EMPIRICAL RESEARCH QUALITATIVE

"Like fighting a fire with a water pistol": A qualitative study of the work experiences of critical care nurses during the COVID-19 pandemic

Jordan Miller[1] │ Ben Young[2] │ Louise Mccallum[3] │ Janice Rattray[4] │ Pam Ramsay[4] │ Lisa Salisbury[5] │ Teresa Scott[6] │ Alastair Hull[7] │ Stephen Cole[8] │ Beth Pollard[1] │ Diane Dixon[1,9]

[1]Institute of Applied Health Sciences, University of Aberdeen, Aberdeen, UK

[2]School of Health & Wellbeing, University of Glasgow, Glasgow, UK

[3]Nursing & Health Care School, University of Glasgow, Glasgow, UK

[4]School of Health Sciences, University of Dundee, Dundee, UK

[5]School of Health Sciences, Queen Margaret University, Edinburgh, UK

[6]Critical Care Unit, NHS Grampian, Aberdeen Royal Infirmary, Aberdeen, UK

[7]Institute of Medical Sciences, University of Dundee, Dundee, UK

[8]Anaesthesia & Intensive Care Medicine, NHS Tayside, Ninewells Hospital, Dundee, UK

[9]School of Applied Sciences, Edinburgh Napier University, Edinburgh, UK

Correspondence
Diane Dixon, School of Applied Sciences, Edinburgh Napier University, Sighthill Court, Edinburgh, UK.
Email: d.dixon@napier.ac.uk

Abstract

Aim: To understand the experience of critical care nurses during the COVID-19 pandemic, through the application of the Job-Demand-Resource model of occupational stress.

Design: Qualitative interview study.

Methods: Twenty-eight critical care nurses (CCN) working in ICU in the UK NHS during the COVID-19 pandemic took part in semi-structured interviews between May 2021 and May 2022. Interviews were guided by the constructs of the Job-Demand Resource model. Data were analysed using framework analysis.

Results: The most difficult job demands were the pace and amount, complexity, physical and emotional effort of their work. Prolonged high demands led to CCN experiencing emotional and physical exhaustion, burnout, post-traumatic stress symptoms and impaired sleep. Support from colleagues and supervisors was a core job resource. Sustained demands and impaired physical and psychological well-being had negative organizational consequences with CCN expressing increased intention to leave their role.

Conclusions: The combination of high demands and reduced resources had negative impacts on the psychological well-being of nurses which is translating into increased consideration of leaving their profession.

Implications for the Profession and/or Patient Care: The full impacts of the pandemic on the mental health of CCN are unlikely to resolve without appropriate interventions.

Impact: Managers of healthcare systems should use these findings to inform: (i) the structure and organization of critical care workplaces so that they support staff to be well, and (ii) supportive interventions for staff who are carrying significant psychological distress as a result of working during and after the pandemic. These changes are required to improve staff recruitment and retention.

Reporting Method: We used the COREQ guidelines for reporting qualitative studies.

Study Twitter Page: @CandidIcu

1 | INTRODUCTION

Internationally, the COVID-19 pandemic placed healthcare systems under extreme duress. In the UK, critical care services rapidly expanded to meet these unparalleled demands. Thousands of staff were drafted into the critical care workforce from various healthcare disciplines, many of whom had little or no critical care experience (San Juan et al., 2022). Initially, little was known about routes of transmission, there were no diagnostic tests or treatments, and patient acuity and mortality rates were extraordinarily high.

Since 2020, critical care services have been buffeted by multiple, recurring waves of the pandemic, each varying in height and force. There is now accumulating evidence of the detrimental impact such sustained demands have incurred on staff, with many reporting depression, anxiety and symptoms of post-traumatic stress disorder (PTSD; Crowe et al., 2021; Greenberg et al., 2021; Hall et al., 2022). While rates of COVID intensive care unit (ICU) admissions have declined and survival rates have improved, internationally critical care services and healthcare services as a whole, including the UK National Health Service (NHS) now face a new and unquestionably COVID-related crisis; the deluge of nurses leaving the speciality and/or profession (Poon et al., 2022).

2 | BACKGROUND

Theoretical models of occupational stress provide an empirical framework for understanding the impact of the pandemic on healthcare staff, that goes beyond simply reporting the point prevalence of psychological distress. These models both, identify outcomes of relevance to individual staff, their employing organization and importantly, explicate relationships between these outcomes. A timely understanding is urgently required to prevent a vicious cycle of poor staff welfare, increased staff turnover and consequent reduced patient safety and quality of care (McHugh et al., 2021; Poon et al., 2022).

The Job-Demand Resource Model (JD-R; Figure 1) may provide a framework to understand the impact of the pandemic on the psychological health of staff, their engagement with work and its impact on their employing organization (Bakker & Demerouti, 2017). This dual-process model conceptualizes working conditions as *job demands* and *job resources*. Demands include components of a job (e.g., role complexity) that require physical or psychological effort and can be associated with adverse psychological and physiological outcomes (e.g., health impairment: burnout). Job resources (e.g., learning opportunities) can positively influence a person's work engagement. Moreover, the personal resources (e.g., resilience) an individual brings to the workplace, in conjunction with job resources, may mitigate the impact job demands have on psychological outcomes. Collectively, these components help explain organizational outcomes, including intention to change jobs and perceived patient safety and quality of care. The application of this model may provide actionable evidence to inform a workplace environment that supports positive health, meaningful work engagement and hence helps retain and recruit experienced and high-quality staff (West et al., 2022; Yi et al., 2022; Zhang et al., 2020).

This study reports the qualitative component of a mixed-methods research project; applying the JD-R model to understand the impact of COVID-19 on work-related stress in critical care nurses (CCNs) and the subsequent effect on a range of organizational outcomes.
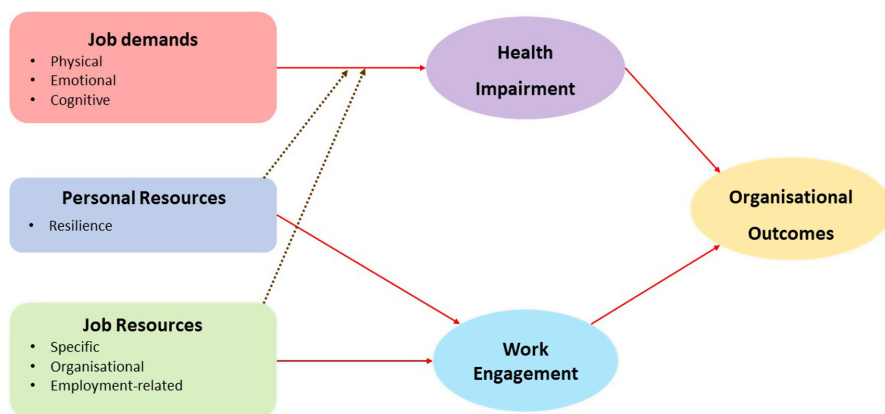
FIGURE 1 Job demand-resource model.

