“Like working on the battlefield”: Experiences of nurses during emerging infectious disease epidemics

Thomas Rozwaha

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Division of Health Research, Faculty of Health and Medicine

Lancaster University

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STATEMENT OF WORD COUNT

Section	Main Text (excluding abstract)	Abstract, references, tables, figures & appendices	Total
Thesis Abstract	300	-	300
Section One: Systematic Literature Review	7,979	8,051	16,030
Section Two: Empirical Research Paper	7,000	6,323	13,323
Section Three: Critical Appraisal	3,978	1,013	4,991
Section Four: Ethics Documentation	-	11,155	11,155
Section Five: Additional Appendices	-	2,521	2,521
Total	19,245	29,063	48,308

THESIS ABSTRACT

Both historical epidemics and the current 2019 novel coronavirus pandemic (COVID-19) have placed tremendous pressure on nurses worldwide. Section One reports a qualitative systematic literature review and thematic synthesis exploring the lived experiences of nurses during historical epidemics and COVID-19. Five databases were searched at two time-points to locate both existing and emerging papers; sixteen studies across five distinct diseases met requirements for inclusion. Within an overarching meta-theme of "working on the battlefield", four themes were developed: 1) "under pressure and on the verge of collapse"; 2) "our duty was lifesaving"; 3) "wholehearted support" vs "stay away from here"; and 4) "everything was unknown and unknowable". Of novel importance is the overarching battlefield context. The experience(s) and impact(s) of a lack of choice in "volunteering" to care on infection wards are similarly novel. Qualitative research into nurses worldwide is needed; this synthesis is limited in generalisability as studies explored nurse experiences in majority-Eastern contexts.

Section Two reports an empirical study investigating the relationship between moral distress and compassion satisfaction in critical care-based nurses during COVID-19. The mediating effects of team psychological safety and emotional regulation on this relationship were also investigated. Participants (N = 276) completed an online survey comprising of self-report measures of these variables. Mediation analysis revealed that the impact of moral distress on compassion satisfaction can be partially attenuated by higher team psychological safety, which was related to increased compassion satisfaction among nurses in two mediation paths. Four additional COVID-19-specific root causes were synthesised: Restrictions on either caregiving or dignity due to infection control measures and/or workload, knowingly placing other staff into distressing and/or unfairly demanding situations, and taking responsibility for redeployed staff members' mistakes.

Section Three includes a reflection of the author's relationship to the research topic, and the relevance of the research to clinical psychology.

DECLARATION

This thesis presents research submitted in March 2021 as partial fulfilment of the requirements for the degree of Doctorate in Clinical Psychology at Lancaster University. The work in this thesis is the author's own, except where due reference is made. This research has not been submitted for any other academic award.

Name: Thomas Rozwaha

Date: 15/03/2021

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Section One: Systematic Literature Review

A systematic review and thematic synthesis of nurse experiences during emerging infectious disease epidemics

Abstract: 365 words (excluding key words, tweetable abstract, keywords, what is already known about the topic and what this paper adds)

Word count: 7979[1] words (excluding figures, tables, references, and appendices)

Thomas Rozwaha

Doctorate in Clinical Psychology

Division of Health Research, Faculty of Health and Medicine

Lancaster University

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All correspondence should be sent to:

Thomas Rozwaha

Doctorate in Clinical Psychology, Lancaster University

Email: t.rozwaha1@lancaster.ac.uk, Tel: 01524 592970

[1] Whilst over the journal word count, this meets requirements for DClinPsy thesis guidelines
[2] See Additional Appendices (*Appendix 5-A*) for submission guidelines

ABSTRACT

Background

As novel or existing respiratory infectious diseases spread and approach/gain epidemic status – "emerging epidemics" – they place extraordinary demands on both whole-hospital systems and the people working within them. Over the last 20 years, there have been numerous emerging respiratory infectious disease epidemics, including Severe Acute Respiratory Syndrome, Middle Eastern Respiratory Syndrome, and Swine and Avian Influenza. Most recently, the 2019 novel coronavirus was declared a global pandemic (from former epidemic status) in March 2020. Nursing during these emerging epidemics is a unique context, with distinct challenges and long-term consequences.

Objective

To synthesise the lived experience of nurses providing direct care in a hospital setting to patients with an emerging epidemic infectious disease.

Design

A two-stage qualitative systematic review and thematic synthesis, following the ENTREQ framework for qualitative reviews.

Data Sources

A structured search using Academic Search Ultimate, CINAHL, MEDLINE Complete, PUBMED and PsycINFO was conducted. Articles were first extracted in April 2020; a second search was conducted in August 2020 to retrieve emerging evidence.

Methods

Qualitative articles meeting the inclusion criteria were included regardless of methodology. Papers were assessed for reporting transparency using the Standards for

Reporting Qualitative Reviews checklist. Thematic synthesis was conducted on the results sections of included articles according to Thomas and Harden's (2007) approach.

Results

Sixteen qualitative studies exploring the lived experience of 438 nurses were included in the review. Four themes were developed within an overarching meta-theme, which represented the context of "working on the battlefield" during the emerging epidemic. The four themes are: 1) "under pressure and on the verge of collapse"; 2) "our duty was lifesaving"; 3) "wholehearted support" vs "stay away from here"; and 4) "everything was unknown and unknowable".

Conclusion

This study is the first to explore the lived experiences of nurses across both historical epidemics and the current threat of the 2019 novel coronavirus. This systematic review outlines the issues arising from placing nurses within a "hero narrative", the ambivalence between choosing or being chosen to volunteer, and the importance of team cohesion and organisational communication. The research base would benefit from documenting the lived experiences of nurses worldwide to inform both location- and culture-specific need, as well as potential global areas of concern.

Key words

COVID-19; pandemics; epidemics; nurse experiences; qualitative systematic review; thematic synthesis; emerging infectious diseases.

Tweetable Abstract

This review explores experiences of "battlefield" nursing during epi/pandemics, and themes of pressure, duty, social support & uncertainty.

What is already known about the topic?

- Emerging respiratory infectious disease epidemics lead to a surge in demand in hospitals; given their method of transmission, infection control-related changes to care provision are restrictive and detract from routine care.
- Healthcare professionals are at a high risk of mental health difficulties both during and following emerging epidemics, these include anxiety, post-traumatic stress and work-related burnout.
- In addition to distress arising from increased job demand, uncertainty in treatment approach(es), and a lack of personal protective equipment, non-work-specific distress also arises from uncertainties including a fear of catching or spreading the infection.

What this paper adds

- This review is the first to synthesise experiences of historical epidemics together with emerging evidence from the 2019 novel coronavirus pandemic.
- The overarching context of nursing during emerging epidemics as "working on the battlefield" is novel; a societal narrative of nurses as "heroes" in this battle is problematic for nurse well-being.
- This synthesis highlights that nurses may feel coerced into volunteering to work in infection wards. This may be associated with heightened levels of post-traumatic stress, and builds on prior reviews suggesting an "eagerness" to volunteer.

INTRODUCTION

There have been numerous respiratory infectious diseases which have approached or gained epidemic status ("emerging epidemics", hereafter) over the last three decades, including Severe Acute Respiratory Syndrome (SARS), Middle Eastern Respiratory Syndrome (MERS), and Swine Influenza, as well as the emerging threat(s) of Avian Influenza in 1997 and again in the mid-2000's (Bradley and Bryan, 2019). The globe is currently under threat of a new coronavirus (SARS-CoV-2) which causes coronavirus disease (COVID-19), an emerging epidemic which has become a worldwide respiratory infectious disease pandemic since it was first reported toward the end of 2019 (Wang et al., 2020). Many who have tested positive for these diseases need inpatient treatment and direct care from healthcare professionals (Murdoch and Howie, 2018).

Both emerging and established epidemics place extraordinary demands on whole-hospital systems and the people working within them (Bloom and Cadarette, 2019, Gavin et al., 2020). Respiratory infectious diseases outbreaks are particularly challenging, given their mechanism of spread via droplet and/or interpersonal contact (Stone et al., 2004); this transmission may (threaten to) overwhelm healthcare services. Additionally, respiratory transmission has a significant impact on both the method(s) and experience(s) of medical care provision from healthcare professionals, including infection control protocols and the use of personal protective equipment (PPE), which are experienced as restrictive and detract from routine care (Lam et al., 2016). Despite a risk of infection, nurses in particular are required to spend extended periods of time in close proximity to these patients, placing them at higher risk of exposure. Nurses often have sparse experience in caring for people with respiratory infectious diseases, but may be required to provide specialist, direct care in the context of an emerging epidemic. These experiences have in common the thread of uncertainty, which has been noted in emerging qualitative reviews of the area (Fernandez et al., 2020).

As part of their day-to-day work, nurses are trained to deal with illness and death (to varying extents), and have been considered "psychologically resilient" to these aspects of the role (Brooks et al., 2020). Despite this, the impacts of workplace-related stress among nurses have been well-documented; nurses experience higher levels of stress-related burnout relative to other healthcare professionals – this is in part related to excessive workload (Chang et al., 2005, Khamisa et al., 2013, Nolte et al., 2017).

In addition, both historical and recent evidence suggests that nursing during emerging epidemics is associated with increased job demand and heightened moral distress (Borges et al., 2020, Shiao et al., 2007). Morally distressing experiences are defined as those where the experience of a moral event is directly causally related to psychological distress; these lead to similar outcomes of emotional exhaustion and burnout (Oh and Gastmans, 2015, Morley et al., 2019). Emerging epidemics are also associated with increased non-work-specific psychological distress amongst healthcare professionals; findings suggest a fear of personal contagion, of placing friends and family members at risk by association, and of quarantine (Brooks et al., 2018, Ives et al., 2009, Nickell et al., 2004). Shortages of (good-quality) PPE across multiple emerging epidemics have added to fears of personal contagion (Houghton et al., 2020).

In response to the COVID-19 pandemic, researchers have rapidly synthesised existing research exploring the experiences of both healthcare professionals (Billings et al., 2020, Preti et al., 2020, Stuijfzand et al., 2020) and nurses in particular (Al Thobaity and Alshammari, 2020, Fernandez et al., 2020) during epidemic events. Quantitative reviews suggest that healthcare professionals are at a heightened risk of mental health difficulties. Of note, 11 – 73.4% of healthcare professionals reported post-traumatic stress symptoms during epidemic outbreaks (Preti et al., 2020); Allen et al., (2020) suggest a pooled estimate of 23.4%. Stuijfzand et al., 2020 found that ~40% of those experiencing post-traumatic stress

symptoms during an outbreak reported consistently high symptoms three years later. High levels of anxiety, depression, insomnia, and burnout were also reported during emerging epidemics; Preti et al. (2020) note that 17.3 – 75.3% of professionals reported "general psychiatric symptoms". Unsurprisingly, 18.1-80.1% of professionals reported similarly high levels of work-related stress.

Nurse-specific reviews published thus far have been qualitative in approach; Fernandez et al.'s (2020) recent synthesis of pre-COVID-19 studies echo aforementioned findings, detailing a concern for personal and family safety, fears related to a lack of PPE and/or changing guidelines, and feelings of uncertainty. A qualitative review of early COVID-19-specific articles (i.e. before April 2020) explored issues affecting nurses on the frontline, raising similar concerns around shortages of PPE and fears of infection (Al Thobaity and Alshammari, 2020).

No review to date has synthesised experiences of nurses during both historical epidemics and the current COVID-19 pandemic. Further, Al Thobaity and Alshammari's (2020) findings were not specifically drawn from qualitative studies exploring the lived experiences of frontline nurses. Many were instead viewpoints or reflections from authors (see e.g. Newby et al., 2020; Gharebaghi and Heidary, 2020). Further, one of the articles included has since been retracted as the content was not first-hand, as the authors had originally claimed (Zeng and Zhen, 2020). Exploration of nurses' lived experiences during these events is vital in understanding common experiences across time, location, and disease type; this approach offers a better representation of nurse experiences relative to viewpoint articles not employing analysis of qualitative findings. Findings may aid preparedness and inform strategy to reduce nurse distress during future emerging epidemics, which have been considered "inevitable" by epidemiologists (Roche et al., 2020).

Review Objective

This review aims to synthesise the lived experiences of nurses working directly with patients during an emerging epidemic, drawing on both literature from historical epidemics and the current COVID-19 pandemic.

METHODS

Design

A two-stage systematic review was undertaken to synthesize existing and emerging experiences of acute nurses during an emerging respiratory infectious disease epidemic. The PRISMA systematic review reporting checklist (Moher et al., 2009) and ENTREQ guidelines for enhancing transparency in reporting the synthesis of qualitative research (Tong et al., 2012) were used as a basis for reporting the review. The protocol for this review was designed in March, 2020 and published on Prospero in April, 2020 (PROSPERO, 2020; CRD42020177331).

Search Strategy

Following a scoping search, five databases (Academic Search Ultimate, CINAHL, MEDLINE Complete, PUBMED and PsycINFO) were used to capture relevant literature. All used identical search strings searched in titles and/or abstracts constructed using the PICOS approach (Tacconelli, 2010). This was informed by articles identified in the scoping search. A structured search strategy aimed to locate articles relevant to: the population (P), nurses; the intervention (I), nursing during emerging respiratory infectious disease epidemic; and the study design (S), articles employing qualitative methodologies. Use of database-specific keywords (e.g. MeSH headings, key terms) further broadened article capture. Search strings for comparison (C) and outcome (O) were not within the scope of the review. The search strategy was reviewed by a Lancaster University librarian.

The scoping search gauged the extent of published literature in the area; sufficient publications existed to explore nurse experiences alone. The final search strategy is detailed in *Appendix 1-A.* Articles were first searched on 31/04/2020 ("stage one"). A follow-up search was conducted on 26/08/2020 ("stage two") to locate emerging articles, likely related to experiences during COVID-19. Extracted articles were compiled in Endnote X9 for screening.

Whilst Ebola Virus Disease is not categorized as a respiratory infectious disease, this was included as concerns were raised about potential respiratory transmission during the emerging crisis – appropriately cautious measures were therefore taken during medical care provision (MacIntyre et al., 2014). Lived experiences may thus be similar. Ebola has been included by other authors in other reviews exploring emerging epidemics (see e.g. Billings et al., 2020, Shorey and Chan, 2020).

Inclusion and Exclusion Criteria

Inclusion criteria.

1. A qualitative or mixed-methods study,
2. Exploring the experience(s) of nurses working directly with patients in hospital settings during emerging epi/pandemic respiratory infectious disease outbreaks,
3. Written in (or translated into) English,
4. Published in a peer-reviewed journal.

Exclusion criteria.

1. Published prior to the onset of the emerging Avian Influenza (H5N1) pandemic of 1997, as developments in nursing technology, ethics, and practice worldwide may decontextualize historical from current realities (Hawryluck and Crippen, 2002, Crocker, 2007, Vanderspank, 2014).

2. Focused on experiences of nurses who routinely volunteer to support crises (e.g. as part of Médecins Sans Frontières/Doctors Without Borders),
3. Including other healthcare professionals and/or nurses not engaging in direct care with patients.

Review Process

In each phase, articles were collated and duplicates were removed. Remaining articles were screened and excluded following review of the title, abstract and the full text. Reference lists of articles were screened for additional records. An adapted PRISMA diagram (*Figure 1*) details this process.

[FIGURE 1 AROUND HERE]

"Quality Appraisal"

Structured approaches to "quality" appraisal of qualitative articles are promoted. However, debate about the feasibility of appraisal is ongoing, particularly given the inherent subjectivity underlying qualitative appraisal. Recent research also questions whether quality appraisal assesses "quality" so much as simply assessing reporting transparency (Thorne, 2017). Articles were thus not excluded on this basis alone, as they could still describe the experiences this review aims to synthesize. This is in line with growing trends in qualitative meta-research (Bondas and Hall, 2007). Included articles were appraised for transparency using the 21-item Standards for Reporting Qualitative Research (SRQR) checklist (O'Brien et al., 2014). Following appraisal of stage one articles, a subset (n=8) were blindly scored by an independent reviewer with qualitative experience (a third-year Lancaster University DClinPsy student). Differences were discussed and resolved; this process is outlined in Appendix 1-B. These discussions informed the stage two quality appraisal.

Appraisal of reporting transparency.

Using the SRQR checklist, articles were appraised for reporting transparency. Each criterion was allocated a score (Yes = 1, No = 0), giving a total score of 21 for each paper. Tan et al. (2020) and Kackin et al. (2020) achieved a score of 100%. An example checklist can be found in *Appendix 1-C*. Reporting transparency scores are collated in *Table 1*.

[TABLE 1 AROUND HERE]

Data Extraction and Synthesis

Thomas & Harden's (2008) thematic synthesis methodology was used within an interpretive-constructivist epistemology (Morrow, 2005, Ponterotto, 2005), acknowledging that reality is not objective, but constructed in the mind(s) of the individual(s) according to their historical-social realities (Dilthey, 2012, Hansen, 2004). Articles' results sections were read and re-read to facilitate immersion into the data, after which codes were extracted. All text in the results sections of included articles constituted "the data", consisting either of verbatim quotations from study participants or reported findings which were clearly supported in text. NVivo was used throughout this process, the use of which has been suggested to enhance the transparency of qualitative syntheses (Houghton et al., 2017).

As coding took place, data were provisionally compared and grouped into a hierarchical structure to generate initial descriptive themes. Emerging findings were discussed in a supervision meeting with all members of the research team. The content and inter-relation of themes were reviewed, expanded, merged and/or collapsed as article-by-article coding took place to better reflect emerging trends – similar to the "constant comparison" method utilized in grounded theory approaches (Walker and Myrick, 2006).

Care was taken to remain wary of the (thematic) structure and content of individual studies, with the aim of reducing any potential theme-ing bias emerging from re-coding pre-themed data – this was reflected on both during and after the coding process. During and

following synthesis, “analytical” themes were developed which transcended the descriptive content of each study, similar to third-order themes in meta-ethnographic approaches to synthesis (Barnett-Page and Thomas, 2009).

RESULTS

Study Characteristics

Findings from 16 qualitative studies involving 438 nurses were included in the review (*Table 2*). Of these, 200 nurses were recruited in a single study (Shih et al., 2007). Studies were published between 2005 (Chung et al., 2005), and 2020 (Zhang et al., 2020). Phenomenological and content analyses were the primary study designs employed. Seven studies were conducted during the COVID-19 pandemic (Gao et al., 2020, He et al., 2020, Liu et al., 2020, Sun et al., 2020, Tan et al., 2020, Yin and Zeng, 2020, Zhang et al., 2020), four during the SARS epidemic (Chiang et al., 2007, Chung et al., 2005, Liu and Liehr, 2009, Shih et al., 2007), three during the MERS epidemic (Kang et al., 2018, Kim, 2018, Lee et al., 2020), one during the Avian Influenza epidemic (Lam and Hung, 2013), and one during the Ebola Virus Disease epidemic (Locsin et al., 2009). Studies took place almost exclusively in East Asian countries; one study was conducted in Uganda (Locsin et al., 2009).

Quality wasn’t explicitly assessed as part of the review. However, of note: the impact researcher characteristics were seldom considered, and few studies utilised consensus agreement with participants to ensure theme accuracy. Overall, a focus on synthesis of a broad selection of research was elected in favour of a limited subset of articles given the paucity of the overall evidence base at this time.

[TABLE 2 AROUND HERE]

Thematic Synthesis

All articles were included in the thematic synthesis. Four themes were developed within an overarching meta-theme, which represented the context of *"working on the battlefield"* (unnamed participant; He et al., 2020) during the emerging epidemic. These four themes are: 1) *"under pressure and on the verge of collapse"* (Participant N10; Tan et al., 2020), detailing the experience of high-intensity workload, new infection-related demands and coping; 2) *"our duty was lifesaving"* (participant N2; Liu et al., 2020), exploring perceptions of what it means to be a nurse in the context of an epidemic; 3) *"wholehearted support" vs "stay away from here"* (participants 5 and 4 respectively; Kim, 2018), describing experiences of in-hospital interpersonal and organisational support, external support and stigma; and 4) *"everything was unknown and unknowable"* (participant "Leung"; Chiang et al., 2007), representing experiences of uncertainty, unfamiliarity and fear of infection. The developed themes can be viewed diagrammatically in *Figure 2.*

[FIGURE 2 AROUND HERE]

Meta-theme: "Working on the battlefield"

The overarching meta-theme of "working on the battlefield" was developed in the context of the use of military terminology and metaphor across several studies. Three main sub-themes were developed: Nurses as soldiers, peers as comrades, and PPE as armour.

We pledged that we will always guard the sick and will never return until the battle against the epidemic is won." (unnamed participant, He et al., 2020).

Nurses as soldiers. Nurses detailed an intention to "fight" a battle with the virus, describing themselves akin to soldiers on the frontline of a battle (Chung et al., 2005, He et al., 2020, Lee et al., 2020, Liu and Liehr, 2009, Locsin et al., 2009, Sun et al., 2020). This was echoed in the local and national media, with journalists referring to them as heroes (Liu et al., 2020, Sun et al., 2020, Zhang et al., 2020). In contrast, hesitation toward volunteering

to fight was experienced as being akin to "traitors or deserters from the war" (unnamed participant, Shih et al, 2007).

Peers as comrades. There were expressions of unity from nurses, who described that the "staff of all ranks are united" (unnamed participant, He et al., 2020) as soldiers united in a common effort against the virus (Chung et al., 2005, He et al., 2020, Lee et al., 2020, Liu et al., 2020, Liu and Liehr, 2009, Sun et al., 2020).

If you were a soldier, you would go to the front line and attend to the war. We, as a nurse, should be just like the soldier…it was just like the friendship on the battlefield." (Unnamed participant, Liu and Liehr, 2009).

This unity may have been particularly strong given that healthcare professionals from non-infectious areas and wider society treated these nurses as "the enemy" – as if they were potential hosts of the virus themselves (Chiang et al., 2007, Kim, 2018, Lee et al., 2020, Locsin et al., 2009). One study referred specifically to doctors working in infectious areas, and how they were "just watching" through the protective glass, and not intervening when nurses providing direct care needed support so as to "minimise the number of medical practitioners in contact" (Participant H; Lee et al., 2020).

PPE as armour. PPE was central for protection from the virus. Nurses spoke metaphorically about the "hard armour" (Lee et al., 2020) provided by PPE in the fight against the virus. Most explored their feelings of relative safety which emerged from wearing and/or seeing others wearing PPE (Kim, 2018, Lee et al., 2020, Sun et al., 2020, Yin and Zeng, 2020, Zhang et al., 2020), though many others noted fears of vulnerability that PPE may provide incomplete protection, or else that they did not have sufficient PPE available (Kang et al., 2018, Liu et al., 2020, He et al., 2020, Lee and Liehr, 2009, Shih et al., 2007, Sun et al., 2020, Tan et al., 2020, Yin and Zeng, 2020, Zhang et al., 2020).

Theme 1: "Under pressure and on the verge of collapse"

This first theme was developed from the physical and psychological pressures nurses faced. This was in the context of increasing infection-specific demands and restrictions, increased workload, understaffing, and the felt impacts/experiences of wearing PPE. This theme also explores the methods nurses employed to manage their well-being in the context of these pressures.

Infection-related demands. Nurses reported increased infection-related demand around administrative tasks, swabbing, training redeployed staff, implementing procedures, and providing infection-related education to patients (Chiang et al., 2007, Kang et al., 2018, Lam and Hung, 2013, Shih et al., 2007, Tan et al., 2020). Additional non-nursing duties including housekeeping, cleaning, and providing advice to workers remodelling non-specialist wards also increased nurses demands (He et al., 2020, Shih et al., 2007, Kim, 2018). These demands were burdensome for nurses already experiencing increased workload due to patient volume and medical complexity.

> *I was totally exhausted after discussing this in several calls and taking care of patients in addition to constantly being bothered by the administrative department about the remodeling situation. I just wanted to cry."* (Unnamed participant, Shih et al., 2007).

Nurses reported anxiety, loneliness, and feelings of abandonment when working in isolation rooms for long periods (Sun et al., 2020, Gao et al., 2020, Kim, 2018). In addition, they described moral distress arising from restricting visits from family members, and witnessing what they perceived to be undignified deaths in the context of infection control procedures (Kang et al., 2018, Kim, 2018, Lee et al., 2020).

Impact(s) of PPE. The physical and psychological impact(s) of PPE were mentioned across all studies. Concerns arose from a shortage of good quality PPE in hospitals, and the

risk this posed to nurse health (He et al., 2020, Lee et al., 2020, Shih et al., 2007, Sun et al., 2020, Tan et al., 2020, Yin and Zeng, 2020, Zhang et al., 2020). PPE shortages meant nurses were required to wear available PPE for extended periods, neglecting their own physical needs (such as drinking, eating and using the bathroom) in the process (He et al., 2020, Gao et al., 2020, Liu et al., 2020, Sun et al., 2020, Tan et al., 2020). Some participants reported being given adult diapers to relieve themselves so as not to sacrifice additional PPE (Gao et al., 2020, Sun et al., 2020).

