contracting COVID-19 and passing infection to family members, limited supplies of PPE, the moral distress associated with patient care for these patients, and the use of maladaptive coping strategies, have placed ICU staff at risk of PTSD. Our results echo studies showing stress in healthcare workers not directly caring for COVID-19 patients.² In addition to the stresses faced by critical care staff globally, PICU staff have anticipatory anxiety around fears of redeployment and being required to work outside of their trained role. Our overall prevalence of 14% risk of PTSD is higher than that found in a study of medical and non-medical staff in Singapore² but lower than in other settings during the COVID-19 pandemic.⁷ Certain groups were more at risk of psychological distress, including nurses and redeployed staff. The organisational changes in response to the pandemic brought major changes to staff members' work environments, their defined roles, and their social and team supports. This in turn disrupted the usual dynamics between each staff member and their workplace, creating an occupational mismatch that promoted stress in some workers.⁸

The need to support staff during the pandemic is paramount. The psychological supports that were reported to be most useful to staff were local cost-neutral departmental interventions such as formal or informal debriefing and alternate workplace exposure to COVID-19 patients. Our responses also suggest value in more formal strategies with a preference for face-to-face supports over online and telephone supports. Cognitive behavioural therapy and mindfulness assistance may offer those staff exhibiting maladaptive coping strategies the opportunity to improve resilience and develop adaptive coping strategies.⁹

Our findings are limited by the variations in stress of ICU staff outside of the COVID-19 pandemic and in the mental health of the general population during the pandemic,¹⁰ along with the relatively low response rate and the limited generalisability of our findings. Also, data collection commenced 2–3 weeks after the peak of COVID-19 cases in Ireland, thereby missing the period of maximum ICU occupancy.

Authors' contributions

Data analysis: RFOC, TF, MHT, KLE, CM

Drafting of article: RFOC, TF, MHT, KLE, CM, CIE, EOC, BL, SC

Made substantial contribution to the study design, data acquisition and interpretation, revision of article, and final approval of the article: all authors

Declarations of interest

The authors declare that they have no conflicts of interest.

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Collaborators contained in [Supplementary Appendix 6](#) have made substantial contributions to the study but do not fulfil requirements for authorship.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.bja.2020.09.040>.

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