Detailed information is available in the published protocol (Rattray et al., 2021). Here, in-depth interviews describe the experiences of CCNs and provide service managers, policymakers and researchers with rich, theoretically derived insights into the enduring impact of the working environment during the pandemic and work-related stress among this vital workforce. These must be translated at pace into real world, supportive and restorative interventions otherwise (as one critical care nurse remarked) "there will be no one left".

3 | THE STUDY

3.1 | Research aims

The study aimed to understand the pandemic work experiences of CCNs.

This study had three primary research aims. To understand:

1. The impact of the pandemic work environment on *job demands* and *job resources* experienced by CCNs.
2. The impact of this work environment on *health impairment* and *organizational outcomes* experienced by CCNs.
3. How CCNs experienced the well-being services offered throughout the pandemic, including their accessibility and utility.

3.2 | Methods

The COREQ checklist for this study is provided in (Table S1).

3.2.1 | Design

This study was a qualitative interview study. The quantitative interview was selected as the method of data collection to enable CCNs to express their experiences in their own words.

3.2.2 | Theoretical framework

The JD-R of occupational stress was used as the broad theoretical framework for the interviews and their analyses. The JD-R model was applied to the interviews to enable the qualitative data to inform directly the results of a related quantitative survey that used the JD-R model (see study protocol for details of the quantitative survey Rattray et al., 2021).

3.2.3 | Eligibility and recruitment

CCNs working in adult Critical Care Units during the pandemic, caring for level three patients across NHS Scotland, two English NHS Trusts and one Welsh NHS Board were eligible to participate.

Inclusion criteria were nursing and midwifery council registered nurses with substantive contracts.

Participants were purposively recruited from a cohort of CCNs and redeployed nurses (*n* = 764) who had completed the quantitative study (published elsewhere) and provided consent to be contacted regarding a one-to-one interview. In total, *n* = 311 staff were emailed demographic screening questions via an online survey to ensure representation across a sampling framework of age groups, ethnicity, gender, type and size of unit, pay grade and years of experience. Given the unique nature of emergency re-deployment into ICUs during the pandemic, the experiences of re-deployed staff will be reported elsewhere. Eighty-two CCN's completed screening, of those, 45 were sent a formal interview invitation. Seventeen respondents did not reply, resulting in 28 interviews. A recruitment diagram is available in Table S2.

3.2.4 | Data collection

Data collection was conducted between 5 May 2021 and 13 May 2022. Individual semi-structured interviews were conducted remotely via Microsoft Teams or telephone, in accordance with participant preferences. Verbal consent was obtained and recorded prior to interview. On average, the interviews lasted 83 min (range 39–119 min) and were audio recorded and transcribed verbatim by a professional transcription company.

All interviews were conducted one-to-one by a female postdoctoral researcher, with experience in conducting qualitative research on sensitive topics and no existing relationship with participants prior to interview. The researcher introduced themselves to interviewees as a health psychology researcher with no previous nursing experience. The researcher had no connection with the participants prior to the interview except via the contact required to schedule the interview.

A semi-structured topic guide formulated in accordance with constructs of the JD-R model was used (Table S3). This explored the principal job demands during the pandemic, available job resources, the impact of the pandemic work environment on staff, and the availability of well-being resources. The interview guide was developed iteratively with the research team (including three former and one current CCN) and was tested during two pilot interviews.

3.2.5 | Data management and analysis

Data were analysed using the five-stage Framework Method described below (Ritchie & Spencer, 1994). Analysis was conducted deductively, using the components of the JD-R model as the analytic framework. Using this approach, each construct of the JD-R model (e.g., Job Demands) functioned as an overarching theme, with the distinct factors of each theme (e.g., Job Demands-Role Complexity) serving as themes. The components of the model are presented in Table 1.

TABLE 1 Components of the JD-R model.

Job demands: Components of a job that require physical or psychological effort to address
- Pace and amount of work
- Emotional load
- Mental load
- Physical effort
- Role complexity
- Role conflict
- Work organisation

Job resources: Components of a job that reduce job demands, their costs; facilitate learning and development and work goals
- Job autonomy
- Task clarity
- Quality
- Feedback
- Relationship with superior
- Relationship with colleagues
- Learning opportunities
- Effectiveness in achieving goals
- Staffing
- Well-being focus

Personal resources: Personal attributes that may mitigate the impact of job demands
- Resilience

Health Impairment: negative impact on employee's health and well-being
- Burnout
- Distress—anxiety and depression
- PTSD symptomology
- Detaching from work
- Recovery after work
- Sleep impairment

Organisational outcomes: Outcomes relevant for organisational attainment
- Desire to change jobs
- Self-reported staff sickness
- Patient safety
- Quality of care
- Certainty about future
- Work commitment
- Job satisfaction

Engagement: Staff engagement, motivation, inspiration and commitment
- Work engagement

3.3 | Familiarization

The interviews were re-listened to and the transcripts were re-read to quality check and facilitate immersion. Throughout, initial impressions were recorded alongside field notes.

3.4 | Identification of a thematic framework

As described, the JD-R model (as detailed in Table 1) provided the overarching coding framework. Two researchers independently open-coded two interview transcripts; highlighting relevant excepts and assigning an appropriate code (or theme) in Microsoft Word.

Three online meetings were held to review coding decisions, interpretations and to revise code or theme definitions.