If I wanted to go to the washroom, I had to take off the PPE and put them on again. So I decided not to drink and dehydrated my body. I didn't know that PPE could make me sweat so much. I was always thirsty, and it was too hard to endure." (Participant 6; Kim, 2018)

PPE was uniformly described as uncomfortable, exhausting and "not user-friendly" (unnamed participant; Lam and Hung, 2013). These "spacesuit-like clothes" (unnamed participant; Lee et al., 2020) were heavy, uncomfortable, and painful; they restricted breathing and vision; and led to physical consequences, including headaches and excessive sweating (Chung et al., 2005, Gao et al., 2020, He et al., 2020, Kang et al., 2018, Kim, 2018, Lam and Hung, 2013, Lee et al., 2020, Liu and Liehr, 2009, Liu et al., 2020, Sun et al., 2020, Zhang et al., 2020). Some of these physical consequences were reminiscent of symptoms of the very infection nurses were aiming to protect themselves from. PPE use also affected dexterity, increasing the difficulty of performing nursing tasks (He et al., 2020, Kang et al., 2018, Lam and Hung, 2013, Lee et al., 2020, Liu and Liehr, 2009, Liu et al., 2020, Zhang et al., 2020), and made communication with patients and professionals more difficult (Chung et al., 2005, He et al., 2020, Kang et al., 2018, Lam and Hung, 2013).

"The body is airtight, breathing is a little difficult, the goggles still fog although we tried ways to avoid it. After putting on PPE, I felt like I am wrapped into a Zongzi (rice dumpling)

and walked clumsily. We all got soaked after a shift. All those situations seriously affected our performance." (Unnamed participant; He et al., 2020)

Workload. The simultaneous pressures of understaffing and increased workload were interlinked and discussed extensively. Short staffing was explicitly mentioned in several papers (Gao et al., 2020, Kang et al., 2018, Lam and Hung, 2013, Sun et al., 2020, Tan et al., 2020). Alongside additional infection-related demands, nurses experienced a higher volume of patients who had an overall greater level of clinical need (Chung et al., 2005, Gao et al., 2020, Kang et al., 2018, Lam and Hung, 2013, Sun et al., 2020, Tan et al., 2020). Others noted that whilst additional staff were provided, they lacked the professional skills needed to work competently within the team (Chung et al., 2005, Lam and Hung, 2013).

"Workload increased, but there was no reallocation of staff. Even so, they only provide us 'man', but with no 'power'." (Unnamed participant; Lam and Hung, 2013)

In addition to a shortage of staff, nurses reported a shortage of necessary equipment, medication, and/or resources to deliver adequate care (Lam and Hung, 2013, Liu and Liehr, 2009, Shih et al., 2007, Tan et al., 2020). Nurses were stressed and exhausted in relation to these factors, especially when "caring for patients [was] already difficult" (unnamed participant; Kang et al., 2018; Gao et al., 2020, Kim, 2018, Lam and Hung, 2013, Locsin et al., 2009, Sun et al., 2020). As one nurse noted: "we couldn't get enough rest" (participant 3, Kim, 2018) and nurses often had to work overtime (Kang et al., 2018, Locsin et al., 2009, Sun et al., 2020).

Intrapersonal methods of coping. Nurses used a variety of active and passive emotional regulation strategies. These strategies included: emotional suppression; emotional expression; diary writing; breathing exercises, mindfulness or meditation; exercise; wishful thinking; adopting a present-moment focus; and immersion in work-related duties (Chiang et

al., 2008, Liu and Liehr, 2009, Sun et al., 2020). Despite this, nurses reported poor mental health, including anxiety, depression, insomnia, and burnout (Chung et al., 2005, Kang et al., 2018, Kim, 2018, Lee et al., 2020, Liu et al., 2020, Locsin et al., 2009, Zhang et al., 2020). Of note, nurses in two studies reported "disordered" sleeping following working in infection wards, but were ambivalent about whether this was in relation to post-traumatic stress (Kim, 2018, Liu et al., 2020).

"After taking care of an MERS-CoV patient, my sleep disorder worsened severely. I couldn't sleep for more than 2 hours … This went on for more than a year … In my personal opinion, I didn't think it was a trauma, but whatever the reason was, I wasn't able to sleep well."

(Participant 1; Kim, 2018)

Theme 2: "Our duty was lifesaving"

This theme was developed in response to nurses exploring their identity (and subsequent actions taken) as a nurse, particularly in the context of an epidemic or pandemic. An awareness of the opposing poles of self-preservation vs exposing oneself to risk (by nursing patients) was present throughout this theme.

"In the face of the virus, feeling scared and wanting to escape from it is the instinct of people, but rushing to the front line is the calling of our professional spirit!" (Unnamed participant; He et al., 2020).

Responsibility to care. Nurses described a professional and moral responsibility to care in the context of an epidemic, despite the obvious risk to self. Twelve studies referred to responsibility being driven by an awareness that "if we don't nurse these infected patients who else will?" (unnamed participant; Locsin et al., 2009) and that "if I don't catch the disease and fall sick, I could still go to work the next day. I have saved one life already." (Participant "Lee"; Chung et al., 2005; Chiang et al., 2007, He et al., 2020, Kim, 2018, Lam

and Hung, 2013, Lee et al., 2020, Liu and Liehr, 2009, Liu et al., 2020, Locsin et al., 2009, Sun et al., 2020, Tan et al., 2020, Zhang et al., 2020). Two papers described this attitude in relation to the values associated with being a Communist party member (Liu and Liehr, 2009, Liu et al., 2020).

Nurses also discussed the responsibility (and the desire) to do the "little things … no matter how small it looked like" (unnamed participant; He et al., 2020), rather than simply providing nursing care to patients (Chiang et al., 2007, Chung et al., 2005, He et al., 2020, Locsin et al., 2009). "Little things" included advocacy, reassurance, and being human when family could not be present. The latter was particularly important when patients were alone and at the end of their life.

"It wasn't just caring for their physical and psychological needs, but also the spiritual needs. It meant that you might be last person the patient will ever talk to in his life, so being there for them was very important." (Unnamed participant; Locsin et al., 2009).

The process of volunteering to care in infection wards (including critical care) was also explored across those studies where nurses were not already working on said wards. Nurses volunteered to care because of: a felt responsibility, recommendations from friends or seniors, following attending a recruitment event, or so that other colleagues might be spared (He et al., 2020, Kim, 2018, Lam and Hung, 2013, Lee et al., 2020, Sun et al., 2020). For some, this was done with "no psychological burden" (unnamed participant; Sun et al., 2020; Lee et al., 2020), but for most, volunteering came with fear, apprehension and anxiety (Kim, 2018, Lee et al., 2020, Sun et al., 2020). As with nurses' neglect for their own physical needs when using PPE, there was a sense of nurses putting their own needs behind the needs of their patients. Not all nurses volunteered, and of those that did, some felt that they were

coerced into volunteering or else "had to participate compulsorily" (Participant 10; Kim, 2018; Chiang et al., 2007, Lee et al., 2020).

"It was a shame to say "no" too strongly, so I said reticently, "If nobody says yes, I will go." Who would be willing to go to a dangerous place? I strongly didn't want to be involved, but no one was willing. I couldn't help it, and I was upset." (Participant 6; Kim, 2018)

A sense of self as a nurse. Nurses described processes of reflection around their sense of self as a nurse. These were largely in the context of caring for infected patients and the associated risk to self. Feelings of reluctance to care were associated with shame, self-blame and self-questioning (Chiang et al., 2007, Lee et al., 2020, Kim, 2018). These reflections were also borne from observing other nurses, as one nurse said:

"I could not believe how slowly the nurse put on her gown when faced with a SARS patient who was short of breath … 'Which action is more commendable [for a nurse]: to protect my own life or to display professionalism?" (Unnamed participant; Chiang et al., 2007).

In contrast, reflecting on the process of caring for patients was a source of pride, appreciation, and a deeper appreciation of the role of a nurse, and by extension, themselves (Chung et al., 2005, Kim, 2018, Lee et al., 2020, Sun et al., 2020).

Theme 3: "Wholehearted support" vs "stay away from here"

This theme was developed from nurses' felt experiences of support and stigma from others. This spans: direct experiences from patients, work colleagues, and their friends and family; and indirect experiences from their hospital organisation, the media, and the wider public.

Connecting with patients. There was a strong sense of advocacy from nurses in relation to their patients – the process of giving support. Nurses described having "all the

time in the world" for patients (Participant "Lee"; Chung et al., 2005) to provide compassionate care, from medical intervention to the aforementioned "little things" (Chung et al., 2005, He et al., 2020, Kang et al., 2018, Kim, 2018), though this was sometimes perceived as "not enough" (Liu and Liehr, 2009, Kim, 2018). In turn, nurses described positive emotions and support gained from patients and their families, who expressed their gratitude and thanks (Chung et al., 2005, He et al., 2020, Lee et al., 2020, Shih et al., 2007, Sun et al., 2020, Zhang et al., 2020).

"Every time I take care of the patients, they will take the initiative to put on a mask. I feel particularly safe in my heart. After treatment, they will keep saying 'thank you' and it feels good." (Unnamed participant; Sun et al., 2020).

Nurses also described an enhanced emotional connection with patients and a felt sense that "in our eyes, they are our compatriots" (Unnamed participant; He et al., 2020); nurses were travelling alongside patients (Chung et al., 2005, He et al., 2020, Lee et al., 2020, Locsin et al., 2009). This emotional connection was described as a "put[ting] myself in his or her shoes" (Participant "Bee"; Chung et al., 2005). Several described how this connection was facilitated by both the real risk of nurses being struck by infection themselves, and by having seen and treated colleagues who had already been struck (Chiang et al., 2007, Chung et al., 2005, He et al., 2020, Kim, 2018, Lee et al., 2020, Liu and Liehr, 2009, Locsin et al., 2009).

"On finishing quarantine and being back at work, I had definitely experienced the situation as a SARS patient and became more tolerant towards patient non-compliance, which reflects how frightened, lonely, and helpless the patient is." (Unnamed participant; Chiang et al., 2007).

In-hospital support. Despite participants often being redeployed to other wards and hospitals, nurses detailed the positive social support received from peers (Chiang et al., 2007, Chung et al., 2005, Gao et al., 2020, He et al., 2020, Kang et al., 2018, Kim, 2018, Lam and Hung, 2013, Lee et al., 2020, Liu and Liehr, 2009, Shih et al., 2007, Sun et al., 2020), described as "being in the same boat" (unnamed participant; Chiang et al., 2007). Positive social support encompasses collaboration, cohesiveness, communication, and compassion with/from other staff, leading to increased teamwork, increased work efficiency and reduced distress. Messaging apps supported communication between shifts.

> *"I appreciated my nursing colleagues; we supported each other every day and shared all our successful and unsuccessful experiences."* (Unnamed participant; Shih et al., 2007)

For others, the rapid change into an unfamiliar work environment (with unfamiliar colleagues) was met with anxiety, apprehension and ambivalence, and where nurses missed old colleagues and described a "fear of saying what I worry [about] in front of others" (Unnamed participant; He et al., 2020; Gao et al., 2020, Yin and Zeng., 2020, Zhang et al., 2020).

The importance of communication from ward and hospital leaders was discussed as a necessary support alongside offered material rewards for working with infected patients. Open, communicative, and present leaders were praised; in contrast, a lack of engagement was criticised by nurses who felt this was a clear need (Gao et al., 2020, He et al., 2020, Liu and Liehr, 2009, Yin and Zeng., 2020, Zhang et al., 2020). Hospital leaders often set up a reward system for volunteering nurses. There were stark differences in the rewards offered and the implementation of rewards offered across studies. Some were met positively (Kang et al., 2018, Lam and Hung, 2013, Sun et al., 2020), but the financial rewards in particular were met with scrutiny (Kim, 2018, Shih et al., 2007). as one nurse reflected:

"I felt that I was abandoned after my work was done. I didn't volunteer because of the reward. But it was totally different from what I heard when I volunteered. In my opinion, no one would volunteer for this much benefit when a similar situation happens next time. Many of those who work in the infection ward would quit." (Participant 3; Kim, 2018)

External support. Nurses' interpersonal relationships with family were both a source of support and strain. Emotional support from family and friends were vital for nurses (Kim, 2018, Lee et al., 2020, Shih et al., 2007, Sun et al., 2020, Yin and Zeng., 2020). However, nurses were aware that family members would be distressed if they knew they were being redeployed; many chose to hide this from others and self-isolate emotionally, as well as physically (Liu and Liehr, 2009, Shih et al., 2007, Sun et al., 2020). Of those who told family members, many were met with objection, confusion, distress and/or anger (He et al., 2020, Lee et al., 2020, Locsin et al., 2009, Sun et al., 2020).

Stigma. In contrast to interpersonal support, nurses also experienced stigma from other healthcare professionals, neighbours, and the general public. Colleagues on their former wards were disapproving or negative about their decision to volunteer (Kang et al., 2018, Locsin et al., 2009, Shih et al., 2007). Healthcare professionals elsewhere in the hospital treated nurses as if they were carriers of the virus, who avoided or criticised them (Kim, 2018, Lee et al., 2020, Locsin et al., 2009, Shih et al., 2007). Fear from the general public also lead to discrimination, avoidance, and a refusal to interact with both nurses and their family (Chiang et al., 2007, Kim, 2018, Lee et al., 2020).

One day, my child was playing with a friend on the playground. A mother who is close to us blamed her child for playing with my child and took him/her away. I was very bitter at that time, and I was sorry for my child. Because of me…. I was afraid simply because my child would get hurt." (Participant O; Lee et al., 2020)

Theme 4: "Everything was unknown and unknowable"

This final theme represented experiences of uncertainty, unfamiliarity and fear of infection felt throughout the epidemic or pandemic.

Becoming "infected". Nurses' concerns about infection were three-fold and were discussed across studies. Given the risks of infection and subsequent mortality, nurses were fearful about catching the infection from others, a fear which was heightened due to uncertainties about PPE effectiveness, method of spread and incubation period – and verified from an awareness of colleagues who had caught the infection.

Associated with this uncertainty was the fear that they would spread the infection to others, whether that be family, friends, colleagues, or other patients (Chiang et al., 2007, Chung et al., 2005, Kang et al., 2018, Kim, 2018, Lam and Hung, 2013, Liu et al., 2020, Shih et al., 2007, Sun et al., 2020, Tan et al., 2020, Yin and Zeng., 2020). Nurses were also concerned that loved ones would catch the infection from other sources as the epidemic grew (Chiang et al., 2007, He et al., 2020, Sun et al., 2020).

"… And the other thing is fear, fear of everything, of being infected, of infecting the people around you, and of an outbreak of the virus…" (Participant "N21"; Tan et al., 2020)

Unknown disease; unknown procedures. Uncertainty was ever-present at work. The overlapping issues of: a lack of knowledge about the infection, working in new areas, and unfamiliar/unknown treatment approaches led to considerable distress for nurses across all studies.

"At the start there were lots of rumours flying around the hospital: the causative agent was not well understood, a diagnostic test had not yet been developed, the mode of transmission was not well understood, no treatment regimen had been established, no immunization

existed and patients were dying. …We did not know how SARS was being spread at first, nor how infectious it was." (Participant "Fung"; Chung et al., 2005)

This uncertainty was exacerbated by unclear information and vague clinical guidelines, which were reported to change on a near-daily basis (Chung et al., 2005, Kang et al., 2018, Kim, 2018, Lam and Hung, 2013, Lee et al., 2020, Shih et al., 2007). Both the constant change of guidelines and the lack of clarity itself were distressing. This affected trust and confidence in available guidelines and increased uncertainty and anxiety. In one study, nurses reported that "every [sic] health professional had their own ideas", leading to unstandardised treatment approaches (Unnamed participant; Shih et al., 2007).

This uncertainty extended to appropriate PPE use, which was both unfamiliar and continually changing, leading nurses to wonder "is protective equipment effective and reliable?" (unnamed participant; He et al., 2020). This uncertainty led to doubts and was fear-inducing for nurses (Chung et al., 2005, Kang et al., 2018, Kim, 2018, Liu and Liehr, 2009, Liu et al., 2020, Shih et al., 2007, Tan et al., 2020).

Even though I was a healthcare provider, it was hard to trust the infection control protocol when it wasn't consistent. It would say "Do A" one day, which would be changed to "No! Do B" the next day. That made me frustrated because it could imply that method A wasn't safe." (Participant 11; Kim, 2018)

Overwhelming uncertainty. Uncertainty became overwhelming for nurses in the context of unmanageable workloads, helplessness, powerlessness, and a fear of death (Chung et al., 2005, He et al., 2020, Kang et al., 2018, Kim, 2018, Lam and Hung, 2013, Locsin et al., 2009, Shih et al., 2007, Sun et al., 2020, Tan et al., 2020, Zhang et al., 2020). For redeployed nurses, a lack of training on appropriate medical equipment and concerns about how to respond in the face of patient deterioration led to similar feelings (Lee et al., 2020, Liu et al.,

2020). Nurses in the Kang et al. (2018) study reported experiencing burnout when experiencing overwhelming uncertainty without knowledge of when it would end.

DISCUSSION

The results of this systematic review and thematic synthesis detail an overarching context of "working on the battlefield", within which sat four distinct themes: 1) "Under pressure and on the verge of collapse", representing the dimension of work-related demands during epi/pandemics; 2) "Our duty was lifesaving", representing the nursing identity, meaning(s) associated with nursing work, and the experience of volunteering (or not) to care; 3) "Wholehearted support" vs "stay away from here", representing the interpersonal dimension of nursing during an epi/pandemic; and 4) "Everything was unknown and unknowable", representing the dimension of fear, uncertainty and powerlessness.

This review adds to the evidence base the overarching context of "working on the battlefield". Whilst battlefield-like experiences were acknowledged in Fernandez et al. (2020), our findings highlight that war-based metaphors relating to fighting the virus, team spirit, and PPE are present across all themes. This review also highlights the importance ambivalence and distress arising from a reluctance to risk infection when choosing to (or being coerced into) volunteering, which builds upon Fernandez et al.'s (2020) findings of an "eagerness" to care and is similarly novel. Neither of these factors were mentioned by Al Thobaity and Alshammari (2020), though both these authors and Fernandez et al. (2020) acknowledge the physical and psychological impact(s) of work-related pressure, lack of PPE, and rapidly changing guidelines.

These findings represent a summary of the lived experiences of nurses working during an emerging epidemic, transcending any one infectious disease, location or time-point. Despite a timespan of nearly two decades across five distinct diseases, the stability of themes

across studies suggests consistent issues which are important to address when preparing for future epidemics. The findings developed in this review humanise and contextualise the lived experiences of nursing during emerging epidemics and is the first to synthesise historical epidemics and the current COVID-19 pandemic together in a single review.

On the "Battlefield"

Cipolletta and Ortu (2020) considered personal construct theory (Kelly, 2008) in the construction of war-based metaphors in the "battle" against COVID-19 which have several parallels with our own findings. Within a broader metaphor of war, doctors and nurses are the "heroes who are fighting in the trenches of the hospitals" (pg. 5, Cipolletta and Ortu, 2020); our synthesis revealed that this metaphor forms the context within which other themes sit. Cipolletta and Ortu (2020) relate the sense of uncertainty and powerlessness (arising in part from a lack of knowledge of treatment) sitting within this context as particularly hard to manage because of a perceived inability to live up to public honours of "super-heroism", leading to feelings of guilt, failure, and misplaced faith.

Other authors have raised similar concerns for the hero narrative in nursing, questioning the indirect impacts this may have on both public expectations for nursing and experiences of nurses themselves. Among these are unrealistic expectations (McAllister et al., 2020), including an expectation for self-sacrifice (Stokes-Parish et al., 2020) and expectations of taking on increasing (i.e. unsafe) levels of clinical risk (Einboden, 2020). These expectations feed into aspects of nursing during epidemics which this review has found to be most distressing, including unmanageable job demands and coercion into volunteering, again echoed in the literature (Cox, 2020). A recent discourse analysis also notes problematic implications around pay (as the act of heroism itself may be seen as a suitable reward), and

acts of “hero worship” taking place instead of long-term policy change around supporting nurses at work (Mohammed et al., 2021).

Volunteering: A Choice or a Duty?

The ever-present fear of catching or spreading the infection was mentioned across studies. This, alongside uncertainties and fear associated with a lack of adequate PPE, is largely consistent with other reviews exploring healthcare professionals’ experiences during epidemics (see e.g. Billings et al., 2020, Fernandez et al., 2020), as were the opposing poles of self-preservation and the commitment to help (despite infection-related risk). This commitment and duty to care for patients is integral to the very profession of nursing (Horton et al., 2007). Importantly, a congruence between personal and professional values is largely consistent in nurses across countries and cultures (Shahriari et al., 2013). Of the values delineated by Shahriari et al. (2013), the dimensions of altruism and responsibility are of particular importance in relation to the decision to nurse despite personal risks of both physical infection and psychological distress.

Altruistic commitment to care is, however, distinct from simply working in the face of risk; in two studies of healthcare workers during the SARS epidemic, 69.5 and 65.8% of staff (respectively) “altruistically accepted the risks associated with caring” (Koh et al., 2005, Wu et al., 2009). Interestingly, Wu et al., (2009) found that altruistic risk acceptance was psychologically protective; nurses who wilfully volunteered despite risk were at a lesser risk of post-traumatic stress-related difficulties. Whilst not measured in our review, similar variations toward risk acceptance were noted. For example, an unnamed participant in Locsin et al. (2009) reported being driven to care because “if we don’t nurse these infected patients who else will?”, whereas participant Lee (Chung et al., 2005) appeared more driven by an altruistic acceptance of risk, as they note: “if I don’t catch the disease and fall sick, I could

still go to work the next day. I have saved one life already." The contextual factors highlighted above extend the findings from Fernandez et al.'s (2020) earlier review, whose duty-related findings considered that nurses were uniformly eager to fulfil nursing-based roles despite infection risk.

Social Support

Social support was a substantial theme in the above synthesis. Whilst some intrapersonal methods of coping were noted, the benefits (and difficulties) associated with interpersonal connection and social communication were explored in greater depth in the studies synthesised. Workplace social support is important in both epidemic-related and general nursing; the importance of team-working and team cohesion have been reported to protect nurses from emotional exhaustion (Bagheri Hosseinabadi et al., 2019). The importance of feeling safe to speak up in teams, about both workplace-related and emotional (felt) difficulties, has also been highlighted in reducing compassion fatigue and increase workplace well-being (Section 2).

Alongside cohesion and communication in clinical teams, the importance of consistent, accurate and regular communication from ward-based and hospital leaders was considered important across studies synthesised. Both team working and open communication were identified as important factors contributing to "what nurses need in order to practice effectively", in a non-epidemic-specific review (Kowalski et al., 2020). This supports complementary guidance suggesting that effective formal and social communication at work (including from organisational leaders), and "positive, safe and supportive learning environments" are the most strongly supported facilitators of healthcare professionals' mental health during and following epidemics (Pollock et al., 2020). In support of this, a recent study during COVID-19 identified that communication from managers (around aspects of

volunteering) was the only significant predictor in nurses' willingness to volunteer in intensive care during COVID-19 (Lord et al., 2021).

Limitations and Future Directions

This study has synthesised the lived experiences of nurses across five distinct diseases and a period of 20 years. However, the generalisability of the findings may be limited by the study sample; 15 of the 16 included studies were conducted in Eastern Asia, one in Africa. No studies exploring experiences of nurses in other countries met the inclusion criteria for this review, and these findings may be questioned to have specific cultural bias. Furthermore, the author is a white, UK male from a non-nursing background, studying predominantly-female nurses from a majority-East Asian background. Whilst researchers should remain wary that culture is not necessarily country- or continent-dependent (Bourgeault et al., 2010), the experiential distance of the author from the subject being studied may have led to the privileging of some experiences over others. Despite this, findings from qualitative studies exploring healthcare professionals' experiences in Western locations detail similar experiences around duty to care, job-related pressures, and feelings of intra-team support (Aughterson et al., 2021, Honey and Wang, 2013, Nyashanu et al., 2020, Schroeder et al., 2020). This lends some initial support to the global generalisability of findings, though future primary research in these samples is encouraged.

The author was aware of this throughout synthesis and the methodology used was explicit in remaining as close to the original data as possible (as the authors appear to be from within the culture(s) of those they interviewed (Thomas and Harden, 2007). However, the author notes that this co-construction of meaning may have "Westernised" majority Eastern experiences in a context where these cannot be separated from their social, cultural and political context(s) (Heidegger, 1962, Lopez and Willis, 2004). This is of particular

importance in the generation of analytical themes from the codes, where contextually "close" codes may have been decontextualised and viewed through a Western lens.

CONCLUSION

This study is the first to explore the lived experiences across both historical (emerging) respiratory infectious disease epi/pandemics and the current COVID-19 pandemic. Four themes encompassing exceptional job-related pressure, duty to care, social support and ongoing uncertainty within an overarching context of "nursing on the battlefield" were developed from 16 primary studies encompassing 438 nurses. The hero narrative in nursing is associated with overworked and undersupported staff. The impacts of this are wide-ranging; realistic expectations for staff and acceptable working environments (e.g. proper staffing, manageable demands) require addressing as an organisational priority. Of novel importance is the distress arising from being coerced into volunteering (relative to choosing altruistically) and the potential impacts of coercion on long-term psychological health. Clear communication from ward-based and hospital leaders (a lack of which was criticised in our synthesis) is important in both increasing willingness to volunteer altruistically, and has been demonstrated in supporting nurse mental health during and following pandemics and represents a further priority for intervention.