3.5 | Indexing

All transcripts were imported into NVivo V.12, to facilitate data management and analysis. Application of the analytic framework involved systematically reading each transcript and assigning the a priori codes from the JD-R framework to the data. Coding was undertaken by two post-doctoral, experienced qualitative researchers. Initially, two transcripts were independently coded by both researchers before meetings were held to review coding decisions, and discuss queries and potential disparities before independently coding the remaining transcripts ($n = 26$). One researcher, coded 16 transcripts and another coded 10. Both met regularly to engage reflexively with the data, sharing insights, and interpretations and acknowledging assumptions that may have influenced the analytic process.

3.6 | Charting

Coded data were organized into the JD-R analytic framework and exported to Microsoft Excel for charting. As such, verbatim data coded to each theme in the JD-R analytic framework was collated. The content of these illustrative excerpts was then reviewed and briefly summarized. This enabled the identification of distinct elements within each theme, for example, the theme *role complexity* within *job demands* comprised three distinct sub-themes: (1) heightened patient acuity and complex care tasks, (2) working in personal protective equipment (PPE) and (3) communicating remotely with relatives.

3.7 | Mapping and interpretation

The content of the framework matrix was reviewed, providing a further opportunity to revise coding decisions, examine relationships between codes, themes and to enhance analytical rigour. Importantly, consideration was given to the most salient experiences of CCNs as they related to various aspects of the JD-R model. For example, *role complexity* was a particularly salient pandemic demand, however, data pertaining to *role conflict* was rarely discussed. Meetings with the research team helped iteratively develop an understanding of the 'bigger picture' of CCNs' experience and work-related stress during the pandemic.

3.7.1 | Ethical considerations

The interviews involved the recollection of emotional and distressing experiences that had ethical implications for the interviewees

and the interviewer. To safeguard the participants' well-being, the interviewer reinforced participants' right to decline to respond and to pause or cease the interview at any point. The interviewer confirmed that participants had available support networks and provided details of relevant external support resources. A distress protocol adapted from Dempsey et al., 2016 was followed (see Table S4). Where participants became emotional, the interviewer acknowledged the challenging nature of the discussion and offered participants a break, to pause the recording or suspend the interview. Each of the participants who became emotional strongly emphasized their desire to continue, with many describing the process as "cathartic". A follow-up email was sent to participants as a well-being check. The interviewer was supported by the two study PIs and other members of the team with regular online debrief meetings. In addition, author (A.H.) is a psychiatrist and psychotherapist who also acted as support for the interviewer.

The study was approved by the School Ethical Review Board for the School of Medicine, Medical Sciences and Health at the University of Aberdeen; reference CERB/2020/10/1993. NHS Research and Development approval was obtained for each participating site.

3.7.2 | Rigour

The suitability of the JD-R framework to capture nurse experience was sense checked in preliminary interviews with CCNs who were working during the pandemic as part of the development process for the accompanying quantitative survey. A recruitment matrix was developed and used to ensure nurses invited to interview captured the diversity of CCNs, e.g. level of pay banding, age, gender, ethnicity, years of experience and geographical location. All transcriptions were checked and amended for accuracy against the original recordings. Interviews were coded independently by two post-doctoral researchers. Two transcripts were double-coded to enable identification of any coding discrepancies. The post-doctoral researchers met regularly to discuss the coding process and raise any emerging queries. In addition, weekly meetings took place between the two study research fellows and other members of the research team to discuss the coding progress and resolve any coding queries.

4 | FINDINGS

4.1 | Participants

Twenty-eight CCNs participated, comprising 21 participants from NHS Scotland, five from England and two from Wales. Twenty-three participants (82.1%) were female and five (17.9%) were male. Participants had a mean age of 39.11 (SD = 10.61, range 25–61) and an average of 12.35 years of critical care nursing experience (SD = 9.30, range 1–29). See Table 2 for demographic information.

The findings are reported in line with the components of the JD-R model that appeared most salient to CCNs. Broadly, the themes describe: (i) the primary job demands (ii) the provision or lack of job resources to alleviate these demands (iii) the impact of the work environment on physical and emotional well-being and (iv) organizational outcomes. A thematic diagram (Figure 2) illustrates the main JD-R themes and highlights relationships between these themes. Table 3, details both the main themes and resulting sub-themes where applicable. Findings are presented with representative quotes.

5 | JOB DEMANDS

Staff universally described the pandemic as having inflicted an unparalleled increase in workplace demands. Of the seven job demands, staff were particularly challenged by: role complexity, the pace and amount of work, physical effort and emotional load. Role complexity, pace and amount of work were multicomponent, whereas physical effort and emotional load were generally unitary.

5.1 | Job demand: Role complexity

The job demand of role complexity was expressed as three types of demand, namely, patient acuity and complexity of care; the demands of having to work in PPE, and the demands associated with remote communication with relatives.

5.1.1 | Role complexity: patient acuity and complex care

Staff repeatedly described the heightened complexity of working in the ICU during the pandemic. This was largely expressed in relation to the high acuity of early COVID-19 patients, typically with multiple and severe organ failure, who many described as "the sickest of the sick" (CCN 20). Similarly, complexity was expressed in relation to the difficulties of treating patients with an unknown, unpredictable disease and the scarcity of treatment options, particularly during the first wave. As one CCN with 29 years of experience recalled, nursing COVID patients was "absolutely foreign" (CCN 22):

> it was so difficult because they were so different. They were the sickest people we'd ever looked after and literally you couldn't move these people sometimes without them … becoming even more critically unwell. You had to readjust everything that you'd learned about ICU (CCN 28).

Others recounted undertaking complex care tasks for the first time, including: proning ventilated, unstable and often clinically obese patients, operating unfamiliar equipment, including

TABLE 2 Participant demographics.