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Conflicts of interest

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FIGURES/TABLES

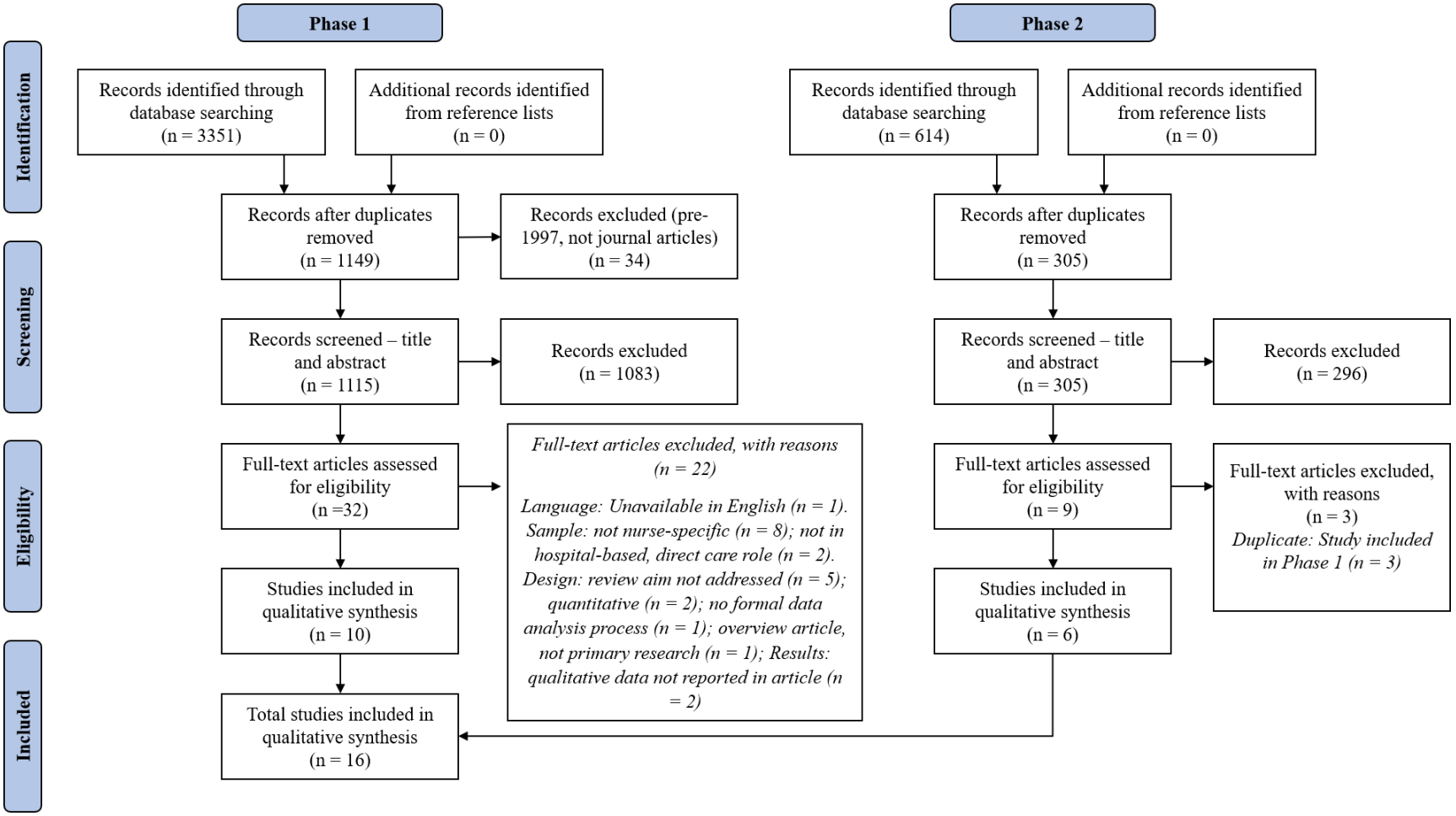

Figure 1: PRISMA diagram detailing literature screening process.

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Score (x/21)
S1*	/	Y	Y	Y	Y	/	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	/	/	Y	17
S2*	/	Y	Y	Y	Y	/	Y	Y	Y	/	Y	Y	Y	Y	Y	Y	Y	Y	Y	/	Y	17
C1	Y	Y	Y	Y	Y	/	Y	Y	Y	Y	Y	Y	/	Y	/	Y	Y	Y	/	Y	Y	17
C2	Y	Y	Y	Y	Y	/	Y	Y	Y	/	Y	Y	/	Y	Y	Y	Y	Y	Y	Y	Y	18
C3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	21
M1*	/	Y	Y	Y	Y	/	Y	Y	Y	Y	Y	/	Y	Y	Y	Y	Y	Y	Y	Y	/	17
M2	/	Y	Y	Y	Y	/	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	/	Y	/	17
H1*	Y	Y	Y	Y	Y	/	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	/	/	18
M3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	/	Y	Y	Y	Y	Y	Y	Y	Y	Y	/	19
S3*	/	Y	Y	Y	Y	/	Y	Y	/	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	/	/	16
C4	Y	Y	Y	Y	/	/	Y	Y	Y	Y	Y	Y	/	Y	Y	Y	Y	Y	/	Y	Y	17
E1*	/	/	Y	Y	Y	/	Y	Y	Y	Y	Y	Y	Y	Y	/	Y	Y	Y	Y	/	/	15
S4*	Y	Y	Y	Y	Y	/	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	/	Y	19
C5*	Y	Y	Y	Y	Y	/	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	/	/	18
C6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	21
C7	/	Y	/	Y	/	/	/	Y	/	Y	Y	Y	Y	Y	/	Y	Y	/	Y	/	/	11
C8	/	Y	Y	Y	Y	/	Y	Y	Y	Y	Y	Y	/	Y	Y	Y	Y	Y	Y	/	/	16

Table 1: Appraisal of study transparency using the SRQR framework.

Article key: S1 = Chiang et al., 2007; S2 = Chung et al., 2005; C1 = Gao et al., 2020; C2 = He et al., 2020; C3 = Kackin et al., 2020; M1 = Kang et al., 2017; M2 = Kim et al., 2018; H1 = Lam et al., 2013; M3 = Lee et al., 2020; S3 = Liu et al., 2008; C4 = Liu et al., 2020; E1 = Locsin et al., 2009; S4 = Shih et al., 2007; C5 = Sun et al., 2020; C6 = Tan et al., 2020; C7 = Yin et al., 2020; C8 = Zhang et al., 2020.

Marking key: Y = standard reported; / = standard not reported.

Note: The randomly assigned sub-sample of articles from the first literature search (n=8) are marked with an asterisk (*). These were blindly scored by a second reviewer with qualitative experience (a third-year DClinPsy trainee). Disagreements were resolved by consensus and the discussions were used as a baseline when appraising the remaining nine articles.

Citation	Paper code	Location	Disease	Sample	Data collection method	Data analysis method	Contextual considerations	Key themes
Chiang et al., 2007	S1	Taipei, Taiwan.	SARS	21 nurses. 15 ED nurses, 6 respiratory nurses. Aged 21-43yrs. 100% female. 0.5-18yrs clinical experience. All recruited via purposive sampling.	Two focus groups. Average length 90mins per focus group. Semi-structured group dialogue method. Group process notes and researchers' journal entries also collected. Conducted in Mandarin.	Thematic analysis, analysed using hermeneutic interpretation. Findings validated by confirmation by healthcare workers (unspecified if this was the research sample) and qualitative researchers.	One nurse identified as "contagious" with probable SARS, six further with suspected SARS. All possible infections identified as due to nursing duties.	Three themes surrounding the "self-state" of nurses during the SARS outbreak emerged: 1) Self-preservation; 2) Self-mirroring, and 3) Self-transcendence.
Chung et al., 2005	S2	Hong Kong, China.	SARS	Eight nurses. Aged 21-40yrs, 50% female, 0.5-14yrs clinical experience. Six nurses were recruited via convenience sampling, two further nurses recruited via purposive sampling.	Individual unstructured interview. Length 1-2hrs per interview. Opening question: "Could you please describe what it is like to care for SARS patients?" Group participant discussion following interviews to triangulate findings. Language unspecified.	Guided by Husserl's phenomenological approach and analysed according to Colaizzi's (1978) method of descriptive phenomenology.	Six nurses were known to the lead researcher (ex-teacher).	Three major themes emerged: 1) A myriad of emotions in caring for SARS patients, 2) The concept of uncertainty, and 3) Revisiting the "taken for granted" features of nursing.

Citation	Paper code	Location	Disease	Sample	Data collection method	Data analysis method	Contextual considerations	Key themes
Gao et al., 2020	C1	Wuhan & Shanghai. China	COVID-19	14 nurses. Aged 24-43yrs, 93% female, 2-20+yrs clinical experience. Purposive sampling across hospitals and wards for maximum variation.	Individual semi-structured interview. Interview guide generated based on clinical awareness and literature searching. Length 60-90mins per interview.	Colaizzi's phenomenological analysis.	All nurses volunteered to take care of COVID-19 patients in isolation wards. Studied impact of shift patterns in relation to experience. Audiovisual interview via "Wechat" smartphone application.	Four themes emerged: 1) Assess the competency of nurses to assign nursing work scientifically & reasonably, 2) reorganise nursing workflow to optimise shift patterns, 3) communicate between managers and front-line nurses to humanise shift patterns, and 4) various feelings and views of nurses on shift patterns.
He et al., 2020	C2	Wuhan, China. Participants were from Qinghai, Gansu & Xinjiang.	COVID-19	10 nurses who travelled to Wuhan when asked. Aged 22-43yrs, 80% female, 2-23yrs clinical experience. Initially recruited via convenience sampling, then snowball recruitment.	Individual semi-structured interview. Length per interview unspecified. Language unspecified.	Qualitative content analysis. Parallel analysis by two researchers followed by discussion for consensus agreement.	All nurses voluntarily travelled to Wuhan during the covid-19 pandemic. Audiovisual interview via "Wechat" smartphone application.	Three themes emerged: 1) Different psychological stages experienced, 2) work stress and new challenges, and 3) new concepts of caring for patients.

Citation	Paper code	Location	Disease	Sample	Data collection method	Data analysis method	Contextual considerations	Key themes
Kang et al., 2018	M1	Seoul and Kyoungki Provice, South Korea.	MERS	27 nurses across six departments. Aged 20-24 years, 93% female, 0.25-17yrs clinical experience. Maximum variation sampling.	Seven focus group interviews and three individual interviews, semi-structured based on a literature review and pilot interviews. Length 1-2hrs per interview. Language unspecified. Field notes made following each session.	Qualitative content analysis. Data collection occurred concurrently with analysis. Two researchers independently coded and resolved differences by consensus.	An unspecified number of nurses had experience working in infectious diseases.	Four themes emerged: 1) Experiencing burnout owing to the heavy workload, 2) relying on PPE for safety, 3) being busy with catching up with the new guidelines related to MERS, and 4) caring for suspected or infected patients with caution.
Kim, 2018	M2	South Chungcheong Province, South Korea.	MERS	12 nurses. Four were from ICU and eight from general wards. Average age 31.83yrs (SD=6.73yrs), 67% female, average 6.88yrs (SD=6.05yrs) clinical experience. Purposive sampling (snowball recruitment).	Individual semi-structured interviews. Length 50-130mins. Language unspecified. Non-verbal utterances (e.g. sighs, silence) also collected.	Qualitative content analysis. Analysis reviewed by two nursing professors. Descriptions and results reviewed by participants.	Study conducted by one researcher alone (due to funding).	Five themes emerged: 1) Going into a dangerous field, 2) strong pressure because of MERS, 3) the strength that makes me endure, 4) growth as a nurse, and 5) remaining task.

Citation	Paper code	Location	Disease	Sample	Data collection method	Data analysis method	Contextual considerations	Key themes
Lam et al., 2013	H1	Hong Kong, China.	H1N1	10 ED nurses. Aged "20-25" – "over 40" (specific ages unspecified), 100% female, "1-5" – "more than 15" years clinical experience (specific time unspecified). Eligible nurses approached individually.	Individual semi-structured interviews. Interview length unspecified. Field notes taken for observations of physical expressions/non-verbal information. Interviews conducted in Cantonese.	Qualitative content analysis. Evaluated during analysis by research supervisor. Interpreted findings validated by all participants.	Researcher had worked as an emergency nurse in the department sampled and selected "eligible nurses".	Three categories (themes) emerged: 1) Concerns about health, 2) comments on the administration, and 3) attitudes of professionalism.
Lee et al., 2020.	M3	Seoul, South Korea.	MERS	17 nurses across four departments. Average age 32.06yrs (SD=3.19yrs), 76% female, average clinical experience 9yrs (SD=4.26yrs). Purposive sampling (snowball recruitment).	Individual semi-structured interviews. Interview length approx. 1-2hrs. Field notes taken to record non-verbal information. Meeting held with research team after every interview to assess interview process.	Phenomenological approach and thematic analysis. Analysed by three researchers. Results shared with participants to check for agreement with analysis outcome.	One nurse had contracted MERS. Nurses did not receive systematic education related to MERS. The researcher in data collection also nursed MERS patients.	One key theme of "beyond the fear of uncertainty" and seven theme clusters: 1) Fear of uncertainty, 2) beyond hesitation, 3) a scene like a battlefield, 4) chaotic nursing identity, 5) buttresses for sustainability, 6) lingering trauma and 7) expanded horizon of nursing.

Citation	Paper code	Location	Disease	Sample	Data collection method	Data analysis method	Contextual considerations	Key themes
Liu et al., 2009	S3	Beijing, China.	SARS	Six nurses working "primarily on medical surgical units". Aged 21-41yrs, gender breakdown unspecified, 1-21yrs clinical experience. Eligible nurses approached individually.	Individual semi-structured interviews. "Story-path approach". Interview length approx. 30-90mins.	Qualitative content analysis. Parallel analysis-synthesis approach with each researcher and consensus reached following each interview analysed.	"Cyberspace" discussion of qualitative content analysis with other researchers (principally via email exchange).	Three "core qualities" (themes) emerged: 1) Personal challenge, 2) essence of care, and 3) self-growth. Instructive messages emerged from each core quality.
Liu et al., 2020	C4	Wuhan, China.	COVID-19	15 nurses across three departments. Average age 27.83yrs (SD=5.43yrs), 67% female, average clinical experience 7.3yrs (SD=5.62yrs). Maximum variation sampling.	Individual semi-structured interviews. Interview length 45-60min. "Experts" and front-line nurses consulted on interview questions.	"Standard qualitative methods" used for analysis (approach unspecified). Analysis completed independently by two markers and peer-reviewed by qualitative experts. Two participants were consulted to ensure accuracy of analysis outcome.		Four theme clusters emerged: 1) Facing tremendous challenge and danger, 2) strong pressure because of covid-19, 3) strong responsibility and identity as a health care provider, and 4) rational understanding of the pandemic.

Citation	Paper code	Location	Disease	Sample	Data collection method	Data analysis method	Contextual considerations	Key themes
Locsin et al., 2009	E1	Gulu, Uganda.	EVD	15 nurses working in EVD units (original speciality unspecified). Aged 28-53yrs, 93% female. Years clinical experience unspecified. Purposeful convenience sampling.	Collection of written descriptions ("narratives") of experiences using structured question form.	Hermeneutic phenomenological approach. "Rigor of research established using credibility, auditability and transferability" but methods for this not specified.	Outsider knowledge that someone had cared for an EVD-positive patient leads to stigma and social ostracization – hence greater anonymity via written descriptions.	Four themes derived from van Manen's (1990) four lived worlds: 1) Lived time (temporality), 2) lived space (spatiality), 3) lived relation (relationality) and 4) lived body (corporality).
Shih et al., 2007	S4	Location unspecified, Taiwan.	SARS	200 nurses across five departments. Average age 27.6yrs (SD=4.5yrs), 96% female. Average clinical experience 2.6yrs (SD=1.7). Purposive sampling.	Focus group semi-structured interviews (n=6-10 per group), followed by optional open-ended questionnaire (n=60 completed). Focus group length 50-60mins. Questions developed via literature review, expert consultation and consultation with five nurses.	Qualitative content analysis and three-later thematic analysis. Results of the analysis checked with focus group members. All investigators discussed the project every two weeks during analysis.	Participants with a "mental disorder" were excluded. Questions focused on three "stages" of caring: 1) Pre-caring, 2) tangible caring, and 3) post-caring.	Three themes emerged, organised by the stages of caring: 1) Pre-caring stage – terror of being infected and sacrificed, 2) tangible caring stage – challenge of infection control and health care cooperation, and 3) post-caring stage – life after surviving the SARS disaster.

Citation	Paper code	Location	Disease	Sample	Data collection method	Data analysis method	Contextual considerations	Key themes
Sun et al., 2020	C5	Henan Province, China.	COVID-19	20 nurses, speciality unspecified. Average age 30.60yrs (SD=6.12yrs), 75% female. Average clinical experience 5.85yrs (SD=6.43yrs). Purposive sampling.	Multiple individual, semi-structured interviews at different time points. Interview length 40-60mins. Interview questions developed via literature review, expert opinion and a pre-interview with two nurses.	Colaizzi's phenomenological analysis. Two researchers independently coded the data and consulted with research team for consensus agreement.		Four themes emerged: 1) Significant amount of negative emotions in the early stage, 2) coping and self-care styles, 3) growth under pressure, and 4) positive emotions occurred simultaneously or progressively with negative emotions.
Tan et al., 2020	C6	Wuhan, China (nurses from nationwide).	COVID-19	30 nurses across five departments. Average age 31.23yrs (SD=6.27yrs), 80% female. Average clinical experience 9.10yrs (SD=5.90yrs). Purposive sampling (snowball recruitment) with maximum variation sampling.	Individual semi-structured interview. Interview length 30-50min. Two pre-interviews took place to familiarise researchers to the process and refine the interview outline.	Heidigger's hermeneutic phenomenological analysis via content analysis. Initial analysis reviewed by research team to review coding and analysis. Two participants consulted regarding results gained.	Interviews conducted immediately following completion of first-line work.	Two main categories emerged: 1) Negative experiences during clinical first-line work, and 2) positive impacts of clinical first-line work.

Citation	Paper code	Location	Disease	Sample	Data collection method	Data analysis method	Contextual considerations	Key themes
Yin et al., 2020	C7	Wuhan, China.	COVID-19	10 nurses across five departments. Aged 25-38, 90% female. Years clinical experience "less than five" – "10 or more". Purposive sampling.	Individual semi-structured interview. Length "kept within 30min as much as possible". Two pre-interviews took place to refine the interview outline. Non-verbal cues also recorded.	Category analysis method and extracted based on existence, relatedness and growth theory.		Three themes explored psychological needs based on: 1) Existence, 2) relatedness, and 3) growth.
Zhang et al., 2020	C8	Wuhan, China (nurses from nationwide).	COVID-19	23 nurses (speciality unspecified). Aged "23-30" – "36-40". 78% female. Years clinical experience "2-5" – "16-20" yrs. Purposive sampling.	Individual semi-structured interview. Interview length 30-50mins. Two pre-interviews took place to refine the interview outline. Non-verbal cues also recorded.	Colaizzi's phenomenological analysis. Coding process discussed with team members to establish consensus.	Participants excluded if they left the unit due to "physical discomfort".	Three themes emerged: 1) Early stage – being ambivalent, 2) middle stage – emotional exhaustion, and 3) late stage – energy renewal.

Table 2: Included study characteristics.

Abbreviations: COVID-19 = 2019 novel coronavirus disease; EVD = ebola virus disease; H1N1 = Avian Influenza; MERS = middle eastern respiratory syndrome; SARS = severe acute respiratory syndrome.

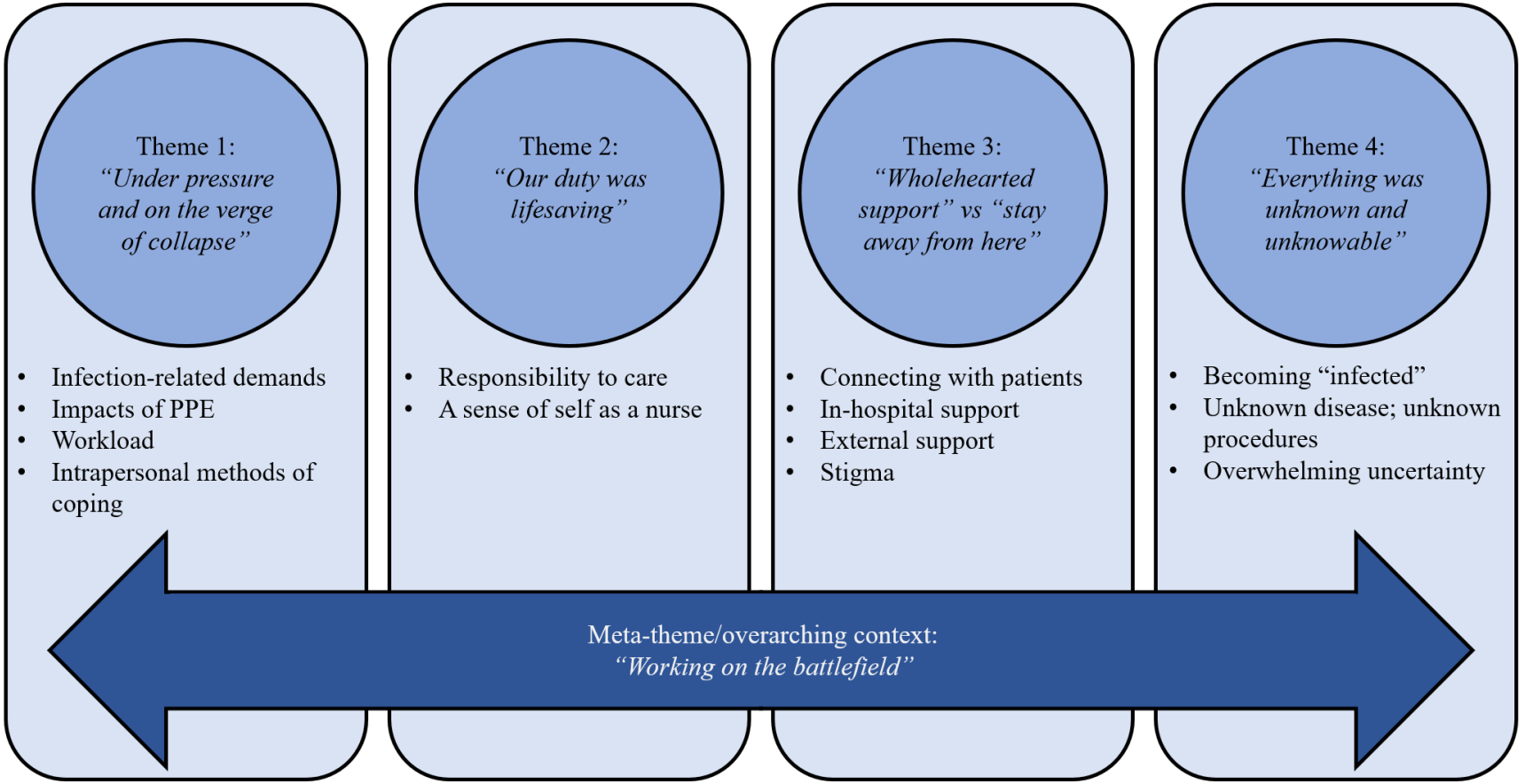

Figure 2: Diagrammatic representation of developed themes.

APPENDIX

Appendix 1-A: Search strategy

Five databases (Academic Search Ultimate, CINAHL, MEDLINE Complete, PUBMED and PsycINFO) were used to capture relevant literature. Free-text search terms per-parameter are detailed in *Supplementary Table 1*. Terms, MeSH headings, key words etc for each search parameter are detailed in *Supplementary Tables 2-4*. Final coding strategy is detailed in *Supplementary Table 5.*

Search parameter	Search terms used
Population (P) - nurses	S1: TI nurs* OR AB nurs*
Intervention (I) - disease	S2: TI ebola OR AB ebola S3: TI "EVD" OR AB "EVD" S4: TI "middle east* respiratory syndrome" OR AB "middle east* respiratory syndrome" S5: TI "MERS" OR AB "MERS" S5: TI "severe acute respiratory syndrome" OR AB "severe acute respiratory syndrome" S7: TI "SARS" OR AB "SARS" S8: TI "corona virus" OR AB "corona virus" S9: TI coronavirus OR AB coronavirus S10: TI covid-19 OR AB covid-19 S11: TI (swine N1 (flu OR influenza)) OR AB (swine N1 (flu OR influenza)) S12: TI "H1N1" OR AB "H1N1" S13: TI (avian N1 (flu OR influenza)) OR AB (avian N1 (flu OR influenza)) S14: TI "H5N1" OR AB "H1N1" S15: TI influenza OR AB influenza S16: TI (infectious NA disease*) OR AB (infectious N1 disease*) S17: TI pandemic* OR AB pandemic* S18: TI epidemic* OR AB epidemic*
Intervention (I) – caring	S19: TI care OR AB care S20: TI caring OR AB caring S21: TI treat OR AB treat S22: TI treating OR AB treating
Study design (S) - qualitative	S23: TI qualitative OR AB qualitative S24: TI experience* OR AB experience* S25: TI perception* OR AB perception* S26: TI opinion* OR AB opinion* S27: TI understanding* OR AB understanding* S28: TI belief* OR AB belief* S29: TI view* OR AB view* S30: TI judg?ment OR AB judg?ment S31: TI attitude* OR AB attitude* S32: TI mindset OR AB mindset S33: TI mind-set OR AB mind-set

Search parameter	Search terms used
	S34: perspective* OR AB perspective*
	S35: TI phenomenolog* OR AB phenomenolog*
	S36: TI thematic OR AB thematic
	S37: TI interview* OR AB interview*
	S38: TI narrative OR AB narrative
	S39: TI ethno* OR AB ethno*
	S40: TI "themes" OR AB "themes"
	S41: TI "focus group*" OR AB "focus group*"
	S42: TI "content analysis" OR AB "content analysis"

Supplementary Table 1a: Free-text search terms used in systematic search strategy.