Ppt ID	Wave at time of interview[a]	Age	Gender	Ethnicity	Nursing experience (years)	Critical care experience (years)	Band[b]	Regional network/Nation[c]
1	2	53	Female	White British	25	20	5	East
2	2	29	Female	White British	6	6	5	North
3	2	44	Female	White British	25	22	7+	East
4	2	25	Female	White British	4	1.5 years	5	East
5	3	54	Male	White British	20	20	5	East
6	3	29	Male	White British	9	7	5	North
7	3	38	Female	White British	17	16	6	West
8	3	26	Female	White British	4	2	5	England
9	3	35	Male	Asian/Asian British	14	10	6	England
10	3	54	Female	White British	33	28	6	West
11	3	28	Male	Black/African/ Caribbean/Black British	3	1 year 4 months	5	England
12	3	53	Female	White British	30	29	6	West
13	3	33	Female	White British	6	2	5	West
14	3	37	Female	White British	15	9	7+	North
15	3	44	Female	White British	23	23	7+	West
16	3	36	Female	White and Asian	10	7	6	North
17	3	26	Female	White British	5	3.5 years	5	East
18	3	52	Female	White British	30	24	6	East
19	3	42	Female	White British	19	9	6	East
20	3	61	Female	White British	24	17	7+	East
21	3	27	Male	White British	3	2	5	England
22	3	54	Female	Other White Background	32	29	5	England
23	3	29	Female	White British	1 year 10 months	1.5 years	5	Wales
24	3	30	Female	White British	5	5	5	Wales
25	3	39	Female	White British	17	14	7+	North
26	3	36	Female	Other White Background	5	4	6	West
27	3	40	Female	Other White Background	19	16	7+	North
28	3	41	Female	White British	19	17	6	West

[a]The timing of the waves differed between England/Wales and Scotland. Therefore, wave categorisations are provided for Scotland as defined by the Scottish Intensive Care Society (SICSAG) and for England and Wales by the Office for National Statistics.

[b]Pay bandings range from 5 to 8, with higher bands representing more senior nurses. Nurses employed at band 7 or above have been collated to preserve anonymity.

[c]Individual units will not be identified. For Scottish units, the three regional networks (North, East and West) as defined by the Scottish Intensive Care Society are presented. Given the small number of participating units from England, identification is restricted to Nation.

anaesthetic ventilators typically used in theatres, or delivering care in satellite ICUs (e.g., in theatres or recovery rooms). As shown below, complexity was particularly acute for CCNs new to ICU:

> It made weird noises, it had moving parts that [ICU] ventilators don't have. So, yeah, I just felt like

anything I did, potentially, was going to kill someone (CCN 11).

> I'd never looked after a proned patient, let alone someone that's also paralysed. I've only looked after one paralysed patient prior to going onto COVID. And then my first shift had two of them (CCN 21).
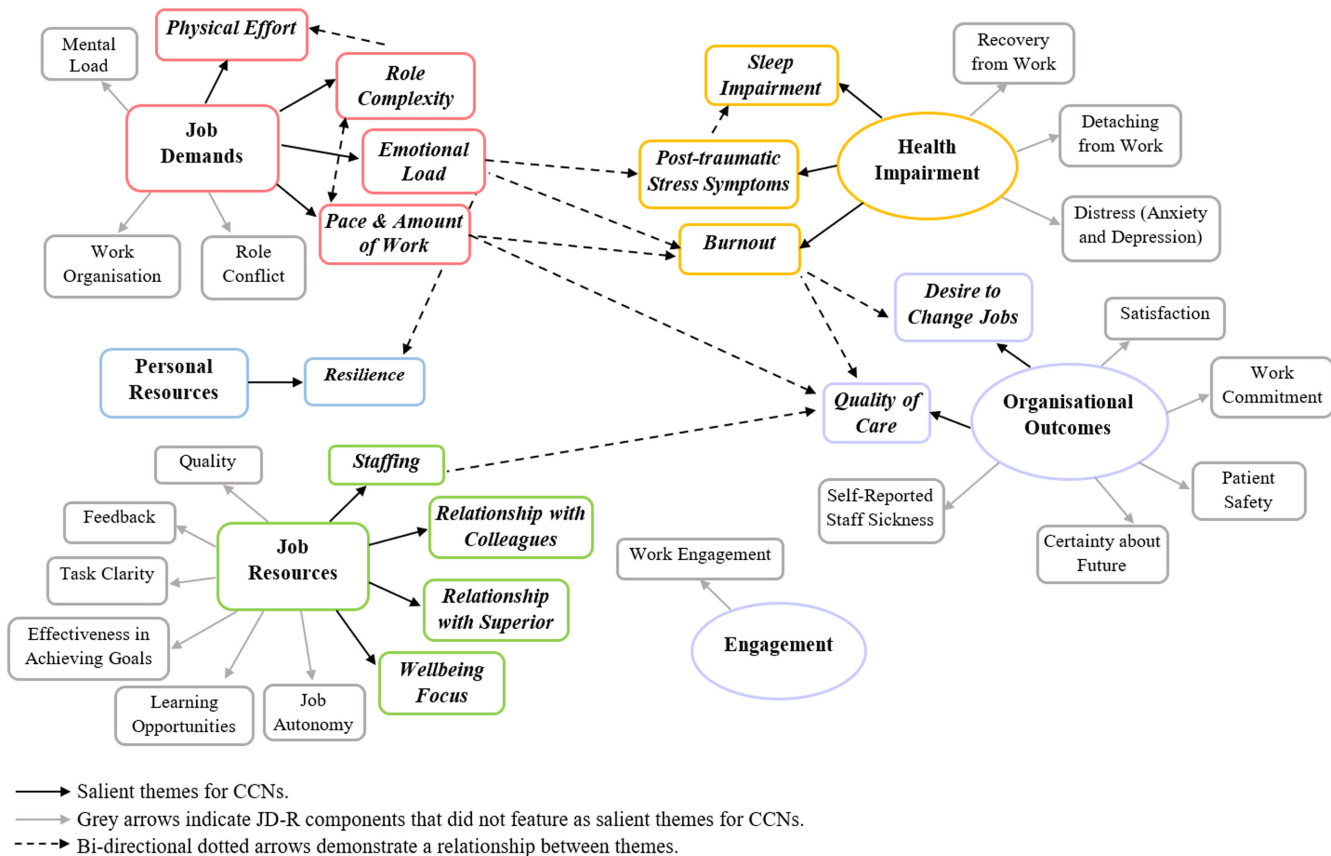
FIGURE 2 Thematic diagram of the principal JD-R themes impacting CCNs during the pandemic.

TABLE 3 Table detailing themes and respective sub-theme(s).

Main JD-R construct	Themes	Sub-theme(s)
Job demands	1. Role complexity	Patient acuity and complex care Working in PPE Remote communication
	2. Pace and amount of work	Staff: patient ratios Supporting re-deployed staff
	3. Emotional load	Delivering end of life care remotely
	4. Physical effort	Working in PPE
Job resources	5. Relationship with colleagues and supervisors	Camaraderie
	6. Well-being focus	Support accessibility Passive versus active support
Health impairment	7. Burnout	Emotional exhaustion Reduced personal accomplishment Impact on life out with work
	8. Post-traumatic stress symptoms	Re-experiencing Avoidance
	9. Sleep impairment	Hyperarousal
Organizational outcomes	10. Quality of care	
	11. Desire to change jobs	

Complexity was compounded by additional job demands, most notably, increased pace and amount of work. The following extract illustrates complexity intensifying due to the revision of staffing ratios during the pandemic:

> Initially when they made all these [staffing] ratios for COVID, it was basically, give them a ventilator, a bit of sedation, that's it. No taking into account their blood pressures are low so they're on multiple drugs for their blood pressures. Their kidneys are failing, so they're on haemofilters to filter out their blood. They're on various antibiotics, they're getting trial drugs. And some of them had 15 pumps round their bed. And out with the unit, you've got people saying, 'well one nurse can look after three of these types of patients' No, they can't (CCN 3).

5.1.2 | Role complexity: Working in PPE

Though PPE was a key resource in protecting their safety, staff reported visual field disturbances, reduced tactile sensitivity and impaired spatial awareness, "we all hit our heads a lot on different pieces of equipment" (CCN 17). PPE also impacted verbal and non-verbal communication, by reducing visual cues and speech clarity, adding to the complexity of communicating with families, patients and staff:

> I don't know if I want to say it – but you could easily lose your shit. You could, honestly. If you're saying something to someone and something else is going on with somebody else and you're trying to explain what you're doing and somebody can't hear you. You could feel yourself saying, 'oh for God's sake, gonnae just everybody shut up for a wee minute' (CCN 15).

5.1.3 | Role complexity: Remote communication

Communicating with relatives represented a uniquely complex demand. Several staff reflected on the overwhelming responsibility of being the only channel of communication between patients and relatives. While complex communication, particularly regarding end-of-life care was acknowledged to be a fundamental part of critical care nursing, delivering such sensitive information remotely, whilst also supporting relatives, was incredibly challenging:

> Normally if a patient's dying if a family chose to be there you would have them in at the bedside. What you had now was a telephone call, 'do you want me to hold the' phone to your husband's ear while he's dying (CCN 15).

Complexity was compounded by in person visits being prohibited; often families had a limited understanding of critical illness and most

found it difficult to comprehend the gravity of their relatives' condition. Consequently, staff emphasized the need to consciously adapt and tailor their language in the recognition that "you couldn't show them the jargon" (CCN 15). Such complexity is perhaps best captured here:

> I remember one woman said to me afterwards that she used to think her husband was being tortured when I would say, "oh he really doesn't like being turned". And it was things like that. You didn't really realise at the time but normally that would be an okay thing to say but it wasn't anymore. So it was hugely difficult (CCN 15).

5.2 | Job-demand: Pace and amount of work

The job-demands experienced by CCNs due to the pace and amount of work took two main forms, namely, worsening staff: patient ratios and the need to support re-deployed staff.

5.2.1 | Pace and amount of work: staff: patient ratios

Staff repeatedly emphasized the challenges of the intensified pace and amount of work. Due to the surge in COVID-19 patients and staff shortages, CCNs routinely worked beyond traditional one-to-one staff: patient ratios and "sometimes had up to four patients" (CCN 8). Many shared disaster-related analogies to capture the nature of these demands:

> It was sort of like fighting a fire with a water pistol. You kind of just ran around until you were told to go on break. You'd go on break, sit down for half an hour, put it all (PPE) back on, and then go back and run around for the next eight hours (CCN 11).

Consequently, staff recalled having to make difficult judgements regarding the care they could feasibly provide, often forgoing mouth-care and other basic care in recognition that "there's only so much you can do, so you have to prioritise the life-sustaining things" (CCN 21). Restrictions on care tasks due to extreme job demands represents an important component of the organizational outcomes arm of the JD-R model. This features prominently within the subsequent section.

5.2.2 | Pace and amount of work: Supporting re-deployed staff

In conjunction with an intensified workload, CCNs had the unique challenge and responsibility of supporting colleagues re-deployed into critical care areas, many of whom had no critical care

experience. Often, staff described being "pulled in all directions" by the "constant bombardment" of tasks. While staff stressed the vital contribution of re-deployed staff "They honestly were life-savers... we would absolutely not have survived the first, let alone made it to the second wave" (CCN 11) due to variations in skill-mix, supporting re-deployed staff incurred challenges:

> they re-deployed people from other healthcare backgrounds, I was working with people from physiotherapy, who are able to help you to roll a patient, things like that, but they didn't...they weren't familiar with the documentation. They...of course not, I'm not blaming them. But to have to deal with that as well (CCN 22).

Senior staff reflected on the dual responsibility of providing practical and emotional support for both ICU and re-deployed staff, in addition to balancing clinical, administrative, management and training commitments, with many foregoing breaks or working beyond contractual hours to do so:

> there were maybe 15 COVID patients and you're in charge of staffing COVID patients and the staff that are looking after these patients. So I personally feel responsible for every one of those patients on that side. And I feel responsible for the staff that are looking after them. So it's just a constant bed space to bed space to bed space, back and forward, back and forward, on the shift, trying to keep everybody safe (CCN 15).

5.3 | Job-demand: Physical effort

The physicality of working in COVID ICU was a salient demand. Almost all described "physical exhaustion" associated with the use of PPE, often with regards to overheating "I was sweating from my eye sockets, and a few times you were like, I'm going to faint" (CCN 13). Staff explained that a considerable proportion of COVID patients were clinically obese, which increased the physical effort of proning, providing pressure care and personal care. Moreover, due to infection control guidelines, staff were prohibited from bringing water onto the unit. This, combined with time demands from removing and putting on PPE when exiting and entering the unit resulted in most staff experiencing severe dehydration and headaches:

> It was just horrendous. I mean, you constantly had a sore head 'cause you're breathing in your own CO_2 the whole time. You're not drinking enough, so your head was constantly sore. You're sweating all the time (CCN 3).