Database	Terms, MeSH headings, key words etc used alongside free-text searching
Academic Search Ultimate	S43: DE "NURSES" OR DE "NURSING"
CINAHL	S43: MH "Nurses+" OR MH "Nursing Care+"
MEDLINE Complete	S43: MH "Nurses" OR MH "Nursing Staff"
PUBMED	S43: nurses[MeSH Terms] OR nursing staff[MeSH Terms]
PsycINFO	S43: DE "NURSES" OR DE "NURSING"

Table 1b. Terms, MeSH headings, key words etc used in systematic search strategy for the population parameter.

Database	Terms, MeSH headings, key words etc used alongside free-text searching
Academic Search Ultimate	S44: DE "EBOLA virus disease" OR DE "MIDDLE eastern respiratory syndrome" OR DE "MERS coronavirus" OR DE "SARS (disease)" OR DE "SARS epidemic, 2002-2003" OR DE "H1N1 (2009) influenza" OR DE "INFLUENZA A H5N1" OR DE "INFLUENZA" OR DE "EMERGING infectious diseases" OR DE "COVID-19"
CINAHL	S44: MH "Ebola Virus" OR MH "Hemorrhagic Fever, Ebola" OR MH "Middle East Respiratory Syndrome" OR MH "Severe Acute Respiratory Syndrome" OR MH "Coronavirus+" OR MH "Influenza, Human+"
MEDLINE Complete	S45: MH "Hemorrhagic Fever, Ebola" OR MH "Middle East Respiratory Syndrome Coronavirus" OR MH "Coronavirus Infections" OR MH "SARS Virus" OR MH "Severe Acute Respiratory Syndrome" OR MH "Influenza, Human" OR MH "Influenza A Virus, H1N1 Subtype" OR MH "Influenza A Virus, H5N1 Subtype" OR MH "Influenza A Virus" OR MN "Epidemics" OR MH "Pandemics"
PUBMED	S45: Ebola hemorrhagic fever[MeSH Terms] OR middle east respiratory syndrome coronavirus[MeSH Terms] OR coronavirus infections[MeSH Terms] OR sars virus[MeSH Terms] OR severe acute respiratory syndrome[MeSH Terms] OR influenza, human[MeSH Terms] OR influenza a virus, h1n1 subtype[MeSH Terms] OR influenza a virus, h5n1 subtype[MeSH Terms] OR influenza a virus[MeSH Terms] OR epidemics[MeSH Terms] OR pandemics[MeSH Terms]
PsycINFO	DE "Influenza OR DE "Swine Influenza" OR DE "Pandemics" OR DE "Epidemics" OR DE "Infectious Disorders" OR DE "Viral Disorders"

Table 1c. Terms, MeSH headings, key words etc used in systematic search strategy for the intervention parameter.

Database	Terms, MeSH headings, key words etc used alongside free-text searching
Academic Search Ultimate	S45: DE "QUALITATIVE research" OR DE "CONVERSATION analysis" OR DE "FOCUS groups" OR DE "PHENOMENOGRAPHY" OR DE "INTERVIEWING" OR DE "INTERVIEWING in psychology" OR DE "INTERVIEWING in sociology" OR DE "SEMI-structured interviews" OR DE "PHENOMENOLOGY" OR DE "PHENOMENOLOGICAL psychology"
CINAHL	S45: MH "Qualitative Studies+" OR MH "Content Analysis" OR MH "Ethnographic Research" OR MH "Interviews+"
MEDLINE Complete	S45: MH "Qualitative Research" OR MH "Hermeneutics" OR MH "Grounded Theory" OR MH "Focus Groups" OR MH "Interview, Psychological" OR MH "Interview" OR MH "Personal Narrative" OR MH "Attitude of Health Personnel"
PUBMED	S45: qualitative research[MeSH Terms] OR hermeneutics[MeSH Terms] OR grounded theory[MeSH Terms] OR focus groups[MeSH Terms] OR interview, psychological[Mesh Terms] OR interview[MeSH Terms] OR personal narrative[MeSH Terms] OR attitude of health personnel[MeSH Terms]
PsycINFO	DE "Qualitative Methods" OR DE "Focus Group" OR DE "Grounded Theory" OR DE "Interpretative Phenomenological Analysis" OR DE "Narrative Analysis" OR DE "Semi-Structured Interview" OR DE "Thematic Analysis" OR DE "Phenomenology" OR DE "Qualitative Measures" OR DE "Ethnography"

Table 1d. Terms, MeSH headings, key words etc used in systematic search strategy for the study design parameter.

	Coding
S46: Population parameter	S1 OR S43
S47: Disease parameter	S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S44
S48: Caring parameter	S19 OR S20 OR S21 OR S22
S49: Study design parameters	S23 OR S24 OR S25 OR S26 OR S27 OR S28 OR S29 OR S30 OR S31 OR S32 OR S33 OR S34 OR S35 OR S36 OR S37 OR S38 OR S39 OR S40 OR S41 OR S42 OR S45
Aggregated coding	S46 AND S47 AND S48 AND S49

Table 1e. Final coding strategy (detailed using S-codes above) used for each limiter and overall in per-database systematic search

Appendix 1-B: Discussions of reporting transparency

Following stage one of the systematic search, eight of the eleven included papers (selected at random) were blindly scored using the SRQR checklist by both the thesis author, and a third-year Lancaster University DClinPsy student with qualitative experience.

In total, blind scoring resulted in seven of the eight papers appraised having at least one discrepancy between scorers, These were principally around the acceptability of the title (n = 5), and the discussion of researcher characteristics and reflexivity (n = 5) within the articles. Differences were discussed and a consensus agreement was reached for each discrepancy explored, which informed the rating process for remaining stage one articles and stage two articles. The following recommendations were made for article rating:

- Question one (title): Concluded that article title must identify study as qualitative in title as a minimum.
- Question five (qualitative approach and research paradigm): Concluded that the methods must include the approach and/or guiding theory used as a minimum; description of process alone not sufficient.
- Question six (researcher characteristics and reflexivity): Concluded that reflexivity must include potential or actual interaction between characteristics and research questions to meet guideline.
- Question nine (ethical issues pertaining to human subjects): Concluded that article must explicitly state that ethical approval was gained and participants consented as a minimum.
- Question eighteen (integration with prior work, implications, transferability, and contribution[s] to the field): Agreed that, given this was a measure of study

transparency, marks would be given even if reviewers considered integration, implications, transferability and/or contributions to be of poor quality.

- Question twenty: Agreed that a conflicts of interest statement, either within the main body or as an addendum, must be provided as a minimum.

Appendix 1-C: Example SRQR checklist

An example SRQR checklist is provided to detail the process by which points were awarded for reporting transparency.

Standards for Reporting Qualitative Research (SRQR)	
Research paper:	Chiang, Chen and Sue (2007). *Self-State of Nurses in Caring For SARS Survivors*
Paper appraised by:	Author ~~Second reviewer~~
Title and abstract	
S1: Title (X)	**Guidance:** Concise description of the nature and topic of the study identifying the study as qualitative or indicating the approach (e.g., ethnography, grounded theory) or data collection methods (e.g., interview, focus group) is recommended
	Evidence: 1. Topic of study (vaguely) provided, ?requires specialist knowledge to understand 2. Qualitative approach not given 3. Data collection method(s) not given
	Standard present? No
S2: Abstract (✓)	**Guidance:** Summary of key elements of the study using the abstract format of the intended publication; typically includes objective, methods, results, and conclusions
	Evidence: 1. Aim of study provided 2. Methods summarised inc. sample, paradigm, format and analysis method 3. Theme titles provided 4. Relationship between self-state and professional self outlined
	Standard present: Yes
Introduction	
S3: Problem formulation (✓)	**Guidance:** Description and significance of the problem/phenomenon studied; review of relevant theory and empirical work; problem statement

	Evidence: 1. Impact(s) of SARS on nurses outlined 2. Duty to care vs risk to self detailed 3. Lack of understanding of experiential management of role strain given (problem formulation)
	Standard present: Yes
S4: Purpose or research question (✓)	**Guidance:** Purpose of the study and specific objectives or questions
	Evidence: 1. Aim of the study provided at the end of the introduction
	Standard present: Yes
Methods	
S5: Qualitative approach and research paradigm (✓)	**Guidance:** Qualitative approach (e.g., ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g., positivist, constructivist/interpretivist) is also recommended
	Evidence: 1. Hermeneutic design outlined 2. Interpretive approach specified
	Standard present: Yes
S6: Researcher characteristics and reflexivity (X)	**Guidance:** Researchers' characteristics that may influence the research, including personal attributes, qualifications/experience, relationship with participants, assumptions, or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results, or transferability
	Evidence: 1. Noted that authors are members of the Chinese Association of Group Psychotherapy 2. No mention of how researcher characteristics may influence the research process, analysis or findings
	Standard present: No
	Guidance: Setting/site and salient contextual factors; rationale[a]

S7: Context (✓)	**Evidence:** 1. Site provided 2. One nurse identified as contagious and "probably suffering from SARS" 3. Six nurses suspected as having SARS 4. All nurses infected as part of their nursing role
	Standard present: Yes
S8: Sampling strategy (✓)	**Guidance:** How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g., sampling saturation); rationale[a]
	Evidence: 1. Purposive sampling – range in age, education, religion, marital status, work experience 2. Selected as registered nurses employed at a hospital and caring for SARA patients during the local outbreak 3. Two groups of nurses – one of emergency nurses and one of intensive care nurses
	Standard present: Yes
S9: Ethical issues pertaining to human subjects (✓)	**Guidance:** Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues
	Evidence: 1. Stated approved by hospital ethics committee 2. Consent process, confidentiality and maintenance of anonymity outlined 3. Transcript access limits specified
	Standard present: Yes
S10: Data collection methods (✓)	**Guidance:** Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources/methods, and modification of procedures in response to evolving study findings; rationale[a]

	Evidence: 1. Focus groups used to collect data 2. Four sessions per group 3. Part of this method was "group dialogue method" 4. Conducted in Mandarin 5. Process notes and researchers journal entries used in data collection alongside tapes of groups
	Standard present: Yes
S11: Data collection instruments and technologies (✓)	**Guidance:** Description of instruments (e.g., interview guides, questionnaires) and devices (e.g., audio recorders) used for data collection; if/how the instrument(s) changed over the course of the study
	Evidence: 1. Broad themes asked in focus groups given 2. Demographics taken 3. Focus groups recorded, average 90 minutes per session 4. Focus groups "taped" method unspecified
	Standard present: Yes
S12: Units of study (✓)	**Guidance:** Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)
	Evidence: 1. Demographic information provided in table 2. Frequency of participation (mean) per person provided 3. No. of members per group and per session provided 4. ?Unclear how many participants attended multiple/all groups
	Standard present: Yes
S13: Data processing (✓)	**Guidance:** Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymization/deidentification of excerpts

	Evidence: 1. Recordings taped and transcribed, not stated by whom 2. Recordings, process notes and journal entries "systematically studied" 3. Prior to each case being examined, an interpretive outline was formed 4. Data integrity verified by health professionals and other researchers "peer review" 5. Anonymisation stated to occur during transcription 6. Findings validated by repeated reading of texts against interpretations
	Standard present: Yes
S14: Data analysis (✓)	**Guidance:** Process by which inferences, themes, etc., were identified and developed, including researchers involved in data analysis; usually references a specific paradigm or approach; rationale[a]
	Evidence: 1. Analysed using processes of hermeneutic interpretation: analysis, interpretation of examplars, interpretation of paradigm cases 2. Process notes and researchers journals used to examine developing themes 3. Not specified who conducted data analysis **4.** Cross-case comparisons used with a focus on nurses' perceptions of their professional role
	Standard present: Yes
S15: Techniques to enhance trustworthiness (✓)	**Guidance:** Techniques to enhance trustworthiness and credibility of data analysis (e.g., member checking, audit trail, triangulation); rationale[a]
	Evidence: 1. Data checked by health professionals and other researchers (unspecified) 2. Emerging findings checked against raw data 3. Transcripts triangulated against process notes and researcher journals
	Standard Present: Yes
Results/Findings	

S16: Synthesis and interpretation (✓)	**Guidance:** Main findings (e.g., interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory
	Evidence: 1. Three "self-states" of nurses provided as main themes 2. Details for each provided and linked with prior research
	Standard present: Yes
S17: Links to empirical data (✓)	**Guidance:** Evidence (e.g., quotes, field notes, text excerpts, photographs) to substantiate analytic findings
	Evidence: 1. Quotes given throughout "findings" section 2. Multiple direct quotes given for each theme 3. ?Unclear which nurses said which quotes – consensus? 4. Quotes given appear to substantiate themes derived 5. Relationship between self-state and caregiving hypothesised
	Standard present: Yes
Discussion	
S18: Integration with prior work, implications, transferability, and contribution(s) to the field (✓)	**Guidance:** Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application/generalizability; identification of unique contribution(s) to scholarship in a discipline or field
	Evidence: 1. Findings further integrated with existing research, both theory and qualitative papers 2. No concerns
	Standard present: Yes
S19: Limitations (X)	**Guidance:** Trustworthiness and limitations of findings
	Evidence: 1. Limitations not provided
	Standard Present: No
Other	
S20: Conflicts of interest (X)	**Guidance:** Potential sources of influence or perceived influence on study conduct and conclusions; how these were managed

	Evidence: 1. Conflict of interest statement not provided 2. ?Results detail links to reflective practice – authors are psychotherapists. Conflict of interest?
	Standard present: No
S21: Funding (✓)	**Guidance:** Sources of funding and other support; role of funders in data collection, interpretation, and reporting
	Evidence: 1. Funding statement given in acknowledgements
	Standard present: Yes

[a]The rationale should briefly discuss the justification for choosing that theory, approach, method, or technique rather than other options available, the assumptions and limitations implicit in those choices, and how those choices influence study conclusions and transferability. As appropriate, the rationale for several items might be discussed together.

Section Two: Empirical Research Paper

Moral distress and compassion satisfaction during COVID-19: A cross-sectional survey of critical care nurses

Abstract: 397 words (excluding key words, tweetable abstract, keywords, what is already known about the topic and what this paper adds)

Word count: 7000 words (excluding figures, tables, references, and appendices)

Thomas Rozwaha

Doctorate in Clinical Psychology

Division of Health Research, Faculty of Health and Medicine

Lancaster University

Prepared in accordance with author guidance from *The International Journal of Nursing Studies*[1]

All correspondence should be sent to:

Thomas Rozwaha
Doctorate in Clinical Psychology, Lancaster University
Email: t.rozwaha1@lancaster.ac.uk, Tel: 01524 592970

[1]See Additional Appendices – Appendix 5-A for submission guidelines

ABSTRACT

Background

The 2019 novel coronavirus pandemic (COVID-19) has put tremendous pressure on healthcare staff, with nurses working on critical care units being disproportionately affected. Critical care nurse well-being was a cause for concern before COVID-19, and we are only beginning to understand the additional psychological effects of the pandemic on nursing staff.

Objective

The purpose of this study was to investigate the relationship between moral distress and compassion in critical care nurses during COVID-19, and to determine the potential mediating effects of team psychological safety and emotional regulation on this relationship.

Design

Cross-sectional, anonymous online survey design.

Setting and Participants

The study consisted of 276 critical/intensive care unit nurses recruited worldwide, including redeployed nurses.

Methods

The Professional Quality of Life Scale-21, the Measure of Moral Distress for Healthcare Professionals, the Team Psychological Safety Questionnaire, and the Emotional Regulation Questionnaire and were used to gather data. Participants were recruited using social media. Descriptive analysis, T-Tests and one-way ANOVAs, Pearson's correlation analyses, multiple regression and mediation analysis using the bootstrap method were used to analyse quantitative data. Best-fit framework synthesis of qualitative data were used to

determine the potential experience of additional root causes of moral distress not identified in the quantitative scale.

Results

In our sample, 49% (n = 133) of nurses were experiencing satisfaction in their jobs and 63% (n = 171) were experiencing compassion fatigue. Being required to care for unsafe numbers of patients and delivering compromised care due to a lack of resources/beds were among the most morally distressing root causes. Four additional COVID-19-specific root causes were synthesised: Restrictions on either caregiving or dignity due to either infection control measures or workload, knowingly placing other staff into distressing and/or unfairly demanding situations, and taking responsibility for redeployed staff members' mistakes.

Mediation analysis of the negative relationship between moral distress and compassion satisfaction revealed three main paths: 1) Compassion fatigue mediated this relationship, and the direct path became insignificant; 2) team psychological safety and compassion fatigue serially mediated this relationship; and 3) team psychological safety and expressive suppression serially mediated this relationship. Cognitive reappraisal was a significant covariate.

Conclusion

The results of the study highlight root causes of moral distress specific to the COVID-19 pandemic. Mediation analysis showed that the impact of moral distress can be partially attenuated by team psychological safety, which was related to increased compassion satisfaction among nurses in two mediation paths.

Key words

Nursing, critical care, COVID-19, psychological safety, moral distress, emotional regulation, job demands resources theory, public health emergencies

Tweetable Abstract

Nurses report workplace moral distress unique to COVID-19. Workplace wellbeing may be supported in teams where nurses feel able to speak up.

What is already known about the topic?

- Critical care nurses experience greater levels of moral distress, and are at a higher risk of compassion fatigue and burnout than nurses elsewhere.
- COVID-19 has placed tremendous physical and psychological pressure on staff, with critical/intensive care staff disproportionately affected.
- The importance of team-based factors in maintaining workplace well-being is well-documented, but under-researched.

What this paper adds

- This paper used the Job Demands-Resources model to investigate how both personal and interpersonal factors affect the relationship between moral distress and compassion satisfaction/fatigue.
- Both team psychological safety and the associated context of reduced expressive (emotional) suppression partially ameliorate the impact of moral distress on compassion satisfaction in critical care nurses.
- Additional causes of moral distress unique to the COVID-19 context were identified across both junior nursing staff and nurse leaders.

INTRODUCTION

The 2019 novel coronavirus disease (COVID-19) has become a worldwide respiratory infectious disease pandemic since it was first reported toward the end of 2019 (Wang et al., 2020). The global healthcare system has faced tremendous quantitative demand on services, demand which has put similarly tremendous pressure on the staff working within them. The impact(s) of COVID-19-related pressure is becoming apparent as research into pandemic-related healthcare staff well-being is published – notably, psychological strain has arisen due to factors including: increased workload; workplace ethical dilemmas; and inadequate personal protective equipment, leading to fears of catching or spreading COVID-19 to others (Labrague and de Los Santos, 2020, Liu et al., 2020, Pappa et al., 2020). This is consistent with the psychological impacts of previous respiratory infectious disease epidemics (*Section 1*). There has been a disproportionate effect on nurses and in particular, nurses on critical care units, who are required to spend large portions of their time directly caring for patients (within close proximity). Many critical care nurses have taken on increased numbers of patients, alongside clinical leadership responsibilities for non-specialist redeployed staff (The Faculty of Intensive Care Medicine, 2020, González-Gil et al., 2020).

Pre-Pandemic Critical Care Nurse Well-Being

Before the COVID-19 pandemic, research indicated that critical care nurses experience greater stress-related psychological difficulties, relative to both other healthcare professionals and the general population (Karanikola et al., 2015, Khamisa et al., 2013). It has been suggested that this stems from the uniquely “high-stakes, high stress” environment of critical care, with multi-factorial demands including: complex medical interventions, working with distressed family members, and the grief-related experiences associated with high patient mortality (Stayt, 2009; Van Mol et al., 2015). Research into critical care nurses has typically focused on indicators of poor psychological health, particularly the overlapping

constructs of burnout and compassion fatigue – the latter defined as the culmination of negative emotion and physical stress arising from traumatic workplace experiences (Jarden et al., 2020). Compassion fatigue is associated with varied non-work-specific consequences for the individual, including: physical and emotional exhaustion, low mood, anxiety, post-traumatic stress symptoms, compromised immunity, and use of maladaptive coping including alcohol and/or substance use (Sinclair et al., 2017). A recent concept analysis also outlined the impact of high levels of nurses' compassion fatigue on care delivery, including increased work-based errors, impaired decision-making, and poor quality care (Peters, 2018). The inability of nurses to enact what they consider to be "morally correct" actions is known as moral distress and can lead to similar negative feeling states (Huffman and Rittenmeyer, 2012, McAndrew et al., 2018). Notably, critical care nurses are at a higher risk of moral distress given a greater proportion of distress-inducing moral conflict – McAndrews et al. (2018) agree that this is in part due to the unique critical care environment.

High levels of emotional strain (such as that arising from moral distress) lead to the necessity of regulating and/or suppressing the expression of associated emotions in the workplace. This is in order to manage both organisational demands and professional expectations. Whilst not healthcare-specific, this is commonly explored in relation to Hochchild's (1983) concept of emotional labour in the nursing literature (see e.g. Badolamenti et al., 2017, Delgado et al., 2017). As Hochchild theorises from a sociological position, psychologically-oriented researchers have integrated this concept into the emotional regulation literature, presenting emotional labour as (Gross and John's [2003] model of) emotional regulation (Grandey and Melloy, 2017). Hochchild's concept of "deep acting" is broadly analogous to antecedent-focused *cognitive reappraisal*, where individuals reinterpret the stimulus meaning in order to reduce emotional intensity. "Surface acting" is considered similar to response-focused *expressive suppression*, where the emotion is fully felt but

concealed. As cognitive reappraisal occurs before the emotional response has been fully generated, this strategy has been demonstrated to have favourable implications for well-being relative to expressive suppression, which has an additional psychological burden as the negative emotion is both fully felt and behaviourally suppressed (Chou et al., 2012, Cutuli, 2014, Xanthopoulou et al., 2018).

At an organisational level, poor well-being increases staff turnover, with 18 British critical care units recently reporting an annual nursing staff turnover above 20% (Highfield, 2019). This corroborates earlier findings indicating higher staff turnover in critical care environments (NHS Employers, 2015). Often, factors leading to poor well-being have been elucidated indirectly as a consequence of nurse turnover – including unmanageable workload and job-related stress (Hayes et al., 2006, Hayes et al., 2012). A recent review found similar impacts of traumatic workplace experiences on turnover, whilst also synthesising relational impacts; poor relationships with colleagues and managers was associated with increased turnover, as was the inability to speak up about patient care (Khan et al., 2019). Whilst not directly included in their review, the latter has some overlap with team psychological safety – a shared belief that the team feels safe enough to speak up and take interpersonal risks without punishment (Edmondson, 1999). The theoretical importance of team psychological safety in compassion fatigue and well-being (due to increased ability to speak up, leading to greater error-based discussion and delivery of high quality patient care) has been well-established in the literature (see e.g. Aikman, 2018, Donovan et al., 2018, Kolbe et al., 2019, O'Donovan and McAuliffe, 2020). Grandey and Melloy (2017) also note the impact of "relational interaction expectations" and "rules for emotive display at work" in their revised model of emotional labour as emotional regulation. Other theorists have similarly suggested that expressive suppression may be a relationally-determined, context-dependent strategy (Campos et al., 2011, Gross and John, 2003, Kahn and Heaphy, 2013).

Understanding Work-Related Strain

Evidently, nurse well-being in critical care is a complex phenomenon. Multiple models of work-related strain have been used to drive theoretical and applied research in the workplace. Demerouti et al.'s (2001) Job Demands-Resources model is a widely used model of work-related strain, likely due to its' lack of restriction to specific demands and resources (Schaufeli and Taris, 2014). This flexibility allows researchers to apply the model heuristically to a range of job-related demands and resources across different work environments.

The revised version of the Job Demands-Resources model (Schaufeli and Bakker, 2004) expanded the original definition of job demands to include emotionally taxing efforts, and introduced the concept of *engagement* (i.e. positive and fulfilling aspects of work) in addition to work-related strain. Job resources are any factors that reduce the impact of the job demand in question, and can be intrapersonal, interpersonal, physical, or organisational. Thus, the Job Demands-Resources model posits that: high job demands and low job resources lead to strain, demands and resources are negatively correlated, and job resources increase engagement via extrinsic (i.e. willingness to exert) and intrinsic (i.e. meeting needs by exerting) motivational processes (Deci and Ryan, 2000, Meijman et al., 1998).

Use of the Job Demands-Resources model also allows for the theoretical distinction of work-related strain and engagement. This distinction fits well in the nursing context, as despite the regular exposure of critical care nurses to unpredictable, demanding, and traumatic workplace experiences, many continue to gain positive reward from their work. Nurses are known for their commitment to delivering compassionate, high-quality care from a humanistic value base (Sacco and Copel, 2018, Verplanken, 2004). An intrinsic satisfaction and the positive emotions which arise from such a value base likely drive the commitment to continue to deliver this care, known as compassion satisfaction. These include feelings of

fulfilment, accomplishment, and work-related revitalisation (Sacco and Copel, 2018). Stamm (2010) supposes a professional quality of life in the workplace – composed of compassion satisfaction and compassion fatigue, cumulatively referred to as compassion. Given their work-specific focus and cumulative nature, compassion satisfaction and fatigue are commonly used as outcome measures across critical care nursing literature (Sabo, 2006, Coetzee and Klopper, 2010, Zhang et al., 2018) and are conceptually congruent with both engagement- and strain-based outcomes of the Job-Demands Resources model (see e.g. Alharbi et al., 2019). However, published articles often focus on compassion fatigue alone.

The Problem

Critical care nurse well-being was a cause for concern before COVID-19, and we are only beginning to understand the additional psychological effects of the pandemic on nursing staff. Despite this, research into critical care nurse well-being too often focuses on personal characteristics as reasons for failure to manage work-related stress, as do the "interventions" designed to "treat" them (Cohen, 2017, Papathanassoglou and Karanikola, 2018). A recent review into the psychological health of healthcare professionals during COVID-19 has followed a similar trend (Vizheh et al., 2020). This comes despite a growing recognition of the impact(s) of relational and systemic aspects of the workplace on well-being (National Institute for Health and Care Excellence, 2015). Indeed, systemic aspects of the workplace have been demonstrated to be important in the oft individually-oriented concept of resilience, a common choice of intervention for nurses presenting with work-related strain (Cusack et al., 2016).