While physical *effort* represents a key job demand, staff also described considerable physical impairments or injury due to such

heightened demands. This included, substantial weight loss or gain, back injuries, fainting, urine and kidney infections, hearing impairments and pressure sores:

> I feel like my body has just been hammered. I ended up with at UTI and kidney infection as well as being kind of very anxious and needing time off work as well... I had lost probably about a stone in a week because I couldn't eat, I couldn't function. I was just so weak (CCN 4).

5.4 | Job-demand: Emotional load

Within almost every interview, CCNs described the increased emotional burden of their work throughout the pandemic. The unknown nature of COVID-19 generated fear and anxiety among many staff, particularly during the first wave. This was heightened by harrowing reports from China and Italy and fears of transmission to themselves, colleagues and family: "COVID was a terrifying thing" (CCN 37). Many acknowledged that critical care nursing is a specialism "not unused to death" (CCN 6) however, the emotional burden of being "constantly surrounded by death, the possibility of death" (CCN 27) and the act of navigating this emotionally complex transition in the absence of patients' families, depleted CCNs emotional reserves:

> the patients are terrified, the nurses are terrified and I was terrified watching these patients who have no family with them and I find it very, very emotional speaking to families on the phone. They were getting upset. A lot of families asked who you were, which I found when people were nice to me, I find that very, very emotional. And supporting patients who...it was a lot of the unknown. Patients that came in, will I survive? Will I...? (CCN 18).

6 | JOB RESOURCES

CCN's described relationships with their colleagues and senior staff as an invaluable resource. Staff also expressed the importance of the accessibility and appropriateness of well-being services.

6.1 | Job-resource: Relationships with colleagues

Relationships with colleagues were heralded as the single most important job resource. When reflecting on the challenges of the pandemic "sometimes I don't know how I got through all of that" (CCN 27) staff would affirm that support from colleagues was "really what got us through". Staff repeatedly described a profound spirit of camaraderie, particularly during the first wave, noting that working together, with a shared purpose acted to maintain staff morale. This

was also mentioned by some staff to break down a longstanding "divide between the nursing and medical team" (CCN 22). For this CCN, the expansion of support networks across specialities was described as "profoundly very positive":

> I don't know if many of us would have been able to carry on the whole pandemic if we didn't have that support of comedy and like, love from our teams really (CCN 17).

For many, colleagues represented a vital component of well-being support, through the provision of informal peer support, and providing safe spaces to debrief or "listening to each other cry" (CCN 17) after difficult shifts. Importantly, while staff valued support from family and friends, the shared experience with other CCNs and recognition that "we'd all gone through it" allowed staff to truly unburden themselves and share their experiences freely:

> it's almost like…not like an army metaphor but it was almost like you were in this battle and you just needed to keep going. You know, like, this was what you needed to do and…who did you need to help you, it was your colleagues. So, if I saw somebody was struggling a little bit, I'll go over and help them. Let's talk about what we need to do today. Let's break the day down into tasks, you know, let's try and see what we can do" (CCN 6).

Support from senior staff was also acknowledged as an influential resource. Throughout, staff expressed the importance of senior staff being visible in the unit, and the value of active support to relieve the burden of support seeking. As described, the active nature of this conversation gave staff permission to be honest regarding their well-being:

> one of the senior nurses was really good at coming round and being like, 'Oh, are you alright?' And people were like, 'yeah'. And then she'd stop, and she'd be like, 'Are you really okay?' And then it was that second ask that made people actually talk to her, whereas we never would have gone to her, and been like, 'I'm struggling (CCN 11).

For other staff, the absence of physical presence on the unit, particularly from senior nursing management was pronounced:

> We certainly didn't see anybody during the pandemic. As far as I know there was nobody particularly senior, any clinical nurse managers, any senior nursing team put on PPE, none of them came in and stood next to a patient who was struggling to breathe and said, I can see what you're going through (CCN 5).

Whilst it was recognized that managers and senior-level staff had additional unseen pressures during the pandemic, some staff recounted feeling frustrated with regard to "the expectations from far, far, away on the end of a Teams call" (CCN 25):

On occasions where senior staff had been present on the unit, this visibility was instrumental in enhancing staff morale, "My boss being in there, getting stuck in and things like that, that boosted morale so much cause that's your boss and they're helping you" (CCN 6).

6.2 | Job-resource: Accessibility and appropriateness of well-being services

Staff identified several well-being resources that were implemented during the pandemic, including hospital well-being hubs, unit quiet rooms, chaplaincy and psychology input, exercise and relaxation classes and food and drink provisions. However, many shared challenges accessing these resources during shifts:

> There is a wellness hub at the hospital, but it's open nine to five, you don't get away from your work, you are the only intensive care nurse, they can't afford to let you away from your work, you know, on any stretch of the imagination to do anything, to make use of any of these facilities, so no, is the short answer to that (CCN 1).

Some reflected on feeling unable to engage in psychological support during the height of the pandemic, in order to not "break down that barrier" (CCN 15) of fortitude while in the midst of a challenging shift. Whilst others described apprehension regarding potential stigma and reproach when accessing internal support services. Staff also reflected on the passive nature of some support services, where self-referral was considered a barrier to access. For many, this signalled an expectation that staff would freely reach out and engage with support services when in reality, most were not able to do so:

> there are certain wellbeing things in situ. But what the NHS can do very, very well is…we have it sitting here. If you need it, come. But if you can't walk anymore because there is no energy left, these services don't come to you. So they are here in situ but you lie on the floor, you have to get up first before you can do that. They are not helping you up from the floor (CCN 22).

7 | HEALTH IMPAIRMENTS

When asked about the impact of the pandemic on well-being, staff described multiple psychological consequences, including burnout, post-traumatic stress symptoms and sleep impairments. It should be acknowledged, that some factors may co-occur with more than one

health impairment, for example burnout, represents a core symptom of post-traumatic stress.

7.1 | Health impairment: Burnout

As a consequence of excessive workload demands and insufficient job resources, several staff described experiencing burnout. When recounting this, staff reflected on their high work engagement pre-pandemic "I got stuck into quality improvement and trying to do lots of new things" (CCN 17). However, almost all staff described the relentless nature of working during the pandemic as physically and emotionally exhausting "my body has just been hammered" (CCN 4):

> When the first wave came to an end, it really felt like a wave. Like, you just tried to keep your head over the water and not drown. And the atmosphere was not camaraderie anymore. And it was just...the second wave broke me. And I ended up with burnout...and I'm seeing psychotherapy ever since" (CCN 22).