The need, then, is for an exploration of the effects of psychologically-oriented demands, personal resources and, notably, interpersonal resources, on both work-related strain and work-related engagement. This includes an exploration into (potential) additional causes of job demands which are unique to the COVID-19 context. This approach is under-

utilised in a critical care-specific nursing sample, despite a recent Critical Care Societies Collaborative Statement's "call for action" to investigate factors affecting both strain and engagement in the critical care environment (Moss et al., 2016). A negative correlation between compassion satisfaction and fatigue/burnout is consistent across the literature (Zhang et al., 2018). Nursing studies which have implied a causal relationship between dimensions of compassion have either considered the role of compassion satisfaction on prevalence of compassion fatigue/burnout (e.g. Kim and Lee, 2016, Yıldırım et al., 2020), or the role of compassion fatigue/burnout on levels of compassion satisfaction (Kim et al., 2019, Meyer et al., 2015). Meyer et al. (2015) noted that nursing stress cannot necessarily be diminished, and advocate for a greater understanding of how job factors influence engagement-based outcomes such as compassion satisfaction.

The Study

Qualitative responses exploring morally distressing situations (job demands) will be analysed to understand whether additional root causes of moral distress have arisen in the context of COVID-19. For quantitative findings, the Job Demands-Resources model will be employed to investigate the impact(s) of moral distress, and its' impact on both compassion satisfaction (engagement) and compassion fatigue (strain) in the context of critical care nurses during COVID-19 (See *Figure 1*). To balance the strain-based focus in the literature and in line with Meyer et al.'s (2015) considerations, this study will focus on variables' relationship to compassion satisfaction as an outcome. Two job resources will be investigated – cognitive reappraisal (emotional regulation; a personal resource) and team psychological safety (an interpersonal resource). Given the psychologically taxing experience of expressive suppression relative to cognitive reappraisal, expressive suppression will be examined as an additional job demand.

[FIGURE 1 ABOUT HERE]

Quantitative hypotheses.

H1. Compassion fatigue will be negatively correlated with compassion satisfaction.

H2. Moral distress will be positively correlated with compassion fatigue and negatively correlated with compassion satisfaction.

H3. Expressive suppression will be positively correlated with compassion fatigue and negatively correlated with compassion satisfaction.

H4. Cognitive reappraisal will be negatively correlated with compassion fatigue and positively correlated with compassion satisfaction.

H5. Team psychological safety will be negatively correlated with compassion fatigue and positively correlated with compassion satisfaction.

H6. The impact of moral distress on compassion satisfaction will be partially explained (mediated) by greater levels of team psychological safety and cognitive reappraisal.

Qualitative aim.

To explore potential COVID-19-related root causes of moral distress via optional qualitative open-ended response(s).

METHOD

Design

This was a cross-sectional, anonymous online survey design employing pre-existing self-report questionnaires. Alongside demographic variables, job demands, personal and interpersonal resource factors were investigated for their relationship to dimensions of compassion. Three qualified critical care nurses were consulted in relation to the survey measures, layout, and appropriateness of demographic information collected prior to distribution. Data were collected anonymously using the Qualtrics online software, which

also housed the participant information sheet, consent form and debrief sheet (see *Section 4: Ethics and Appendices, pg. 4-25 onwards*).

Participants

Inclusion criteria.

To be eligible for the survey, participants had to be a registered nurse currently working on a critical care unit. Nurses who had been redeployed into critical care due to COVID-19 were also eligible to take part. There were no restrictions on location, job rank or critical care population (e.g. adult or paediatric).

Recruitment strategy.

Nurses were recruited via convenience sampling using social media. The Lancaster Doctorate in Clinical Psychology and British Association of Critical Care Nurses shared the survey advert/link via their social media channels in the first instance. An optional prize draw of 1 x £50 Amazon voucher was offered to encourage participation; the winner was randomly selected and received this prize following survey closure.

Sample size.

There were 340 responses in total – of these, 276 participants completed demographics and at least one validated measure (see *Appendix 2-A)*; 239 participants fully completed the survey. This met our requirements at the study design stage, based on *a priori* power analysis using G*power for a fixed model linear multiple regression, suggesting N = 180 (Critical F = 3.127), assuming a .15 (medium) effect size, .01 alpha error probability, and power of .95. Inclusive of demographic variables (up to twelve total predictors), *a priori* power analysis suggested N = 234 (Critical F = 2.266) given the same assumptions.

Materials

Data collection.

Basic demographic information including: age, gender, role, time in role, if redeployed, critical care unit population (i.e. adult or paediatric), and country of work was collected prior to other survey measures.

Professional Quality of Life Scale-21. The outcomes of compassion satisfaction and compassion fatigue were measured using an adapted version of Stamm's (2010) Professional Quality of Life Scale-V (the ProQol-21; Heritage et al., 2018). The ProQoL-21 uses 21 of the original 30 items (based on Rasch analysis) on a 5-point Likert scale (see *Section 4: Ethics and Appendices, pg. 4-36*). The Likert scale ranges from 1 (never) to 5 (very often). The ProQol-21 employs a robust two-factor structure of compassion satisfaction and fatigue. Stamm's (2010) measure suggested use of the scale as a screening (i.e. non-diagnostic) tool. Heritage et al. (2018) have adapted Stamm's (2010) cut-offs for use with the revised measure. For compassion satisfaction, scores above 21 (25^{th} percentile) suggest that an individual finds positive reward from their jobs. Those scoring higher than 25 (75^{th} percentile) on the compassion fatigue subscale are considered a cause for concern.

Moral Distress Scale for Healthcare Professionals. Job demands were measured using the Moral Distress Scale for Healthcare Professionals (MMD-HP; Epstein et al., 2019). The MMD-HP measures current levels of moral distress per cause as a product of frequency and intensity, using two 5-point Likert scales (see *Section 4: Ethics and Appendices, pg. 4-32*). Likert scales range from 0 (not never occurring/no distress) to 4 (very frequent/very distressing). Current levels of moral distress are scored as a single cumulative score.

The Emotional Regulation Questionnaire. Job resources include personal resources, and were measured using the Emotional Regulation Questionnaire (ERQ-10; Gross and John, 2003), a commonly used 10-item scale to measure cognitive reappraisal and expressive suppression. Each question is answered on a 7-point Likert scale (see *Section 4: Ethics and Appendices, pg. 4-38*) ranging from 1 (strongly disagree) to 7 (strongly agree).

Team Psychological Safety Questionnaire. Interpersonal resources were measured using the 7-item Team Psychological Safety Questionnaire (TPSQ-7; Edmondson, 1999). This widely-used measure explores how safe individuals consider their team for interpersonal risk-taking – important in multi- and inter-disciplinary working, and is scored using a 5-item Likert scale (see *Section 4: Ethics and Appendices, pg. 4-40*) ranging from 1 (strongly disagree) to 5 (strongly agree).

Qualitative responses. The MMD-HP (Epstein et al., 2019) allows participants to manually add up to three additional morally distressing experiences at work, and to similarly rate these according to their frequency and intensity. Further to this, an additional open-ended question was added to invite participants to detail any comments they have in relation to their workplace well-being – either generally, or due to the recent COVID-19 pandemic.

Quantitative Analyses

Data were tabulated in SPSS V26 (IBM, 2019) with PROCESS V3.5 (Hayes, 2018). Participants who had only completed the demographic items were removed from the dataset. There were no participants with missing items within measures. Items on the ProQoL-21 were re-scored using an SPSS macro (available in Heritage et al.'s [2018] appendices), and items one, three and five on the TPSQ-7 (Edmondson, 1999) were reverse-scored.

Assumptions underlying factor analysis of the ERQ-10 were met; factor structure was explored using a series of factor analyses given concerns about the 10-item structure raised by Spaapen et al. (2014). Confirmatory factor analysis revealed that the two-factor structure had poor fit, and modification index (MI) analysis revealed high covariance between items 1 and 3 (MI = 52.832, Par Change = .693), as observed in Spaapen et al. These items loaded onto their own (third) factor in the subsequent exploratory factor analysis (maximum likelihood estimation with promax rotation, eigenvalues >1). This is likely due to the similar

aspects of cognitive reappraisal examined, which serve to increase positive emotion via attentional redeployment (Diefendorff et al., 2008). A series of exploratory factor analyses revealed that a revised scale excluding item 1 ("When I want to feel more *positive* emotion [such as joy or amusement], I *change what I'm thinking about*"), was theoretically and statistically favourable and was used for onward analysis (labelled the ERQ-9 henceforth; see *Appendix 2-B* for details).

Descriptive and reliability statistics (Chronbach's alphas) were calculated for each of the survey measures (*Appendix 2-C*). Assumptions underlying correlational analysis, t-tests and ANOVAs were considered. The data were visually and statistically inspected for outliers using a series of scatterplots, histograms, box plots and Q-Q plots. Only one value on the MMD-HP was considered an "extreme" outlier (± 3.29 standard deviations away from the mean); sensitivity analyses with and without this value revealed no significant changes to the strength or direction of the findings. Assumptions of linearity were met, though data was non-normally distributed across all survey measures. Parametric statistics were used despite non-normality given sufficient sample size (Blanca et al., 2017, le Cessie et al., 2020). For t-tests and ANOVAs, homogeneity of variances were assumed (according to Levene's test for equality of variances).

The main statistical model used to analyse the data was mediation using Hayes' Process Tool using PROCESS V3.5 (Hayes, 2018). Mediation is used to investigate whether a relationship between a predictor variable and an outcome variable operates via one or multiple additional (mediator) variables (Field, 2018, Hayes, 2018). Mediation is said to have occurred when the confidence interval of the indirect effect does not contain zero (Field, 2018, Hayes, 2018). Mediation was chosen as it was theorised that the intermediary variables may (at least partially) explain the relationship between the predictor and outcome variable(s) (see e.g. Bennett, 2000, Frazier et al., 2004).

The predictor variable for mediation was moral distress. Models were informed by theory and preliminary analyses. The initial mediator variables were team psychological safety and expressive suppression. Compassion fatigue was entered as an additional mediator in the final model. Age and cognitive reappraisal were added as additional predictor variables based upon pre-mediation analyses. Following hierarchical multiple linear regression analysis of significant variables to the compassion outcome variables, two initial models were generated, one for each compassion satisfaction and compassion fatigue. The final model of compassion satisfaction was generated following analysis and integration of the initial two models.

Qualitative Analyses

Reponses for additional morally distressing scenarios were analysed using best-fit framework synthesis (Carroll et al., 2013). Responses were assessed to ensure they meet the "necessary and sufficient conditions for moral distress" outlined by Morley et al. (2019) – i.e. responses should contain a direct causal relation between the experience of a moral event and the experience of "psychological distress". Responses were assessed for the presence of a "moral event" and psychological distress was assessed via a score of 1+ given in the associated quantitative measure.

Each scenario provided by participants were compared to each item of the MMD-HP to determine if they could be classified under the 27 existing "root causes" of moral distress. Items were coded to one (or multiple) root cause(s) where relevant. Where this was not possible, remaining items underwent inductive thematic analysis to yield additional root causes for moral distress. The findings of the latter question will be explored in a second paper; raw data can be found in *Section Five (Appendix 5-B)*.

Ethical Considerations

Ethical approval was granted by the Lancaster University Faculty of Health and Medicine Research Ethics Committee (reference number 19083) and data collection took place between 15/06/2020 – 31/08/2020.

RESULTS

276 participants completed at least one survey measure and were included in onward analysis. *Table 1* details the demographic characteristics of the sample.

[TABLE 1 ABOUT HERE]

Preliminary Analyses

Compassion satisfaction and fatigue.

The results indicate that 48.7% (n = 133) of the sample were experiencing satisfaction in their jobs; 62.6% (n = 171) were experiencing compassion fatigue. Of these, 22.7% (n = 62) of participants were experiencing both compassion satisfaction and fatigue; 11.4% (n = 31) were experiencing neither. Age and compassion fatigue were negatively correlated with small effect size (r = -.154, p = .011).

Moral distress.

Participants scored a mean of 121.58 (SD = 69.34), with a mean score of 4.50 (SD = 2.57) per root cause on the MMD-HP. The four highest ranking root causes of moral distress were: Continuing to provide aggressive treatment in someone who is likely to die, either due to a lack of decision-making around withdrawal (M = 8.76; SD = 4.99), or due to family members' insistence (M = 8.23; SD = 5.24); compromised patient care due to lack of resources/equipment/bed capacity (M = 7.30; SD = 5.48); and being required to care for more patients than can safely be cared for (M = 7.24; SD = 5.79). Males experienced more moral distress (M = 142.09) than females (M = 117.61); independent samples t-test indicated that this was significant (M Difference = 24.48, 95% CI [1.58, 47.38], t(242) = 2.106, p = .036).

Root causes synthesised via qualitative responses. Participants provided 101 additional morally distressing scenarios, which were assessed against existing root causes (on the MMD-HP) using best-fit framework synthesis. Responses containing novel sources of moral distress underwent thematic analysis. Four additional root causes of moral distress were developed. These were:

1. Caregiving restrictions due to COVID-19-related infection prevention and control measures.
2. Inability to provide patients/family with appropriate levels of dignity and/or compassion due to COVID-19-related infection prevention and control measures and/or workload.
3. Knowingly placing other staff into distressing and/or unfairly demanding situations due to COVID-19-related pressures.
4. Taking responsibility for redeployed staff members' mistakes.

Notable quotes contributing to existing and novel root causes identified in the best-fit framework synthesis can be found in *Table 2*.

[TABLE 2 AROUND HERE]

Emotion regulation.

One-way ANOVA revealed a significant effect of country on cognitive reappraisal ($F(2, 259) = 3.580$, $p = .029$). Tukey's post-hoc analysis revealed that nurses in the US ($M = 24.51$, $SD = 5.08$) scored higher than nurses in the UK ($M = 22.42$, $SD = 5.12$, M difference = 2.10, 95% CI [.06-4.14], $p = .042$) but not nurses elsewhere in the world ($M = 21.48$, $SD = 4.11$, M difference = 3.04, 95% CI [-.15, 6.23], $p = .066$).

Team psychological safety.

One-way ANOVA revealed a significant effect of country on team psychological safety ($F(2, 259) = 3.564$, $p = .030$). Tukey's post-hoc analysis revealed that nurses in the US ($M = 24.98$, $SD = 4.40$) scored higher than nurses in the UK ($M = 22.88$, $SD = 4.91$, M difference = 2.10, 95% CI [.18, 4.02], $p = .029$) but not nurses elsewhere in the world ($M = 24.00$, $SD = 3.89$, M difference = .98, 95% CI [-2.04, 3.99], $p = .726$).

Preliminary Correlation Analyses

Supplementary Table 2 shows the means, standard deviations, ranges, and Cronbach's alphas for the sample on each of the measures completed. All Cronbach's alphas scored above the recommended minimum score of 0.7 (Nunnally, 1978).

The correlation matrix for demographic and study variables (Pearson's correlation coefficients) are detailed in *Table 3*. As predicted in H1, compassion satisfaction and compassion fatigue were negatively correlated with large effect size. As predicted in H2, moral distress negatively correlated with compassion satisfaction with medium effect size, and positively correlated with compassion fatigue with large effect size. Also as predicted in H5, team psychological safety positively correlated with the compassion satisfaction with medium effect size, and negatively correlated with compassion fatigue, again with medium effect size. A negative correlation with medium effect size was found between team psychological safety and moral distress, indicating that higher moral distress was associated with lower perceptions of interpersonal safety in teams. Emotional regulation strategies (cognitive reappraisal and expressive suppression) were positively correlated with small effect size. Emotional regulation strategies were also correlated with compassion satisfaction (as predicted) but not compassion fatigue, providing partial support for H3 and H4. Cognitive reappraisal positively correlated with compassion satisfaction with small effect size; expressive suppression negatively correlated with compassion satisfaction, again with small effect size.

[TABLE 3 AROUND HERE]

Mediation Analyses

Initial regression and mediation analyses were conducted to establish the effect(s) of significantly correlated study variables to the outcome variables of compassion satisfaction and compassion fatigue. For all mediations, unstandardized path coefficients were calculated to reduce distribution errors (Hayes, 2018). A full summary of initial regression and mediation analyses can be found in *Appendix 2-D*. The bootstrap method analysed the serial multiple mediation of team psychological safety, expressive suppression and compassion fatigue in the relationship between moral distress and compassion satisfaction (*Figure 2*).

[FIGURE 2 AROUND HERE]

The total effect of moral distress on compassion satisfaction was significant (c = -.033, SE = .006, t = -5.101, p < .0001), but there was no direct effect (c' = -.003, SE = .007, t = -.3901, p = .697). Moral distress had a negative direct effect on team psychological safety (B = -.026, SE = .004, t = -6.134, p < .0001) and a positive direct effect on compassion fatigue (B = .041, SE = .006, t = 7.280, p < .0001). The direct effects of team psychological safety (as the first mediating variable) on the second mediating variable expressive suppression (B = -.263, SE = .066, t = -4.010, p = .0001) and third mediating variable compassion fatigue (B = -.229, SE = .083, t = -2.758, p = .006) were also significant. A review of the direct effects of mediating variables on compassion satisfaction showed that expressive suppression (B = -.255, SE = .084, t = -3.034, p = .003) and compassion fatigue (B = -.508, SE = .069, t = -7.386, p < .0001) were significant. Other effects were not significant.

When taking into account all variables (including covariates) in the tested model, the path through the single mediation of compassion fatigue (indirect effect = -.021, 95% BC CI [-.029, -.014]), the path through team psychological safety and expressive suppression

(indirect effect = -.002, 95% BC CI [-.003, -.001]) and the path through team psychological safety and compassion fatigue (indirect effect -.003, 95% BC CI [-.006, -.001] were all significant. The total indirect effect was also statistically significant (indirect effect = -.030, 95% BC CI [-.039, -.022]). Cognitive reappraisal was a significant covariate (B = .271, SE = .086, t = 3.167, p = .002). Age was not a significant covariate in the full model (B = -.042, SE = .040, t = -1.056, p = .292). Confirmatory factor analysis of the unified model (excluding age) was consistent with our prediction in H6 and suggested good fit on all indices other than the Tucker Lewis Index ($\chi 2/df$ = 1.801, [p = .072], (A)GFI = .949, TLI = ,948, CFI = .972, RMSEA = .058 [LO 90 = .000, HI 90 = .105]).

DISCUSSION

In this study, the prevalence of compassion satisfaction and compassion fatigue among critical care nurses worldwide during the COVID-19 pandemic was outlined. As hypothesised, these findings have identified that moral distress significantly impacts critical care nurses' levels of compassion satisfaction and fatigue. Our results highlight the highest-ranking root causes for moral distress during COVID-19, as well as four morally distressing root causes unique to the COVID-19 nursing context. Furthermore, we used serial-multiple mediation to provide evidence that the impact of moral distress on compassion satisfaction can be attenuated by team psychological safety through two distinct mechanisms.

In excess of 60% of the sample reported significant levels of compassion fatigue, with around half reporting compassion satisfaction (Heritage et al., 2018). The prevalence (and reporting) of compassion fatigue amongst both general and critical care nurses is inconsistent; Bao and Taliaferro (2015) suggest around 30% of healthcare providers experience compassion fatigue relative to 7.3-40% of critical care nurses (Van Mol et al., 2015). However, our findings are limited in generalisability as this study used the shorter ProQol-21, which has not been used in a critical care-specific sample to date. These figures are

concerning (but perhaps unsurprising) given the context of working through COVID-19. In a related meta-analysis, Galanis et al. (2020) synthesised 14 (non-ward-specific) nurse burnout studies during COVID-19, identifying a prevalence of emotional exhaustion at 34.1%. Consistent with the wider research base, the authors also reported that critical care nurses experienced higher levels of burnout, though a precise figure was not stated.

Three of the four highest ranking root causes of moral distress in our sample were also the highest ranked in Epstein et al.'s (2019) original article. These were: Continuing to provide aggressive treatment in someone who is likely to die, either due to a lack of decision-making around withdrawal, or due to family members' insistence, and being required to care for more patients than can safely be cared for. This suggests common themes in the experience of moral distress in nursing. The mean score for each of these items was approximately 1 point (/16) higher than nurses surveyed in Epstein et al.'s article, and with the full-scale mean being 9 points higher. Results suggest that working during COVID-19 has mildly elevated levels of moral distress, but that the most morally distressing experiences remain consistent with pre-pandemic experiences. These results are promising for the new measure and suggest that, whilst elevated, our findings may be generalisable to non-COVID-19-specific contexts.

The best-fit framework synthesis conducted found four additional root causes of moral distress, all of which were related to COVID-19. Lack of ability to provide either "good enough" medical care or dignity to patients due to infection control measures and/or workload have been reported during previous respiratory infectious disease epidemics (*Section One*; see e.g. Lee et al., 2020, Liu et al., 2020). A low sense of responsibility in redeployed staff during SARS was reported by Jia et al. (2020), in relation to nurses having to take responsibility for redeployed nurses' care, though the broader moral impact of redeployed staff on critical care nurses' moral distress is a unique finding of our study. The

fourth new cause is specific to nursing leaders, with distress arising from knowingly placing other staff into distressing and/or unfairly demanding situations and is similarly novel. Studies exploring nurse leaders' experiences during epidemics has gone understudied. Where these have been published, they have reported experiences of giving support rather than distress arising from support not given (Shih et al., 2009).

As aforementioned, the positive relationship between moral distress and compassion fatigue is well-reported in the literature (see e.g. McAndrew et al., 2018), and our findings lend further support to this relationship. Our findings highlight the importance of higher levels of team psychological safety in partially ameliorating the relationship between moral distress and compassion fatigue. Poor teamwork and/or nurse-physician relationships have been acknowledged as risk factors for both moral distress and compassion fatigue in review articles (Atashzadeh-Shoorideh et al., 2020, McAndrew et al., 2018), with a recent study highlighting the role of work-related social support in ameliorating the impact of nursing demands on burnout (Manzano García and Ayala Calvo, 2020). Findings across similar dimensions report that team working and team cohesion can protect nurses from emotional exhaustion (Bagheri Hosseinabadi et al., 2019, Levert et al., 2000). Indeed, a recent Cochrane review reported that "effective" formal and social communication at work, and "positive, safe and supportive learning environments" as their most strongly supported facilitators of healthcare professionals mental health during and following epi/pandemics, both of which are consistent with the team psychological safety construct (Edmondson and Lei, 2014, Pollock et al., 2020). Whilst age was correlated with compassion fatigue, this association was lost in the mediation, suggesting that the weak negative correlation may have been conflated.

Our analysis further extends these relationships in the context of compassion satisfaction. In the full model, moral distress does not have a significant direct effect on compassion satisfaction (c' path); this relationship is instead is fully mediated by compassion

fatigue, which is itself partially mediated by team psychological safety. This suggests that compassion satisfaction is reduced as a result of the physical and psychological impacts of moral distress (compassion fatigue) rather than moral distress itself, and that being able to speak up without fear of retribution may attenuate the impact of moral distress on compassion fatigue. In a second path, the relationship between moral distress and compassion satisfaction is also partially mediated by the serial mediation of team psychological safety and expressive suppression. Low team psychological safety thus reduces the ability of nurses to speak up specifically about the emotional consequences of the work (an increase in expressive suppression), further reducing compassion satisfaction. This is consistent with previous research – Van Bogaert et al. (2009) reported the direct effects of fatigue-related depersonalisation on personal accomplishment and job outcomes, which were themselves predicted by work-related social support and emotional demands; this finding was consistent in a follow-up study (Van Bogaert et al., 2013). In agreement with the second path of our model, Montgomery et al. (2015) noted that department-level teamwork was found to predict engagement but not burnout. Considering team psychological safety and expressive suppression together, our results suggest that not only the ability to speak up, but also the ability to express felt emotions without fear of judgement are important in increasing levels of compassion satisfaction. This has relevance for moral distress, which is an emotive experience by definition. Speaking out about moral issues in the workplace has been coined *moral courage*; a recent concept analysis highlighted the association of moral courage with both team psychological safety and expressive suppression (Numminen et al., 2017). Speaking up (even with the possible consequence of risking one's own reputation), reporting unsafe practices and speaking about out one's values and views were all identified as methods of "acting as a (morally) courageous nurse", and are consistent with the outcomes of high team psychological safety (see e.g. Lindh et al., 2009, Sauerland et al., 2014). Further,

the expression of personal feelings and daring to admit one's own vulnerability were highlighted as methods of both acting as and being a courageous nurse, which are consistent with not employing expressive suppression tactics (see e.g. Bryon et al., 2012, Stenbock-Hult and Sarvimäki, 2011). The association between team psychological safety and expressive suppression also lends support to relational theories of emotional regulation (Gross and John, 2003, Khan et al., 2019) and is consistent with Grandey and Melloy's (2017) revised model of emotional labour as emotional regulation, which theorises that work context (i.e. relational dynamics and rules for emotive display) determines use of emotional regulation strategies employed around others.

Researchers have linked self-determination theory with moral distress, and consider this to have particular relevance in critical care environments (Yeganeh et al., 2019). Self-determination theory posits that autonomy, competence, and relatedness are at the foundation of human needs (Deci and Ryan, 2008); fulfilment of these needs at work is linked to greater satisfaction in the work context (see e.g. Baard et al., 2004, Gagné, 2014, Gomez-Baya and Lucia-Casademunt, 2018). Importantly, the highest-rated root causes of moral distress in this study (both novel and pre-existing) are consistent with violations to the three components of self-determination theory. For example, violations to autonomy and competence are implicit in the (externally decided) infection control- and workload-related limits of providing "good enough" care to patients. Being required to continue aggressive treatment to patient(s) likely to die due to family members' insistence or a lack of decision-making around withdrawal similarly undermines internal needs for professional autonomy and competence. Violations to relatedness (i.e. social connection) lead to distress arising from nurse leaders placing their juniors in situations they know to be unfair. The relatedness dimension of self-determination theory is also important when considering the importance of team psychological safety in ameliorating the impact(s) of moral distress. Given that a sense of relatedness requires a

"sense of mutual respect, caring and reliance with others" (Deci et al., 2001, pg. 931), our results show that fostering psychologically safe environments helps to satisfy needs for relatedness, increasing compassion satisfaction.

Cognitive reappraisal was also a significant covariate in the model; nurses who employed cognitive reappraisal tended to experience more satisfaction at work. These findings are consistent with the emotional labour literature more often studied in nursing (Xanthopoulou et al., 2018).

Clinical Implications

The clinical implications are three-fold. Reduction of overwhelming demand remains the most effective strategy for reducing work-related strain and increasing work-related engagement (Moloney et al., 2018) and should be an organisation-level priority in addressing poor well-being at work. Whilst the inherent attenuation of moral distress is more complex than other common workplace demands (such as e.g. simply reducing physical activity at work), two of the highest-ranking root causes in our study were indeed physical demands – increased staffing levels and the provision of (adequate levels of) appropriate medical resources. Increased staffing levels should have the secondary benefit of reducing the distress experienced by being made to care for more patients can be safely cared for, another of our highest-ranking root causes. Importantly, any new staff should be adequately trained to attenuate the additional root cause our study identified, where nurses take responsibility for others' patients.

Team psychological safety has important implications for both compassion fatigue and compassion satisfaction, and represents a team- and unit-level priority for improving workplace well-being. This study agrees with the Pollock et al.'s (2020) recommendations for workplace culture to be safe, open and supportive, but would emphasise that teams need to be

safe enough to express emotion, rather than opinion or belief alone. Allowing for both positive and negative emotions, as well as contributions, has been identified as a method for improving both unit culture and staff well-being in a previous meta-synthesis (Morrow et al., 2016).

Individually-oriented, emotional regulation-focused interventions around increasing ability to cognitively reappraise may have some benefit in increasing compassion satisfaction. In parallel to our own findings, a recent study of critical care nurses demonstrated significant improvements in compassion satisfaction, but not compassion fatigue, following emotional regulation training with a significant cognitive reappraisal element (Kharatzadeh et al., 2020). There is, however, limited evidence supporting the use of reappraisal-focused intervention in the wider literature (Turner and McCarthy, 2017). Readers are reminded of the limits of individually-focused interventions aforementioned, and the relative importance of addressing physical, systemic and organisational issues as a priority (Papathanassoglou and Karanikola, 2018).

Limitations and Future Directions

This study was designed prior to the COVID-19 pandemic, and limited attention was given to COVID-19-specific factors that may have influenced our results. However, synthesis of qualitative responses from the MMD-HP has provided the study with important contextual information about the changing nature of moral distress during COVID-19. The research base would benefit from further (qualitative) COVID-19-specific research into morally distressing experiences at work from both staff nurse and nurse leader perspectives, in order to increase insight into these emerging root causes and to better understand the context(s) in which they sit.

Whilst useful theoretical implications are drawn from the relationship between team psychological safety, expressive suppression, and compassion satisfaction, these are somewhat limited by study design. The ERQ-10 does not specify context for use of expressive suppression (nor cognitive reappraisal), it simply reports frequency of strategy use. More directed research into the relationship between team psychological safety and ability to express emotion in teams (and its' impact on dimensions of compassion) are necessary to confirm the initial claims made above.

The theoretical implications drawn from the model may also be limited by the sample itself. Given that recruitment was non-directive and took place during a period of unprecedented clinical pressure, those who elected to respond may not be representative of all nurses. For example, our findings may be skewed by nurses who were particularly motivated to take the time to complete the survey because they found working during COVID-19 particularly difficult.

Finally, the authors acknowledge the limitations inherent to applying causal analyses to a cross-sectional methodology. Further research should seek to assess the impact of these variables over time, either naturalistically or in response to intervention. The authors also welcome study replication to further lend support to the findings above.

CONCLUSION

The present study is the first to explore the relationship between moral distress and compassion satisfaction during the COVID-19 pandemic using a serial-multiple mediation model. In excess of 60% of the sample reported significant levels of compassion fatigue; our sample also reported experiencing elevated levels of moral distress. Organisational-level interventions addressing workplace demands (including increased staffing and adequate levels of resource, including bed capacity) are of paramount importance. Improving team-

level cultures, to increase nurses' perceived ability to speak up without fear of retribution are similarly important in reducing the impact of moral distress on well-being. Our results highlight additional root causes of moral distress which may be unique to the COVID-19 nursing context and require further exploration, including the impacts of infection control measures and/or workload on care provision, taking responsibility for redeployed staff members mistakes, Finally, our results demonstrate that nurse leaders experience a specific (and similarly novel) root cause of moral distress upon knowingly placing other staff into distressing or overburdening situations.

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Conflicts of interest

Conflicts of interest: none.

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FIGURES/TABLES

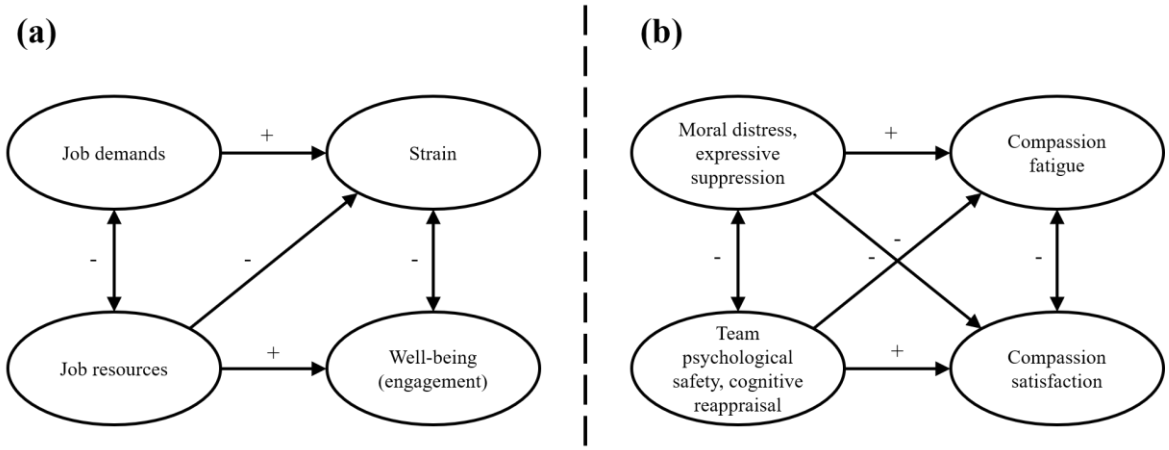


Figure 1: Study variables within the Job Demands-Resources Model

Key: Figure 1a (left) – initial stages of the revised Job-Demands Resources model (Schaufeli and Bakker, 2004). Figure 12 (right) – study variables mapped onto the revised model, with hypothesised directions of effect.

Descriptive statistics		
Descriptor	**Mean (SD)**	**Min-max (range)**
Age (years)	36.26 (10.10)	22 – 68 (46)
Time in role (months)	76.97 (87.79)	0 – 374 (374)
Frequencies		
Descriptor	**No. of participants**	**Percentage**
Age (years; recoded)		
22 – 30	103	37.3%
31 – 40	86	31.2%
41+	87	31.5%
Time in role (months; recoded)		
0-1 years	55	19.9%
1-5 years	124	44.9%
5+ years	97	35.1%
Gender		
Male	50	18.1%
Female	226	81.9%
Other	0	0%
Country		
United Kingdom and Northern Ireland	206	74.6%
United States of America	48	17.1%
Canada	14	5.1%
Ireland	2	0.7%
Australia	2	0.7%
Belgium	2	0.7%
Denmark	1	0.4%
Indonesia	1	0.4%
Role		
Newly-Qualified Staff Nurse	19	6.9%
Staff Nurse	158	57.2%
Sister/Charge Nurse	60	21.7%
Clinical Educator	11	4%
Specialist Nurse	10	3.6%
Ward Manager	10	3.6%
Matron	8	2.9%
Redeployed status		
Yes	26	9.4%
No	250	90.6%
Ward		
Adult	267	96.7%
Paediatric	9	3.3%
Neonatal	0	0%

Table 1: Sample demographic characteristics. (N = 276)

Root cause	Participant quote
Existing root causes in MMD-HP	
Question 1. Witness healthcare providers giving "false hope" to a patient or family.	"Private treatment offered despite extremely low prognosis. Patient sold their house to afford surgery. They died in ITU after weeks, probably bankrupting their family."
Question 2. Follow the family's insistence to continue aggressive treatment even though I believe it is not in the best interest of the patient.	"When I am caring for a patient that's 70+ years old and that we know is not going to make it and the family wants to keep the person breathing." "Daughter refused to withdraw on her mother despite devastating hypoxic brain injury & was kept alive for over 3 weeks"
Question 3. Feel pressured to order or carry out orders for what I consider to be unnecessary or inappropriate tests and treatments.	"Blood products massively used in known desperate situations."
Question 5. Continue to provide aggressive treatment for a person who is most likely to die regardless of this treatment when no one will make a decision to withdraw it.	"With regards to end of life care, patients who have capacity and want to stop all treatment as they have had enough have their feelings disregarded." "Unnecessary procedures causing pain and distress to patients counciously [sic] asking for withdrawal of treatment."
Question 7. Be required to care for patients whom I do not feel qualified to care for.	"Allocated a patient from which specialist training has to be taken (e.g. a filter) and this training hasn't been provided." "Being assigned to care for level 3 ventilator patients at the peak of covid with minimal ventilator training."
Question 9. Watch patient care suffer because of a lack of provider continuity.	"Bed managers not getting patients step down beds." "Inconsistencies with interpretation of a respect form."
Question 10. Follow a physician's or family member's request not to discuss the patient's prognosis with the patient/family.	"Medical error not reported to patient."
Question 13. Be required to work with other healthcare team members who are not as competent as patient care requires.	"Avoidable Patient Death Due To Poor Nursing Skills By Team Member." "Working in pods with non icu trained staff who silence alarms or are unaware of seriousness of some situations."
Question 14. Witness low quality of patient care due to poor team communication.	"Poor and inconsistent communication to staff." "Lack of communication and response from management."
Question 16. Be required to care for more patients than I can safely care for.	"Being assigned to care for two demanding patients (one climbing out of bed severe falls risk and the other verbally demanding) with minimal assistance on a unit I had never been before." "Taking care of 2 or 3 level 3 patients."

Root cause	Participant quote
Question 17. Experience compromised patient care due to lack of resources/equipment/bed capacity.	"Side rooms tucked away out of sight of anyone unless they going to sluice. No panic button and cctv camera only screen behind nurses station. Continue to be used despite some near miss situations occurring." "Inadequate staff safety equipment."
Question 18. Experience lack of administrative action or support for a problem that is compromising patient care.	"Matrons/band7s and consultants don't wish to hear [about patient care issues] as it drops bed capacity." "Working in unsafe area during covid with no medical or senior nursing support."
Question 20. Fear retribution if I speak up.	"Feel threatened for speaking out about unsafe patient:staff care ratios."
Question 21. Feel unsafe/bullied amongst my own colleagues.	"Sexual discrimination, age discrimination, sexual innuendo." "Feel bullied to work overtime to cut the cost of hiring additional staff."
Question 22. Be required to work with abusive patients/family members who are compromising quality of care.	"Parents putting their child at risk by getting in the way of you being able to deliver adequate care." "Family allowed to intimidate nurses and over see their care."
Question 24. Be required to care for patients who have unclear or inconsistent treatment plans or who lack goals of care.	"Inconsistent escalation of treatment plans change due to shift changes of consultant so not for ventilation ceiling treatment becomes incubated after a day of patient struggling and even telling relatives not intubating then new consultant new plan."
Question 25. Work within power hierarchies in teams, units, and my institution that compromise patient care.	"Working with nasty member of staff and avoiding having contact with them which puts patient safety at risk." "Hospital cover bullying to move Itu staff to wards leaving critical care unsafe."
Question 26. Participate on a team that gives inconsistent messages to a patient/family.	"Every family member not on the same page with plan of care."
Synthesised COVID-specific root causes	
Experience barriers or restrictions in medical care or best practice due to COVID-19-related infection prevention and control measures and/or COVID-19-related workload.	"Lack of communication and patient care due to PPE." "Patient admitted to covid ward but was in need of surgery but issues around waiting for swab results." "Needing to remove equipment off a dying patient because we needed it for someone else who was critically ill."

Root cause	**Participant quote**
Be unable to provide patients and/or family members with appropriate levels of dignity and/or compassion due to COVID-19-related infection prevention and control measures and/or COVID-19-related workload.	"Unable to comfort distressed family at end of life and barriers of both parties wearing ppe." "Last offices given during pandemic without availability of screens for privacy and dignity."
Knowingly placing other staff (juniors or colleagues) into distressing and/or unfairly demanding situations due to COVID-19-related pressures.	"Asking others to work outside their competence." "Had to put staff in difficult and stressful situations."
Being placed in a position where I (feel I) have to take responsibility for redeployed staff members' mistakes.	"During covid, working with staff who had no ICU experience and were unwilling to participate in patient care." "Working with deployed staff, taking responsibility for their incompetence and mistakes."

Table 2: Example quotations informing best-fit framework synthesis of moral distress root causes

	N	1	2	3	4	5	6	7
1. Age	276	-	-.052	.003	-.082	-.059	-.017	*-.154**
			.430	.965	.187	.345	.777	*.011*
2. MMD-HP	244	-	-	*-.370***	.106	-.022	*-.322***	*.505***
				.000	.103	.731	*.000*	*.000*
3. TPSQ-7	262	-	-	-	*-.242***	.079	*.342***	*-.338***
					.000	.204	*.000*	*.000*
4. ERQ-ES	262	-	-	-	-	.141*	*-.218***	.114
						.023	*.000*	.064
5. ERQ-CR5	262	-	-	-	-	-	*.205***	-.076
							.001	.222
6. ProQoL-CS	273	-	-	-	-	-	-	*-.528***
								.000
7. ProQoL-CF	273	-	-	-	-	-	-	-

Table 3: Correlation matrix for demographic and study variables.

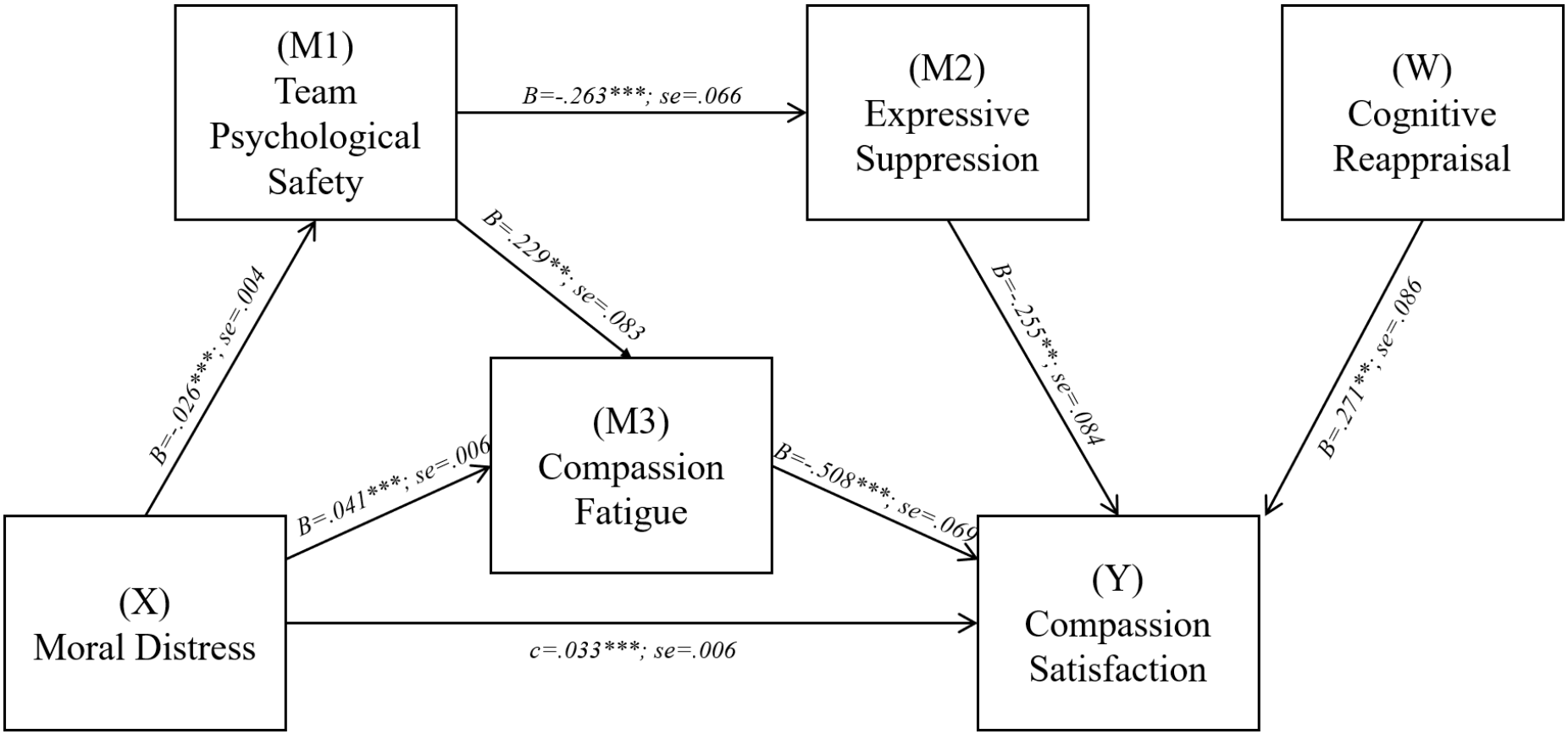


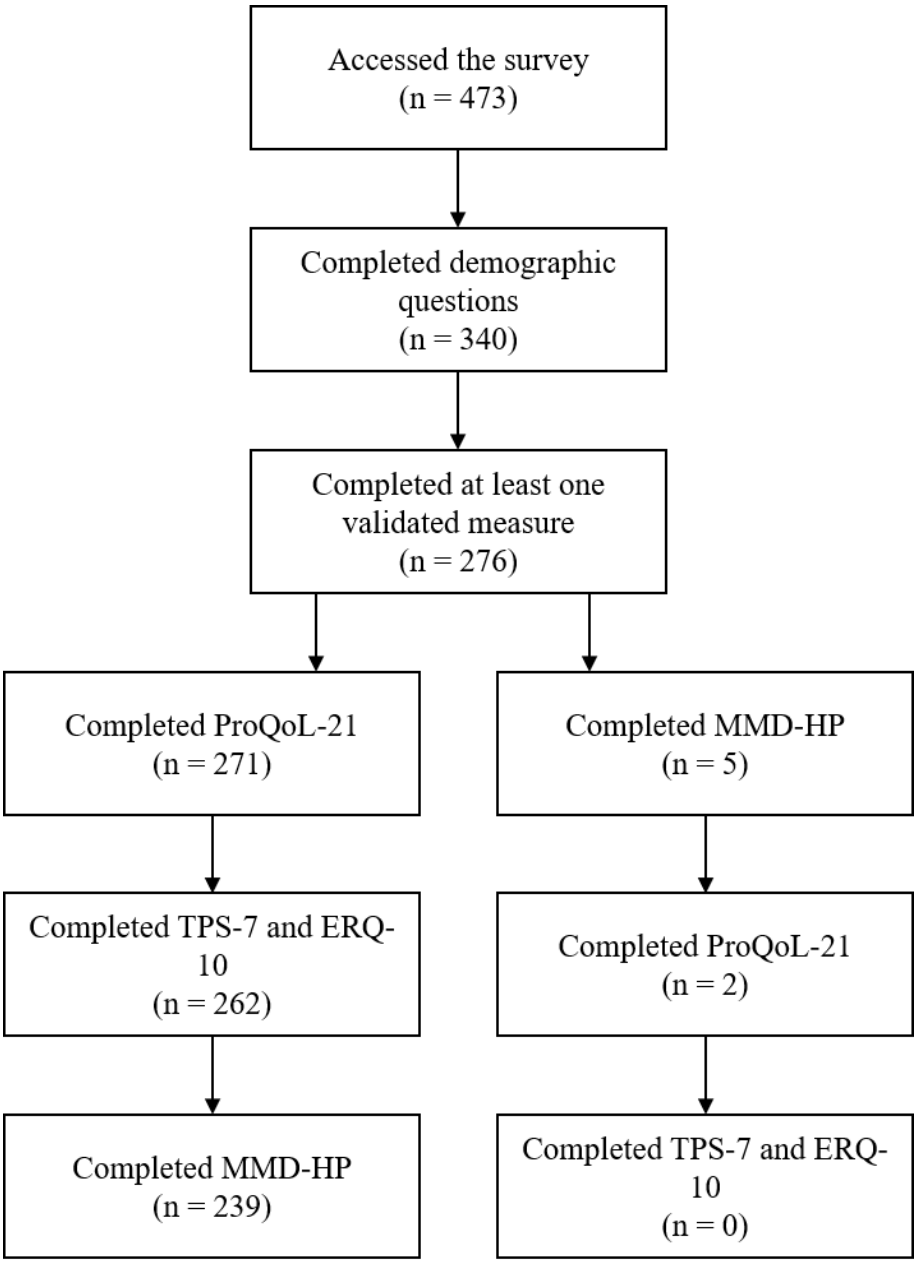
Figure 2: Serial multiple-mediation of variables in the relationship between moral distress and compassion satisfaction.

Note: $p < 0.05$ = *; $p < 0.01$ = **; $p < 0.001$ = ***

APPENDIX

Appendix 2-A: Flow Diagram of Survey Completion by Participants

A flow diagram (*Supplementary Figure* 1) illustrates the number of participants completing each survey measure. During recruitment, the order of measures were changed in an attempt to increase survey retention, leading to two distinct paths for survey completion.



Supplementary Figure 1. Flow diagram of survey completion by participants.

Appendix 2-B: Emotional regulation exploratory factor analyses

In total, 262 participants completed the ERQ-10. Confirmatory factor analysis suggested poor fit across a number of criteria examined (see *Supplementary Table 1*) including significant $\chi 2/df$ and TLI, CFI and RMSEA statistics beyond their recommended cut-off values. As mentioned in text, modification index analysis revealed high covariance between items 1 and 3.

Model	***df***	**X2**	**Sig.**	**$\chi 2/df$**	**TLI**	**CFI**	**RMSEA**	**LO 90**	**HI 90**
ERQ-10	34	113.88	.000	3.350	.898	.896	.095	.076	.114
ERQ-9 (#1)	26	50.81	.003	1.95	.947	.962	.060	.035	.085
ERQ-9 (#2)	26	36.61	.081	1.41	.978	.984	.040	.000	.067

Supplementary Table 1. Confirmatory factor analyses of different emotional regulation questionnaire structures.

Key: ERQ-10 = original ten-item, two-factor structure of ER as detailed by Gross and John (ref); ERQ-9 (#1) = nine-item, two-factor structure suggested following removal of covaried item 3; ERQ-9 (#2) – nine-item, two-factor structure following removal of covaried item 1.

The factorability of the items were examined. Chronbach's α was adequate at .738, the Kaiser-Meyer-Olkin measure of sampling adequacy was borderline acceptable at .748, and Bartlett's test of sphericity was significant ($\chi 2(45)=800.53$, $p<.001$). Exploratory factor analysis was conducted using the maximum likelihood method with promax rotation (based on eigenvalues>1). Three factors were extracted accounting for 53.504% of the variance. Items 1 and 3 loaded onto a third factor as observed in Spaapen et al. (2014), however, item 1 was an ultra-heywood case (factor loading = 1.036), rendering the factor structure invalid. A second exploratory factor analysis was conducted with a fixed two-factor structure, resulting in the expected two-factor structure explaining 43.407% of the variance.

Given the high within-factor covariance observed on two items via modification index analysis and poor overall model fit, two-factor models for nine items were extracted (using eigenvalues > 1) when removing item 1 (accounting for 45.979% of the variance) or item 3

(accounting for 45.218% of the variance) respectively. Confirmatory factor analysis of both alternative models suggested that the removal of item 1 rather than item 3 resulted in a better model despite item 3 being negatively worded (*Supplementary Table 1*; DiStefano and Motl, 2006). The revised 5-item scale for cognitive reappraisal without item 1, and original 4-item scale for expressive suppression was used for onward analysis.

Appendix 2-C: Descriptive statistics of survey measures

Scale	*N*	Mean (SD)	Min – max (range)	Cronbach's α
MMD-HP	244	121.93 (69.68)	0 – 382 (382)	0.921
TPSQ-7	262	23.30 (4.81)	8 – 34 (26)	0.758
ERQ-CR-5	262	22.67 (5.09)	8 – 35 (27)	0.796
ERQ-ES	262	15.27 (4.84)	4 – 28 (24)	0.744
ProQoL-CS	273	21.10 (7.20)	10 – 36 (26)	0.881
ProQoL-CF	273	29.01 (6.43)	22 – 46 (24)	0.853

Supplementary Table 2. Descriptive statistics and chronbach's alphas of measures used in analysis.