For some, emotional exhaustion was characterized by feeling "emotionally a bit raw" (CCN 8), while for others, was hallmarked by emotional detachment or numbness. This was acknowledged as a coping mechanism, allowing staff to compartmentalize and avoid thoughts surrounding the emotional circumstances of their work. Consequently, some staff described now feeling substantial disengagement, reporting that work "just feels like a daily slog all the time" (CCN 17):

> I kind of feel as well like I've become a bit numb to everything because I've had to, or I would end up crying all the time (CCN 4).

> I was just getting quite low, just really tired, really, really shattered, and then you try and find the motivation and you think, drag yourself to work, oh my God, another wall of...or another sea of stress (CCN 23).

For others, burnout had negative ramifications on personal life outside of work, describing a loss of satisfaction in activities they enjoyed before the pandemic, or challenges maintaining interpersonal relationships:

> I don't know if it's just exhaustion that has spilled over into my actual life, rather than just being tired at work. I don't know if my mindset has just changed to the point now, where I don't care about things [...] My last relationship broke down towards the end of the second wave. Me and my ex had split up, and she very much was like, it just feels like you're not there (CCN 11).

7.2 | Health impairment: Post-traumatic stress symptoms

Staff also reported post-traumatic stress symptoms as a consequence of their experiences. This was largely characterized by increased stress reactivity, or a generalized sense of hyperarousal. Although at times, staff found this difficult to verbalize, some described experiencing an "underlying stress that you couldn't necessarily tell where it was coming from" (CCN 8). Others reflected on their time in COVID ICU as an "out of body experience" (CCN 11):

> I'm finding I can't watch anything on TV that's medical related, I can't...like if I see anything at all on the news or anything, I'll start ...like my eyes just water (CCN 13).

Almost all staff recounted exceptionally emotive and traumatic experiences, often in relation to withdrawal of care. For those most affected, they were able to vividly recall aspects of the incident "That family will stay with me for ever. I'll never, ever forget their name; I remember the patient's date of birth; the two sons' names; they had kids" (CCN 7). The same nurse described experiencing intrusive thoughts while hanging out washing, noting that memories of the experience had "dominated my thoughts".

7.3 | Health impairment: Sleep impairment

Staff recurrently described difficulty with both sleep initiation, and sleep maintenance while working during the pandemic. Several mentioned ruminating about incidents or decisions made during previous shifts or feeling very anxious before upcoming shifts. Often staff described being in a state of hyperarousal following shifts that prohibited them from sleeping "it was like my body just refused to sleep" (CCN 4).

> I just couldn't carry on, I couldn't... I wanted to go to bed, I literally did want to go to bed; but I couldn't sleep, I'd sleep for, like, two hours at a time and then, you know, for example that family would bounce in my mind, and I'd be up at 2am doing the ironing because it was the only thing that I could actually concentrate on (CCN 7).

8 | ORGANIZATIONAL OUTCOMES

The work environment during the pandemic also contributed to wider organizational consequences, including reduced quality of care and increased desire to change jobs.

8.1 | Organizational outcome: Reduced quality of care

As described, role complexity and the pace and amount of work increased hugely during the pandemic. Consequently, staff recounted having to reduce the level and quality of care they provided, because they simply did not have time:

> personal care took a massive back seat. Sometimes people would go four or five days without being washed, 'cause we just physically couldn't, you didn't have the time to do it (CCN 11).

When detailing these situations, staff reflected on the uniqueness of critical care nursing, emphasizing that meeting patients' basic care needs, and providing high quality, one-to-one care was incredibly rewarding. As such, many described feeling conflicted regarding the decision to forgo certain aspects of patient care in the recognition that "everything can be an essential" (CCN 12). It became clear that enacting these decisions had enduring negative emotional and moral consequences, with staff using words such as "haunting" to capture the impact of this:

> for those first few shifts, it was almost a case of just like, oh, don't worry about it. But I think as that became the trend, where you weren't repositioning the patient sometimes for six or eight hours, or people were lying in faeces for an equal amount of time, I think eventually that really started to become quite difficult to accept and it was so grim [...] if this was any other point in time, they would have got like A class treatment (CCN 21).

8.2 | Organizational outcome: Increased desire to change jobs

While a small proportion of CCNs had actively left critical care, transitioned to a non-clinical role or left nursing altogether, several expressed intentions to leave due to sustained demands and the challenging work environment "oh my God, it's not sustainable" (CCN 23). Staff shared worries regarding further waves or future pandemics, stating "there's no way I could do it again" (CCN 17). More than ever, CCN's described an "enormous" loss of staff from their units, using language such as "haemorrhaging" to capture the magnitude of this loss:

> every two weeks when I come to work there's a new card to be signed for a member of staff that's leaving. And it's like for God's sake, that's someone that's been here for 15 years and now they're leaving to go do PIP [welfare benefit] assessments. It's just like, oh that's just sad (CCN 21).

9 | DISCUSSION

In applying the JD-R model to understand CCNs' experiences, this study builds on evidence from the early stages of the pandemic, highlighting the enduring impact of the pandemic work environment on staff and organizational wellbeing. Our findings emphasize that job demands, namely: the pace and amount, complexity, physical and emotional effort of work, increased significantly. Echoing existing literature, many staff in this study described the prolonged emotional burden of repeated exposure to death and caring for patients in the absence of relatives as a principal unique challenge during the pandemic (Castaldo et al., 2022; Lapum et al., 2021; Maben et al., 2022). Collectively, the intensity of these demands was powerfully represented by harrowing use of word choice, with references to COVID-19 as a "war", and "fighting to keep patients alive" akin to "fighting fires" and a "constant battle".

The dual demands of increased pace and amount of work and complexity arising from the rapid expansion of ICU capacity, revision of staff: patient ratios and heightened patient acuity, necessitated staff altering their working practices and prioritizing life-sustaining care. The dichotomy between the standard "A-class treatment" and the provision of perceived "bare bones" care when navigating the demands of the pandemic, imposed a considerable moral burden on staff. When recounting these circumstances, staff emphasized such decisions to be at odds with core nursing values, reporting that they subsequently felt like a "bad nurse" and that "I wasn't doing my job". The enduring implications of this should not be understated, with staff describing "haunting" emotional and moral repercussions, including guilt and powerlessness (Lapum et al., 2021). Throughout the pandemic literature, the perceived provision of lower quality care is considered a core factor in the development of moral injury (Morley et al., 2020). Given that sustained moral injury, akin to that experienced by staff across several pandemic waves, is acknowledged to lead to burnout and may contribute to intentions to leave critical care, interventions to support staff are urgently required (Andersson et al., 2022).