Key (top to bottom): MMD-HP – Measure of Moral Distress for Healthcare Professionals; TPSQ-7 – Team Psychological Safety Questionnaire; ERQ-CR5 –Emotional Rgulation Questionnaire, five-item Cognitive Reappraisal subscale; ERQ-ES – Emotional Regulation Questionnaire, Expressive Suppression subscale; ProQoL-CS – Professional Quality of Life Scale-21, Compassion Satisfaction Subscale; ProQol-CF – Professional Quality of Life Scale-21, Compassion Fatigue Subscale.

Appendix 2-D: Hierarchical multiple linear regression and initial mediation analyses

Compassion Fatigue Regression Analysis

Results of the regression are presented in *Supplementary Table 3*. At the first step, age was found to be a significant predictor (β = -.148, p = .022), explaining 2.2% of the variance (F(1, 237) = 5.333, p = .022, Adjusted R^2 = .018). In the second step, the addition of moral distress accounted for an additional 24.7% of the variance (F = 2, 236) = 43.453, p < .001, Adjusted R^2 = .263) and age remained significant. In the final step, the addition of team psychological safety accounted for a further 2.8% of the variance (F = 3, 235) = 33.046, p <.001, Adjusted R^2 = .288); prior variables remained significant. In total, the model explained 29.7% of the variance in compassion fatigue (p < .001).

Compassion Fatigue Mediation Analysis

The total effect of moral distress on compassion fatigue was significant (c = .047, SE = .005, t = 8.933, P < .0001) and moral distress had a positive direct effect on compassion fatigue (c' = .041, SE = .006, t = 7.303, p < .0001). Moral distress had a negative direct effect on team psychological safety (B = =.026, SE = .004, t = -6.164, p < .0001). Mediator team psychological safety had a negative direct effect on compassion fatigue (B = -.243, t(235) = 03.035, p = .003). The indirect effect (i.e. mediation) was significant (point estimate = .006, SE = .003, 95% BC CI [.002, .012]). Age was also a significant covariate in the total effects model (B = -.075, SE = .038, t(236) = -2.012, p = .045).

Compassion Satisfaction Initial Regression Analysis

Results of the regression are presented in *Supplementary Table 4*. At the first step, moral distress was found to be a significant predictor (β = -.315, p < .001), explaining 9.9% of the variance (F(1, 237) = 26.151, p < .001, Adjusted R^2 = .096). In the second step, the addition of team psychological safety accounted for an additional 5.1% of the variance (F(2,

236) = 14.160, $p < .001$, Adjusted $R^2 = .143$). In the third step, expressive supression explained a further 1.9% of the variance ($F(3, 235) = 5.347$, $p = .002$, Adjusted $R^2 = .159$). In the final step, cognitive reappraisal explained a further 4.2% of the variance ($F(4, 235) = 5.333$, $p = .022$, Adjusted $R^2 = .198$). In total, the model explained 21.1% of the variance in compassion satisfaction ($p < .001$).

Compassion Satisfaction Initial Mediation Analysis

The total effect of moral distress on compassion satisfaction was significant (c = -.033, SE = .006, t(236) = -5.138, p < .0001) and the moral distress had a negative direct effect on compassion satisfaction (c' = -.023, SE = .007, t(236) = -3.58, p = .0004). The negative direct effect of moral distress on team psychological safety is aforementioned in the compassion fatigue mediation. The direct effect of first mediating variable team psychological safety on second mediating variable expressive suppression was significant (B = -.258, SE = .068, t(235) = -3.916, p = .0001). A review of the direct effects of mediating variables on compassion satisfaction showed that only expressive suppression had a negative direct effect (B = -.275, SE = .092, t(234) = -2.976, p = .003). Other effects were not significant.

When taking into account all variables (including covariates) in the tested model, the path through the single mediation of team psychological safety (point estimate = -.007, 95% BC CI [-.014, -.002]) and the serial multiple-mediation path through team psychological safety and expressive suppression (indirect effect = -.0018, 95% BC CI [-.004, -.001]) were significant. The total indirect effect was also statistically significant (indirect effect = -.009, 95% BC CI [-.017, -.003]). Cognitive reappraisal was a significant covariate (B = .271, SE = .085, t = 3.171, p = .002).

Compassion Satisfaction – Further Regression Analysis

Given the study aims of determining the cumulative effect of variables on compassion satisfaction, a further step was added to the compassion satisfaction regression detailed above (also detailed in *Supplementary Table 4*). In the fifth step, compassion fatigue explained a further 14.7% of the variance ($F(5, 234) = 53.418$, $p < .001$, Adjusted $R^2 = .345$). At this step, neither moral distress nor team psychological safety were significant, however, they may still have mediating effects – mediation analysis inclusive of these variables followed. In total, the model explained 35.8% of the variance.

Step	Predictors	B	SE B	*β*	*t*	*p*	R Square	Adjusted R Square	R Square Change	F Change	Sig. F Change
1. Age	**Age**	-.100	.043	-.148	-2.309	.022	.022	.018	.022	5.333	.022
2. Moral Distress	Age	-.075	.037	-.112	-2.012	.045					
	Moral Distress	.048	.005	.498	8.933	< .001	.269	.263	.247	79.779	< .001
3. Team Psychological Safety	Age	-.081	.037	-.120	-2.191	.029					
	Moral Distress	.041	.006	.432	7.303	< .001					
	Team Psychological Safety	-.243	.080	-.179	-3.035	.003	.297	.288	.028	9.2090	.003

Supplementary Table 3. Hierarchical regression of compassion fatigue on age, moral distress and team psychological safety variables.

Step	Predictors	B	SE B	*β*	*t*	*p*	R Square	Adjusted R Square	R Square Change	F Change	Sig. F Change
1. Moral Distress	**Moral Distress**	-.033	.006	-.315	-5.114	< .001	.099	.096	.099	26.151	< .001
2. Team Psychological	Moral Distress	-.024	.007	-.225	-3.488	.001					
Safety	**Team Psychological Safety**	.362	.096	.243	3.763	< .001	.150	.143	.051	14.160	< .001
3. Expressive	Moral Distress	-.023	.007	-.233	-3.490	.001					
Suppression	Team Psychological Safety	.309	.098	.208	3.157	.002					
	Expressive Suppression	-.215	.093	-.143	-2.312	.022	.169	.159	.019	5.347	.002
4. Cognitive	Moral Distress	-.023	.007	-.224	-3.584	< .001					
Reappraisal	Team Psychological Safety	.271	.096	.182	2.815	.005					
	Expressive Suppression	-.275	.092	-.182	-2.975	.003					
	Cognitive Reappraisal	.295	.084	.209	3.531	< .001	.211	.198	.042	12.471	< .001
5. Compassion Fatigue	Moral Distress	-.002	.007	-.023	-.374	.709					
	Team Psychological Safety	.163	.088	.110	1.849	.066					
	Expressive Suppression	-.245	.083	-.162	-2.934	.004					
	Cognitive Reappraisal	.276	.076	.195	3.645	< .001					
	Compassion Fatigue	-.497	.068	-.453	-7.309	< .001	.358	.345	.147	53.418	< .001

Supplementary Table 4. Hierarchical regression of compassion satisfaction on moral distress, team psychological safety, expressive suppression, cognitive reappraisal and compassion fatiguevariables

Section Three: Critical Appraisal

A research summary, reflections on my relationship to the research project, and the relevance of the findings to clinical psychology.

Word count: 3978 words (excluding references)

Thomas Rozwaha

Doctorate in Clinical Psychology

Division of Health Research, Faculty of Health and Medicine

Lancaster University

All correspondence should be sent to:

Thomas Rozwaha
Doctorate in Clinical Psychology, Lancaster University
Email: t.rozwaha1@lancaster.ac.uk, Tel: 01524 592970

This section of the thesis will detail my reflections on key aspects of the research work. First, I will present a brief summary of *Sections One and Two*, highlighting the key findings from each paper. Then, I will share personal reflections surrounding my relationship with the research conducted, including: my initial and ongoing interest in the research area, the impact(s) of the 2019 novel coronavirus (COVID-19) pandemic on the research project, and the navigation of personal and professional identities in the research process. Finally, I will consider the relevance of clinical psychology to the research topic.

RESEARCH SUMMARY

This thesis aimed to broadly investigate the experiences of nurses working in the context of an emerging respiratory infectious disease epidemic. *Section One* synthesised qualitative research exploring the lived experiences of nurses working directly with patients during emerging epidemics (including COVID-19) over the past 20 years. *Section Two* focused specifically on critical care nurses during the COVID-19 pandemic (including those nurses redeployed *into* critical care), using the Job Demands-Resources Model (Schaufeli and Bakker, 2004) as a heuristic to investigate factors affecting workplace well-being.

The Thematic Synthesis

In relation to the lived experiences of nurses working during emerging epidemics, *Section One* uncovered an overarching context of "working on the battlefield". Constructions of war-based metaphors were mentioned across both COVID-19 and non-COVID-19 studies. Metaphors of war have attracted particular attention during the COVID-19 pandemic. Of note, Cipolletta and Ortu (2020) describe an increased difficulty to manage feelings of uncertainty and powerlessness due to a perceived inability to live up to the "heroic" expectations placed upon them by a media-pushed hero narrative. Clinically, there are concerns that these expectations will push unrealistic expectations and unsafe levels of

clinical risk (Einboden, 2020, McAllister et al., 2020), or that the "act" of heroism may be deemed a suitable reward in lieu of adequate pay and appropriate workplace support (Mohammed et al., 2021). Within this context sat four themes:

1. "Under pressure and on the verge of collapse" detailed the experience of high-intensity workload, new infection-related demands, and coping. These are consistent with both quantitative research in the area and prior qualitative reviews.
2. "Our duty was lifesaving" explored perceptions of what it means to be a nurse, in the context of an epidemic, and in relation to themselves and others. Our study found a unique finding around the distinction between an altruistic desire to volunteer vs coercion into, or forced, volunteering.
3. "Wholehearted support" vs "stay away from here" described experiences of in-hospital interpersonal and organisational support, external support, and stigma. The importance of both team-based and wider organisational communication, openness and support was consistent with both general and pandemic-specific guidance in nursing.
4. "Everything was unknown and unknowable" represented experiences of uncertainty, unfamiliarity, and fear of infection. Similar to theme one, these are consistent with historical and emerging research in the area.

Future directions include exploration of the lived experiences of nurses worldwide to explore location- and/or culture-specific difficulties, as was the need to explore experiences of nurses in "established" pandemics (i.e. COVID-19).

The Empirical Project

Section Two was cross-sectional in approach. Mediation analysis revealed that the impact of moral distress on compassion satisfaction can be partially attenuated by higher

team psychological safety, which was related to increased compassion satisfaction among nurses in two mediation paths. Qualitative analysis of responses from the Moral Distress Measure of Healthcare Professionals (Epstein et al., 2019) synthesised four additional coronavirus-specific root causes of moral distress. These were: restrictions on either a) caregiving, or b) dignity, due to infection control measures and/or workload; c) knowingly placing other staff into distressing and/or unfairly demanding situations; and d) taking responsibility for redeployed staff members' mistakes.

Recommendations for organisational priorities in addressing the physical causes of moral distress in the workplace were recommended in improving workplace well-being. Our findings also recommend that a focus on team-level interventions to increase the ability to both speak up about issues and express emotionally, without fear of judgement or repercussion, are also important for workplace well-being in critical care staff. The limits of individually-oriented interventions (i.e. therapeutic support) in the context of organisational and systemic issues in the workplace were highlighted.

REFLECTIONS ON THE RESEARCH PROJECT

Choosing a Research Topic

My initial interest in the area stemmed from everyday observations of the interplay between individual and systemic factors in (NHS) workplace well-being – both in my own well-being, and in the well-being of friends and colleagues working in different areas of the NHS. In particular, I have personal relationships with healthcare professionals working in critical care settings, including my partner. I had heard them discuss their work lives in everyday conversation; many of these conversations revolved around what I later understood to be moral distress. In many ways, I was already aware of the "high-stakes, high-stress" environment of critical care (Van Mol et al,. 2015) and of the emotional themes which

surround it, even prior to formally studying the area. At the same time, I had seen (and personally experienced) financial cut-backs in the wider NHS (see e.g. Alston, 2018, Appleby et al., 2015, Kerasidou, 2019) alongside a cultural shift which seemed to locate the burden of workplace stress solely within the individual (Taylor, 2019, Traynor, 2018).

I most notably experienced this in relation to psychological theories of resilience, a common choice of intervention for nurses presenting with work-related strain (Cusack et al., 2016, Taylor, 2019). The British Psychological Society (BPS) define resilience as "not a characteristic or a skill but … a dynamic interaction between the person and their environment" (BPS, 2019a). However, resilience is often quoted as the ability to "cope" with the difficulties of some aspect of adversity – including toxic environments or stressful events at work. Indeed, whilst resilience has roots in theories of positive adaptation *despite* adversity, organisations are increasingly adopting neoliberal narratives enforcing positive adaptation *to* adversity (Bottrell, 2009, Garrett, 2015; emphasis added). Garrett (2015) also suggests that policy is increasingly using resilience theory to "blame" individuals for social arrangements rather than tackling the social disadvantages directly. This is consistent with research exploring personal characteristics as principal factors in the "inability" to "manage" workplace distress in critical care nurses (Cohen, 2017, Papathanassoglou and Karanikola, 2018).

This awareness guided my overall plans for the research topic – I wanted to explore both personal and interpersonal characteristics in my research. However, rather than focus on resilience, I aimed to choose personal characteristics without neoliberal undertones in the current political landscape. Emotional regulation had been shown to be an important buffering factor in maintaining wellbeing at work and was a good fit for the research, particularly considering the overlap with the more often studied concept of *emotional labour* in the nursing literature (Albrech, 2011, Grandey and Melloy, 2017). The choice of moral

distress as a job-specific demand had been an obvious choice; research into moral distress is common in critical care professionals, though again, interpersonal factors in this had gone understudied.

I also wanted to consider systems-level factors which I felt would be both novel and of relevance. One issue I grappled with throughout the thesis was that of pragmatism; my desire to consider additional variables led to projects which were neither concise nor justifiably brief for participants to conduct. In one early iteration, I had planned to study physical demands in addition to moral distress, investigate systemic factors around psychological safety at the level of both the team and the culture, and investigate impacts on both workplace-specific and general well-being. Clearly, it would have been unfair to request this survey burden on nursing staff. Through supervision with the research team, I was able to develop pragmatism, and not place too much burden on participants, whilst still keeping to my overall goals for the project. The resulting proposal put forward for review encompassed all the original goals: A focus on psychological demands, supports, and outcomes, and which was inclusive of both personal and systemic factors which may affect well-being.

Impacts of COVID-19

This interest in the research area long preceded COVID-19; I had begun to form a loose proposal in the winter of 2018. Delays and setbacks in non-thesis related aspects of the DClinPsy led to delays in the submission of the thesis research proposal, however, I was in a position to submit in the January of 2020. Following a research meeting, we had noted the emerging threat of COVID-19 and the effect(s) this was having on the Chinese healthcare system. I made the difficult decision to delay the submission to evaluate and potentially make changes to the research proposal, in the event that COVID-19 threatened the UK (and indeed the globe) on a similar scale.

When it became apparent that COVID-19 was to be assigned a "pandemic", I had to reflect on the aims and purpose of the research project. Was this to be a study of critical care nurses *in the context* of the COVID-19 pandemic, or was this a study of the COVID-19 pandemic on nurses? It was felt that, whilst similar, the two were distinct to some extent. Again, I grappled my desire to understand the potential issues in depth against that of pragmatism – which was considered even more important in relation to the high physical, emotional, and time-related pressures nurses would be facing. I elected to proceed with the majority of the study as planned; we would investigate those factors which we hypothesised to be of importance in general critical care nursing, and consider the impact(s) of COVID-19 in the discussion. To this end, I elected to include an additional open-ended question allowing nurses to add any comments relating to their well-being during the pandemic, and also included redeployed nurses within the inclusion criteria (alongside a demographic question to separate the two in onward analysis). This was with the aim of broadening the "voice" of nurses in the study, both by increasing eligibility, and in giving nurses a direct platform to speak up about issues of perceived importance.

COVID-19 also led to a change in research topic for the systematic review. I had originally planned a best-fit framework synthesis (Carroll et al., 2013) of moral distress in critical care nurses, and had completed a proposal and informal systematic search for this. This had been with the aim of exploring critical care nurses' experiences of moral distress, and using these to evidence and expand upon emerging theories advocating for broader definitions of the moral distress construct (beyond the scope of this appraisal; see e.g. Campbell et al., 2016, Fourie, 2015, McCarthy & Gastmans, 2015, and Morley, 2018 for further information). In consultation with the research team, I felt that a review of nurse experiences during emerging respiratory infectious disease epidemics was important to better contextualise the impact(s) of working specifically in such contexts, whilst the empirical

research focused on aspects of critical care nursing that were of interest both during epidemic and non-epidemic contexts.

Reflexivity

My relationship with the research area was multifaceted, covering professional and personal dimensions. As aforementioned, I had a number of long-standing personal connections with healthcare staff in critical care. In my personal life, my partner was working in a critical care-based nursing role, and I had other friends in healthcare roles both on critical care and in the wider hospital. My role as trainee clinical psychologist encompassed both clinical work and active research. Following the onset of the COVID-19 pandemic in March of 2020, I moved into a new clinical placement in a staff support-based role. The boundaries between my personal life, and my clinical- and research-based work became blurred, moreso than I had ever experienced. As such, it feels both important and necessary to reflect on these identities in relation to the thesis.

"Partner" and "friend"

As a partner and friend to staff working in direct care roles, I was seeing a different side of the pandemic than I had as either a researcher or (to a lesser extent) a clinician. Particularly, I was seeing and hearing both the events and the impacts of work-related physical exhaustion and emotional trauma outside of the work environment. Understandably, these elicited strong emotional responses in me. Fear, helplessness, frustration, and abject outrage were among the most commonly felt emotional responses I held in relation to the experiences of my partner and friends. On reflection, these feelings may also have partially driven the change in my systematic review; using my power as a researcher to document these lived experiences of nurses felt like an increasingly important venture as I saw my

loved ones struggle through the initial stages of what would become known colloquially as the “first wave” of the COVID-19 pandemic.

“Psychologist”

My role as a psychologist on my final placement was to support staff (both directly and in an indirect training/supervisory role) throughout the hospital from April-August 2020. As such, I was gaining a perspective of the psychological impact(s) of COVID-19 which was distinct from my personal connections. Whilst research existed around historical pandemics, the research base had not yet had the time to fully document the impact(s) of COVID-19, and so my clinical work was driven in part by uncertainty, mirroring frontline staffs’ own uncertainty of ways forward amidst COVID-19 (*Section One*).

“Storyteller”

My role as a researcher did, at times, feel more like that of a storyteller in a time of rumour and misinformation. I had a strong desire to faithfully and accurately document the experiences detailed across both papers completed for the thesis. As aforementioned, I elected to add an additional open-ended question to increase nurse voice within the empirical paper. Whilst not my intention, I reflected on nurses’ use of the qualitative element of the moral distress measure. I was struck by the finding that all novel root causes related directly to the COVID-19 pandemic and had inadvertently become a core finding of the research, which I had not anticipated. For the general question around well-being, I grappled at length about my eventual decision to exclude this from the thesis. In the end, this decision was driven by my desire to give those nurses who had completed the question the appropriate space for their voices to be heard. The quantitative findings have important and novel implications for nurse well-being on critical care. Similarly, the COVID-19-specific moral distress findings have important implications which need attention. However, whilst these

findings are both powerful and reasonably succinct, the open-ended question generated broader and more in-depth responses from participants. I again reflected on whether this was driven by my difficulties with pragmatism. However, importantly – I felt that I couldn't do justice to the nurses' voices by making this a part of the present thesis; it was this feeling that led to my decision to analyse, write up and publish these findings separately. Raw data can be found in *Section Five: Appendix 5-B.*

I needed to remain particularly mindful of my identities as a friend, partner, and clinician whilst coding and synthesising in *Section One*. This was important as my research question ("what are the lived experiences of nurses working directly with patients during an emerging epi/pandemic…") was so open. I felt this open question was important so as not to exclude any one finding from the holistic experience (and to incorporate multiple lived realities according to my epistemological position), but had to remain wary of a potential unconscious privileging of findings which were congruent with those I had heard in my clinical and personal identities. Thematic synthesis uses inductive line-by-line coding of all papers' results sections (Thomas and Harden, 2007); lapses in coding thoroughness from non-congruent information was not my main concern. My need for self-awareness was most prominently felt in the "constant comparison" approach to the generation, review, expansion, and/or collapsing of themes. For me, this meant recognising occasions when codes elicited echoes of experiences within me from outside the research domain, and examining whether theme generation was being driven by the codes or by my own experiences. Often, these were congruent with general findings – for example, the experiences associated with rapidly changing guidelines and fears of infection were common both across studies and in my personal experiences. Other reflections were congruent with my personal or clinical experiences, but were neither common nor related enough for inclusion into the review. For example, I commonly heard of criticisms of governmental communications and/or support

initiatives both at home and at work, however, this was mentioned in only one study (Shih et al., 2007); it was thus inappropriate to include under the "wholehearted support" theme of the review.

RELEVANCE TO CLINICAL PSYCHOLOGY

The BPS defines clinical psychology as "applications of psychological science to help address human problems" (pg. 8; BPS, 2019b). Whilst both professionals and the general public tend to associate clinical psychologists primarily with 1-1 therapy (Patel et al., 2018, Wood et al., 2019), competencies are broader than psychotherapy alone. For example, practicing clinical psychologists are trained to work with not only individuals, but also in groups and indirectly at an organisational level.

Alongside occupational psychologists, clinical psychologists are trained to assess and formulate psychological distress at the level of the individual, team, or organisation, and to implement evidence-based interventions to improve well-being (BPS, 2019b, 2019c). Of the two, however, clinical psychologists are uniquely trained in relation to the identification and deconstruction of psychological distress, whether these arise from workplace-specific factors or other aspects of their lives. Thus, provided clinical psychologists are appropriately competent in working in such contexts (as per the Health and Care Professions Council [HCPC] standards of proficiency, 2016), they are in a strong position to provide leadership, consultancy, and/or formulation-driven intervention at all levels of the organisation.

First- and Second-Order Change

Drawing on theories of cybernetics, Watzlawick et al. (1974) differentiated between first- and second-order change in the resolution of problems. Broadly speaking, first-order change focuses on problem resolution by intervening at the level of individuals within a system (whilst leaving the system unchanged); by contrast, second-order change intervenes at

the systems-level to improve the individual-system fit. This distinction is important for current ways of working in the NHS. As aforementioned, nurses may be referred for psychological intervention for difficulties arising due to unreasonable work-related pressure – a second-order approach to improve work pressures is a more reasonable target for intervention given (as discussed in *Section 2*). There are some limits to these frames in relation to multi-tiered organisations (e.g. a nurse is an "individual" within a system [team] of nurses, but a team is also an "individual" within the hospital-wide system) which is beyond the scope of this appraisal. For simplicity, this appraisal will consider indirect, high-level intervention to be of the second-order, and direct intervention to be of the first-order.

Second-order change.

In considering opportunities for second-order change, it is first necessary to reframe the traditional view of who constitutes a "service user". However problematic, there is a relatively clear distinction between providers of healthcare and recipients of healthcare in traditional mental health systems (i.e. service users from the general population are referred into a service and seen by a clinician). This assumption forms the basis for many existing leadership documents from the BPS (2007, 2010). Where clinical psychologists are working in leadership positions and focusing specifically on staff well-being, there is a dual role of healthcare staff as both "employee" and "service user"; given that psychological work delivered aims to increase staff well-being, staff are occupying both roles whether they have been "referred" for direct support or not. Clinical psychologists must thus hold in mind guidance on effective leadership where healthcare staff are within either role.

The Guidelines for the Provision of Intensive Care Services is explicit in recommending psychologists as consultants to senior leadership on systemic issues influencing staff well-being (Faculty of Intensive Care Medicine [FICM] and the Intensive

Care Society [ICS], 2019). This includes advocating for changes to systems-level design, rather than using first-order psychological intervention alone; crucially, and in the context of physical determinants of moral distress uncovered in *Section Two* (e.g. understaffing), this means identifying "the level of resources needed to deliver safe and effective services" and "articulat[ing] the need for change and its impact on people and services" (BPS Division of Clinical Psychology, 2010). West et al. (2015) adopt a similar stance, promoting the need to deliver systems-level change to promote social justice and challenge practices which are unethical to either staff member or patient. The National Institute for Health and Care Excellence (2015) go beyond this, recommending a culture of psychological safety across the organisation and ensuring that the work environment meets requirements for (physical and mental) safety.

Clinical psychologists are thus acting as both "consultant" and "advocate" in high-level positions. Importantly, second-order change is proactive, with the aim of preventing psychological harm, rather than *responding* to psychological harm inflicted due to workplace-specific issues (BPS, 2017).

First-order change.

Making change at the level of the "individual" rather than the system is achievable in two forms. First, the use of 1-1 psychological intervention with staff members to facilitate understanding, reduce distress, and improve well-being. This is commonly seen as a psychologists' "bread and butter" and is similarly encouraged by FICM and ICS (2019). Psychologists are trained to deal with a diverse range of difficulties including anxiety, low mood, and post-traumatic stress. Evidence-based interventions also exist for morally distressing events and contexts (see e.g. Burston and Tuckett, 2013, Musto et al., 2015), and clinical psychologists are well-placed to deliver integrative, formulation-driven

intervention(s) to healthcare staff seeking support. Importantly, and in the context of the present thesis, many staff in *Section One* felt that they needed psychological support. Some had already accessed this, but many others either did not have an available service in the workplace, or else felt they didn't have the time to access them. Promotion of access to first-order services for staff are thus important to consider in second-order guidance to leaders aforementioned.