Evidence of the psychological implications of the pandemic are prolific, with reviews highlighting concerning rates of burnout, anxiety, depression and insomnia in frontline healthcare workers (Gualano et al., 2021; Pappa et al., 2020). Our findings add to the evidence base, highlighting that sustained workplace demands depleted CCN's physical and emotional reserves throughout the trajectory of the pandemic, with many describing burnout, post-traumatic stress symptoms and sleep impairment. Longitudinal research supports this interpretation, with workload demands being core factors driving the rise of burnout in critical care staff (Gomez et al., 2020). Our findings are bolstered by our accompanying quantitative study of over 400 CCNs, which found up to three quarters at risk of significant psychological distress, up to half at risk of burnout and a third reporting PTSD symptoms at a level that warrants formal clinical assessment (McCallum et al., 2022). Evidence highlights that without carefully designed intervention, symptoms of PTSD and burnout among staff are likely to endure (Bakker et al., 2005). Taken together,

this evidence is concerning for the well-being of the current and future workforce.

When reflecting on resources that may have alleviated workplace demands, aside from the practical provision of adequate staffing, positive relationships with colleagues and supervisors were regularly considered the only meaningful resource to "get us through the pandemic". In support of previous qualitative literature whereby the pandemic was considered to generate 'communities of fate', (Montgomery et al., 2021) the collective challenges of the pandemic, served to promote social cohesion and camaraderie among many staff in the current study. It was this shared experience, that enabled staff to act as an important well-being resource through the provision peer support and informal debriefs. Importantly, several staff also expressed frustration regarding the absence of senior managers on the unit throughout the course of the pandemic. It should be noted that the rapid expansion of critical care services substantially altered the critical care work environment, and by nature presented challenges to habitual sources of support for most staff. These findings, in line with existing literature, advocate for the importance of positive staff relationships and adequate organizational resourcing to sustain these relationships (Clarissa et al., 2022; Endacott et al., 2022).

Perspectives on the availability and effectiveness of formal well-being resources varied. Almost universally, staff reported barriers to accessing support services, either due to proximity to their unit, opening times outwith ICU shift patterns or the requirement to actively self-refer to access support. Barriers to staff accessing support services, such as inconvenient locations of services, workload and understaffing, have been reported by healthcare staff across the NHS during the pandemic (Clarissa et al., 2022). Notably, for both supervisory support and well-being resources, staff reflected on the value of such support being provided in an active rather than a passive form. If staff are to be adequately supported, well-being resources should be actively offered, accessible and appropriately timed.

Although numerous barriers to access were reported, almost all staff identified supportive resources that had been initiated during the pandemic. COVID-19 exerted unprecedented demands on all aspects of health care, and while senior managers were navigating the challenges of supporting staff and introduced support services with the "right intensions", from a staff perspective, these were often not effective for those that needed it most.

The implications of these findings are twofold. The mental health of CCNs has been affected by the pandemic and timely interventions are required. Some staff will recover without intervention, but many will require intervention appropriate to the level and nature of their distress. It is likely that some CCN staffs who are carrying significant psychological distress because of working during and after the pandemic will require specialist input to enable them to recover from symptoms of PTSD, burnout and psychological distress. Healthcare managers need to ensure that this specialist input is provided and is easy for CCNs to access as they require it. Managers of healthcare systems might also usefully consider the findings of this study

to thoughtfully and actively engage with CCNs to learn how critical care workplaces can be structured and organized so that they support staff to be well at all times, including and especially at times of high demand.

9.1 | Strengths and limitations

A qualitative approach allowed a uniquely rich and detailed exploration of CCNs' experiences, one that would not have been captured by quantitative measures alone. Moreover, utilizing a theory-driven, deductive approach enabled the identification of key components of the pandemic work environment and its impact on staff health impairment and organizational outcomes. Our study included a large sample of CCNs from a range of pay grades, years of experience and achieved gender representation (equivalent within the nursing workforce). However, our sample predominantly comprised CCNs from Scotland, and may not fully capture the experience of staff from comparably larger units in England and Wales who may have been impacted differently by the pandemic. Data collection spanned multiple pandemic waves, providing important evidence of the enduring and likely long-term impact on staff well-being and organizational outcomes which could not be captured by studies published in the early stages of the pandemic. While this study enriches and helps to explain our quantitative findings, further inductive analysis of this data set may facilitate the development of a pandemic specific model of work-related stress.

Since the emergence of COVID-19 in the UK in March 2020, unprecedented pressure has been exerted on the nation's health care service. The pandemic imposed sustained workplace demands on critical care staff, the impact of which has had enduring effects on their well-being. Supporting the recovery of critical care staff is of paramount importance in the post-pandemic era, these findings serve as an urgent call to action for organizations to prioritize the welfare of the critical care workforce.

10 | CONCLUSIONS

While the health care sector is no longer in the active throes of the pandemic, our findings confirm the impact of the pandemic is enduring, and that staff are "tired and so broken" (CCN 19). Ultimately, the potent combination of sustained demands, and insufficient or unsuitable resources to meet those demands, had wider organizational consequences, with an increasing number of staff reporting intentions to leave critical care. This is of grave concern to the nursing workforce. The NHS and healthcare providers globally are in the midst of a worsening staffing crisis, aggravated by the challenges of the pandemic (Health and Social Care Committee, 2022). The implementation of robust strategies to both promote recruitment and importantly, to support the well-being and retention of critical care staff are urgently required.

CONFLICT OF INTEREST STATEMENT

The authors declare that they have no conflicts of interest that could influence the work reported in this paper.

PEER REVIEW

The peer review history for this article is available at https://www.webofscience.com/api/gateway/wos/peer-review/10.1111/jan.15773.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

ORCID

Louise Mccallum https://orcid.org/0000-0002-7334-9153
Diane Dixon https://orcid.org/0000-0001-7099-204X

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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