Team-based interventions represent the second option for first-order change (relative to the organisation). In addition to being promoted by FICM and ICS (2019), the BPS (2007) and the Psychological Professions Network (PPN; 2020) advocate for clinical psychologists working with teams to facilitate and cultivate psychological safety. Importantly, and as informed by *Section Two*, the development of team psychological safety needs to include not only open communication around workplace issues, but also around emotional issues; staff who are more able to express their thoughts *and* emotions without fear of retribution feel both less emotionally exhausted *and* more satisfied with their jobs. This may include the facilitation of reflective practice, Schwartz Rounds and/or group supervision (Flanagan et al., 2020, Kurtz, 2019, Thompson, 2013, PPN, 2020).

In addition, team-level interventions around psychological distress, as well as team-based issues, are another way of working for applied psychologists (BPS, 2010). For example, in a healthcare context, this could include trauma risk management (Jones et al., 2003) or critical incident processing (Galliano, 2002) following a ward-based traumatic event. However, these approaches underline the necessity for clinical psychologists to keep abreast with the research base. These are "psychological first aid" approaches to managing traumatic events and should not be confused with psychotherapy themselves – therapeutic approaches such as psychological debriefing have since been shown to increase harm

following a traumatic event (Wessely and Deahl, 2003, Regel, 2007) and are now actively discouraged.

CONCLUSION

This thesis represents my research journey throughout the DClinPsy and has developed and shaped my practice as a reflexive, critical clinician and researcher. The intersection of my personal and professional identities in relation to a subject of global importance during this journey have been outlined, as have the efforts made to maintain an unbiased position throughout the research journey. The findings solidify the importance of psychological thinking and practice beyond the therapy room – crucially, the findings outline the importance of clinical psychologists in leadership positions as experts and advocates to effect organisational-level change and promote well-being, as well as practitioners at the level(s) of systems, teams and the individual.

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SECTION FOUR: ETHICS DOCUMENTATION

Word count, including tables, figures and references: 11,155

Thomas Rozwaha

Doctorate in Clinical Psychology

Division of Health Research, Faculty of Health and Medicine

Lancaster University

FHMREC APPLICATION

Faculty of Health and Medicine Research Ethics Committee (FHMREC)

Lancaster University

Application for Ethical Approval for Research

for additional advice on completing this form, hover cursor over 'guidance'.

Guidance on completing this form is also available as a word document

Title of Project: Compassion and well-being in critical care nurses: A quantitative investigation

Name of applicant/researcher: Mr Thomas Rozwaha

ACP ID number (if applicable)*: N/A **Funding source (if applicable)** N/A

Grant code (if applicable): N/A

***If your project has *not* been costed on ACP, you will also need to complete the Governance Checklist [link].**

Type of study

☐ Involves existing documents/data only, or the evaluation of an existing project with no direct contact with human participants. **Complete sections one, *two* and four of this form**

☒ Includes *direct* involvement by human subjects. **Complete sections one, *three* and four of this form**

SECTION ONE

1. Appointment/position held by applicant and Division within FHM Trainee Clinical Psychologist, Doctorate in Clinical Psychology, Division of Health Research

2. Contact information for applicant:

E-mail: T.Rozwaha1@Lancaster.ac.uk **Telephone**: 07950 715277 (please give a number on which you can be contacted at short notice)

Address: C34 Furness College, Lancaster University, Bailrigg, Lancaster, LA1 4YG

3. **Names and appointments of all members of the research team (including degree where applicable)**

Dr Ian Fletcher, Senior Lecturer, Furness College, Lancaster University, Lancaster, LA1 4YG

Dr Sabir Giga, Senior Lecturer, Furness College, Lancaster University, Lancaster, LA1 4YG

Dr Julie Highfield, Consultant Clinical Psychologist, Adult Intensive Care Unit, University Hospital of Wales, Cardiff, Wales, CF14 4XW

3. If this is a student project, please indicate what type of project by marking the relevant box/deleting as appropriate: (please note that UG and taught masters projects should complete **FHMREC form UG-tPG**, following the procedures set out on the FHMREC website

PG Diploma ☐ Masters by research ☐ PhD Thesis ☐ PhD Pall. Care ☐

PhD Pub. Health ☐ PhD Org. Health & Well Being ☐ PhD Mental Health ☐ MD ☐

DClinPsy SRP ☐ [if SRP Service Evaluation, please also indicate here: ☐]
DClinPsy Thesis ☒

4. Project supervisor(s), if different from applicant: As above

5. **Appointment held by supervisor(s) and institution(s) where based (if applicable)**: As above

SECTION TWO

Complete this section if your project involves existing documents/data only, or the evaluation of an existing project with no direct contact with human participants

1. Anticipated project dates (month and year)
Start date: End date:

2. Please state the aims and objectives of the project (no more than 150 words, in lay-person's language):

Data Management

For additional guidance on data management, please go to Research Data Management *webpage, or email the RDM support email:* rdm@lancaster.ac.uk

3. Please describe briefly the data or records to be studied, or the evaluation to be undertaken.

4a. How will any data or records be obtained?

4b. Will you be gathering data from websites, discussion forums and on-line 'chat-rooms' n o

4c. If yes, where relevant has permission / agreement been secured from the website moderator? n o

4d. If you are only using those sites that are open access and do not require registration, have you made your intentions clear to other site users? n o

4e. If no, please give your reasons

5. What plans are in place for the storage, back-up, security and documentation of data (electronic, digital, paper, etc)? Note who will be responsible for deleting the data at the end of the storage period. Please ensure that your plans comply with General Data Protection Regulation (GDPR) and the (UK) Data Protection Act 2018.

6a. Is the secondary data you will be using in the public domain? n o

6b. If NO, please indicate the original purpose for which the data was collected, and comment on whether consent was gathered for additional later use of the data.

Please answer the following question *only* if you have not completed a Data Management Plan for an external funder

7a. How will you share and preserve the data underpinning your publications for at least 10 years e.g. PURE?

7b. Are there any restrictions on sharing your data?

8. Confidentiality and Anonymity

a. Will you take the necessary steps to assure the anonymity of subjects, including in subsequent publications? yes

b. How will the confidentiality and anonymity of participants who provided the original data be maintained?

9. What are the plans for dissemination of findings from the research?

10. What other ethical considerations (if any), not previously noted on this application, do you think there are in the proposed study? How will these issues be addressed?

SECTION THREE

Complete this section if your project includes *direct* involvement by human subjects

1. Summary of research protocol in lay terms (indicative maximum length 150 words):

Many factors can affect nurse well-being on critical care units (CCUs), including the experience of moral distress, personal resources and interpersonal support. At present, it isn't clear how these factors interact to influence CCU nurse well-being. This study will ask CCU nurses to fill an online survey about a) the extent to which they experience moral distress in the workplace, b) their ability to manage emotions at work (emotional regulation; a personal resource), and c) how able they feel safe to speak up and communicate within their teams (team psychological safety; a measure of interpersonal support). This study will then measure how much positive reward nurses get from their jobs, and whether the workplace is traumatic and emotionally exhausting (known as "compassion"). This study will also qualitatively explore how the recent covid-19 pandemic may have affected these domains via open-ended question and content analysis.

2. **Anticipated project dates (month and year only**)

Start date: March 2020 End date Dec 2020

Data Collection and Management

For additional guidance on data management, please go to Research Data Management *webpage, or email the RDM support email:* rdm@lancaster.ac.uk

3. Please describe the sample of participants to be studied (including maximum & minimum number, age, gender):

Participants will be registered nurses currently working in a critical or intensive care unit. Participants will be aged 18+, with no maximum age limit. There are no plans to exclude based on gender. There are no plans to exclude based upon working within adult, paediatric or neo-natal services, or based on geographic location. 180 participants will be required for proposed statistical analysis, with no proposed maximum number of participants. The survey will remain open for up to six months.

4. How will participants be recruited and from where? Be as specific as possible. Ensure that you provide the *full versions* of all recruitment materials you intend to use with this application (eg adverts, flyers, posters).

Participants will initially be recruited using email and social media links provided by The British Association of Critical Care Nurses (BACCN), spanning England, Wales, Scotland, and Northern Ireland. This has been agreed in principle provided the study receives ethical approval from FHMREC and BACCN are acknowledged in any subsequent publication (see thesis research materials, Appendix 1 for written proof). BACCN have good history of research involvement and have worked with Dr Julie Highfield (clinical supervisor) in the past. At present, BACCN have ~2,000 members across England, Scotland, Wales and Northern Ireland. Their latest membership survey had 233 completed responses and 100 partial responses from 526 total survey visits. An optional prize draw of a £50 amazon voucher to one entrant to encourage completion, pending confirmation from BACCN that they would be happy to distribute a survey with such an incentive. Aggregated email addresses from the secondary (prize draw-specific) Qualtrics survey will be stored within an encrypted Microsoft Excel file, with each entrants' email address assigned a unique identifier ranging from "1" up to the total number of entrants. Upon completion of data collection, a random number generator using the same range of numbers will be used to determine the winning entrant. Once the gift card has been emailed, the Excel file and all correspondence will then be immediately deleted by Mr Thomas Rozwaha. Please see Question 13 for further information regarding the prize draw. If a similar number completed this survey, this would be sufficient for the data analysis strategy.

It is unclear as to whether the current covid-19 pandemic will aid or hinder recruitment – additional recruitment methods have been explored to attenuate the potential for under-recruitment. The debrief sheet (final page of the survey) encourages nurses to share the survey link to further aid recruitment via snowball sampling. Further, the Irish Association of Critical Care Nurses (IACCN) are aware of the survey and have expressed an interest in assisting with recruitment, although formal confirmation of this had not been given at the time of submission for ethical approval. The first posts will be made on the BACCN Twitter account (using their association Twitter handle) & Facebook account (by a group administrator, not an individual user account), and on the Lancaster DClinPsy twitter account (using the DClinPsy's Twitter Handle). As the survey will be publicly available, anyone will be able to post, tweet, retweet or otherwise share survey information and survey link once it is in the public domain. Advertising materials have been developed and will be available to use on request (see thesis research materials, Advertising Materials). An optional prize draw of a £50 amazon voucher to one entrant has also been provided to encourage completion.

As the link will be distributed on social media, CCU nurses worldwide will be able to access, complete and distribute the survey.

5. Briefly describe your data collection and analysis methods, and the rationale for their use.

This study will utilise a quantitative cross-sectional design using an online survey methodology. Participants will answer questions from validated instruments and provide demographic details using the secure online questionnaire service, Qualtrics. An initial exploration of data will be conducted using correlations, t-tests and one-way ANOVA. Emotion regulation subscales, team psychological safety, and the overall moral distress score

will be correlated against the outcome measure (compassion). T-tests and ANOVA will be used to see if demographic variables (age, gender, job role etc) lead to significant differences for each of these scales. Variables with significant relationships with the outcome measure (compassion) will be entered into a multiple regression to investigate best predictors. Structural equation modelling will be considered following preliminary data exploration, dependent on outcomes and total participant numbers. Participants will also have the option of answering two open-ended questions in relation to their perception of the impacts of the current covid-19 pandemic on team psychological safety and emotional regulation, and a further open-ended question with any additional comments they wish to provide. Open-ended survey responses will undergo content analysis.

6. What plan is in place for the storage, back-up, security and documentation of data (electronic, digital, paper, etc.)? Note who will be responsible for deleting the data at the end of the storage period. Please ensure that your plans comply with General Data Protection Regulation (GDPR) and the (UK) Data Protection Act 2018.

Online survey information will be completed using the Qualtrics survey system and completed survey data will be stored within the Qualtrics software. This is an anonymous survey. Aggregated data will be transferred onto the University's secure servers and all analysis will be managed on these servers. Thomas Rozwaha will hold guardianship of the data until the assignment is submitted, after which, Dr Ian Fletcher (research supervisor) will hold guardianship of the data. Data will be held for 10 years, after which it will be deleted by Dr Ian Fletcher.

For entry into the optional prize draw (detailed below), participants will be required to enter an email address for contact. In order to ensure anonymity, participants wishing to enter the prize draw will be directed to a second Qualtrics survey, which will collect and store email addresses separately from survey data. Email will be similarly transferred to the University's secure servers and stored within an encrypted Microsoft Excel file. Upon completion of data collection, one email address will be selected at random from this file and the winner will be contacted. The Excel file will then be immediately deleted by Thomas Rozwaha.

7. Will audio or video recording take place? ☒ no ☐ audio ☐ video

a. Please confirm that portable devices (laptop, USB drive etc) will be encrypted where they are used for identifiable data. If it is not possible to encrypt your portable devices, please comment on the steps you will take to protect the data.

N/A

b What arrangements have been made for audio/video data storage? At what point in the research will tapes/digital recordings/files be destroyed?

N/A

Please answer the following questions *only* if you have not completed a Data Management Plan for an external funder

8a. How will you share and preserve the data underpinning your publications for at least 10 years e.g. PURE?

Following the thesis *viva voce*, data will be deposited in Lancaster University's institutional data repository and made available upon request with an appropriate data license. Lancaster University uses Pure as the data repository which will hold, manage, preserve and provide access to datasets produced by Lancaster University research.

8b. Are there any restrictions on sharing your data ?

Supporting data will only be shared on request with genuine researchers. Access will be granted on a case by case basis by the Faculty of Health and Medicine.

9. Consent
a. Will you take all necessary steps to obtain the voluntary and informed consent of the prospective participant(s) or, in the case of individual(s) not capable of giving informed consent, the permission of a legally authorised representative in accordance with applicable law? yes

b. Detail the procedure you will use for obtaining consent?

Following presentation of the participant information sheet (page 1 of the online survey), participants will provide consent using an adapted version of the FHMREC consent template for online anonymous surveys (page 2 of the online survey). Participants are informed that proceeding to page 3 of the survey will constitute consent to take part in the study.

10. What discomfort (including psychological e.g. distressing or sensitive topics), inconvenience or danger could be caused by participation in the project? Please indicate plans to address these potential risks. State the timescales within which participants may withdraw from the study, noting your reasons.

There is the potential that some of the questions could remind participants of distressing events on the ward/unit and that this could induce some distress in participants. The risk of this is likely to be low. Participants will be recommended to contact their GP/primary care physician, or their local occupational health department/line manager if such events occur. Participants are also provided with a link to an online well-being library with specific

resources for critical care staff, and contact details for a nationwide NHS staff support service. As information is anonymous, information cannot be withdrawn following completion. Partial responses are recorded. Participants are reminded in the consent process that information cannot be withdrawn once entered.

11. What potential risks may exist for the researcher(s)? Please indicate plans to address such risks (for example, noting the support available to you; counselling considerations arising from the sensitive or distressing nature of the research/topic; details of the lone worker plan you will follow, and the steps you will take).

None identified.

12. Whilst we do not generally expect direct benefits to participants as a result of this research, please state here any that result from completion of the study.

Participants may enter for an optional prize draw of 1 x £50 Amazon voucher.

13. Details of any incentives/payments (including out-of-pocket expenses) made to participants:

1 x £50 Amazon voucher (optional entry at the start of the survey). Should participants wish to enter the prize draw, they will be directed to a secondary survey. The secondary survey will ask participants to indicate they are choosing to opt-in to the prize draw, and will ask participants to provide the email address they would like an Amazon voucher to be forwarded to should they win the prize draw. Following completion of this, participants are re-directed back to the primary survey. The data collected in the secondary survey will not be linked to the primary anonymised survey, and this is made clear to participants within both surveys and within the information sheet. The email addresses will be aggregated in an encrypted Microsoft Excel file, with each entrants' email address assigned a unique identifier ranging from '1' up to the total number of entrants. A random number generator drawing from the same range of numbers will be used to determine winners. The student (T. Rozwaha) will forward winning participant an electronic £50 Amazon voucher via email. Immediately following this, the Microsoft Excel file and all correspondence will be deleted by the student (T. Rozwaha).

14. Confidentiality and Anonymity

a. Will you take the necessary steps to assure the anonymity of subjects, including in subsequent publications?

yes

b. Please include details of how the confidentiality and anonymity of participants will be ensured, and the limits to confidentiality.

No personal information will be taken and demographic information is sufficient that participants will not be identifiable based on information. This will ensure anonymity. Individual qualitative responses may be quoted in the thesis and subsequent publications – whilst this will not maintain confidentiality, anonymity will be similarly ensured. Whilst email addresses will be taken for the optional prize draw, these will be collected and stored separately to the survey content, as aforementioned. These will not be shared or published and will be immediately deleted following prize draw.

15. If relevant, describe the involvement of your target participant group in the *design and conduct* of your research.

Three qualified nurses who have experience in a critical care setting have been consulted in relation to the survey measures, layout, length and appropriateness of demographic information. Survey content was adjusted in response to feedback about: Who to contact in the workplace in relation to any distress from the survey, job titles in the "demographic information" section, completion of the survey on a mobile device, and the open-ended questions asked in the survey. These nurses felt the length of the survey was acceptable, particularly given the opportunity for personal reflections and comments.

16. What are the plans for dissemination of findings from the research? If you are a student, include here your thesis.

Submission of research in a thesis as partial fulfilment for the degree of Doctor in Clinical Psychology. Presentation of the research at the British Association of Critical Care Nurses annual conference in November 2020. There are plans to submit research for publication following viva.

17. What particular ethical considerations, not previously noted on this application, do you think there are in the proposed study? Are there any matters about which you wish to seek guidance from the FHMREC?

One ethical issue is the potential de-anonymisation of responses to the researcher, as, although survey responses and email addresses are stored separately, the researcher will have access to both prior to formal analysis. If there is a low or slow response rate, it may be possible that the researcher will be able to identify which email addresses are associated with which survey responses. To address this, the researcher will not access content until data collection is complete.

SECTION FOUR: signature

Applicant electronic signature: Thomas Rozwaha
Date 28/05/2020

Student applicants: please tick to confirm that your supervisor has reviewed your application, and that they are happy for the application to proceed to ethical review ☒

Project Supervisor name (if applicable): Dr Ian Fletcher, Dr Sabir Giga Date application discussed 28/05/2020

Submission Guidance

1. **Submit your FHMREC application by email to Becky Case (**fhmresearchsupport@lancaster.ac.uk) as two separate documents:
    i. **FHMREC application form.**
    Before submitting, ensure all guidance comments are hidden by going into 'Review' in the menu above then choosing *show markup>balloons>show all revisions in line.*
    ii. **Supporting materials.**
    Collate the **following materials for your study, if relevant, into a single word document:**
        a. **Your full research proposal (background, literature review, methodology/methods, ethical considerations).**
        b. Advertising materials (posters, e-mails)
        c. Letters/emails of invitation to participate
        d. Participant information sheets
        e. Consent forms
        f. Questionnaires, surveys, demographic sheets
        g. Interview schedules, interview question guides, focus group scripts
        h. Debriefing sheets, resource lists

    Please note that you DO NOT need to submit pre-existing measures or handbooks which support your work, but which cannot be amended following ethical review. These should simply be referred to in your application form.

2. Submission deadlines:
    i. Projects including direct involvement of human subjects **[section 3 of the form was completed]**. The *electronic* version of your application should be submitted to Becky Case **by the committee deadline date.** Committee meeting dates and application submission dates are listed on the FHMREC website. Prior to the FHMREC meeting you may be contacted by the lead reviewer for further clarification of your application. Please ensure you are

available to attend the committee meeting (either in person or via telephone) on the day that your application is considered, if required to do so.

ii. The following projects will normally be dealt with via chair's action, and may be submitted at any time. **[Section 3 of the form has *not* been completed, and is not required].** Those involving:

a. existing documents/data only;
b. the evaluation of an existing project with no direct contact with human participants;
c. service evaluations.

3. **<u>You must submit this application from your Lancaster University email address, and copy your supervisor in to the email in which you submit this application</u>**

RESEARCH PROTOCOL

Compassion and well-being in critical care nurses: A quantitative investigation

Research team: Mr Thomas Rozwaha (Trainee Clinical Psychologist, Lancaster University), Dr Ian Fletcher (Research Supervisor; Senior Lecturer, Lancaster University), Dr Sabir Giga (Research Supervisor; Senior Lecturer, Lancaster University) and Dr Julie Highfield (Field Supervisor; Consultant Clinical Psychologist, University Hospital of Wales, Cardiff).

Research Proposal

Introduction

Background information

Historically, research into nurses on the Critical Care Unit (CCU)[1] has focused on ill-being (the negative reciprocal of well-being), including compassion fatigue (CF) – a culmination of negative emotion arising from traumatic workplace experiences (Jarden et al., 2019). The inability of nurses to enact what they consider to be "morally correct" actions (often due to systemic constraints) is known as moral distress (MD) and can lead to similar negative feeling states (Huffman & Rittenmeyer, 2012; McAndrew, Leske & Schroeter, 2018). At an organisational level, ill-being increases staff turnover, with 18 British CCU's recently reporting an annual nursing staff turnover above 20% (Highfield, 2019). In recent years, a growing focus on the relational and systemic aspects of workplace well-being has been emphasised by governmental representatives (Black, 2015).

CCU nurses are regularly exposed to unpredictable, demanding and traumatic experiences in the workplace. Despite this, nurses are committed to delivering compassionate, high-quality care from a humanistic value base (Verplanken 2004; Austin et

[1] The term "Critical Care Unit" is used throughout this proposal, however, these can also be referred to as "Intensive Care Units", "Intensive Treatment Units" or "Intensive Therapy Units". As such, this proposal draws from sources using all these terms.

al., 2005; Sacco & Copel, 2018). Satisfaction and the positive emotions which arise from such a value base likely drive the commitment to continue to deliver this care, known as compassion satisfaction (CS). Stamm (2010) supposes a professional quality of life in the workplace – composed of CS and CF, cumulatively referred to as compassion. Preliminary literature searching identified compassion as an area commonly used as a work-based well-being outcome in ICU, and Stamm's model is the most widely used measure of compassion (Cocker & Joss, 2016). However, low levels of compassion can lead to burnout and affect global well-being – common in CCU staff.

In addition to the typical experiences CCU staff are exposed to during day-to-day work, CCU staff are among those whose practice is affected during emerging and ongoing infectious disease epi/pandemics (e.g. increased workload and changing procedures due to large numbers of critically unwell infectious patients). Working in these contexts may increase experiences of moral distress, and the necessity of social support and team working has been outlined for enabling continued nursing practice (Sokol, 2006; Liu & Liehr, 2008).

The British Psychological Society (BPS) has detailed the role of psychological professionals in helping employers to better understand the importance of how psychosocial aspects of the workplace affect well-being, as well as in developing and maintaining effective, psychologically safe teams (BPS 2001; 2010; 2017). This is consistent with the Faculty of Intensive Care Medicine's (2019) guidance, emphasising the role of psychologists in addressing CCU workplace stress at individual, team and organisational levels. Causes of nurse ill-being across several nursing specialities has been previously researched. However, concurrent measurement of demanding work environments, personal resources and social support in a CCU-specific sample is less well-documented and remains a novel area of research (Cusack et al., 2016; Gershon et al., 2007; Moss et al., 2016; Poncet et al., 2007).

There is no research exploring these factors (and their impact on compassion) in a CCU-specific sample during an epi/pandemic event.

The job demands-control (-support) (JDC[S]) model has been the theoretical foundation for more empirical studies than any other work-related stress model, outlining that job demands, job control (including personal resources), and social support (interpersonal resources) are key, distinct factors which independently contribute to workplace strain and well-being (Fila, 2016; Griffin & Clarke, 2011; Johnson & Hall, 1988; Johnson, Hall & Theorell, 1989). The JDC(S) model and its predecessor, the job demands-control model (Karasek, 1979) examine strain using contrasting but overlapping hypotheses:

1. The strain hypothesis posits an increased likelihood of strain when (a) demands are increased; (b) control and/or support is decreased; and, (c) that a combination of (a) and (b) increases the likelihood of strain more than any one factor alone (Van Vechel, de Jonge & Landsbergis, 2005) .
2. The buffer hypothesis is based on the philosophy that reducing demands will minimise overall strain and focuses on the interactive effects between all three key factors (Van der Doef & Maes, 1999).

This study will investigate the impact(s) of demographic factors, job demands, personal and interpersonal resources on CCU nurses' well-being, primarily using the JCD(S) strain hypothesis.

Aims and research questions

The proposed study will use the JDC(S) model to investigate the interrelationships between levels of MD (a psychological demand), emotion regulation (a personal resource), and team psychological safety (an interpersonal resource) in CCU nurses, and their relationship to compassion. This study will also explore nurses' perspectives on team psychological safety, emotion regulation and workplace well-being in the context of working

during the novel human respiratory coronavirus (covid-19) pandemic. Initially, this study hypothesises that higher levels of MD will lead to greater CS and lower CF, and that the impact of MD (measured by compassion) will be attenuated by greater levels of personal and interpersonal resource (See figure 1). Research questions are as follows:

1. Is MD positively correlated with CF and negatively correlated with CS?
2. Are emotion regulation and team psychological safety negatively correlated with CF and positively correlated with CS?
3. If sample size is sufficient for structural equation modelling: Does emotion regulation and/or team psychological safety attenuate (mediate/moderate) the impact of MD on compassion?
4. What are nurses' perspectives on how the covid-19 pandemic has impacted workplace well-being?

Method

Sample

Participants will be registered nurses currently working in a CCU. Participants will be

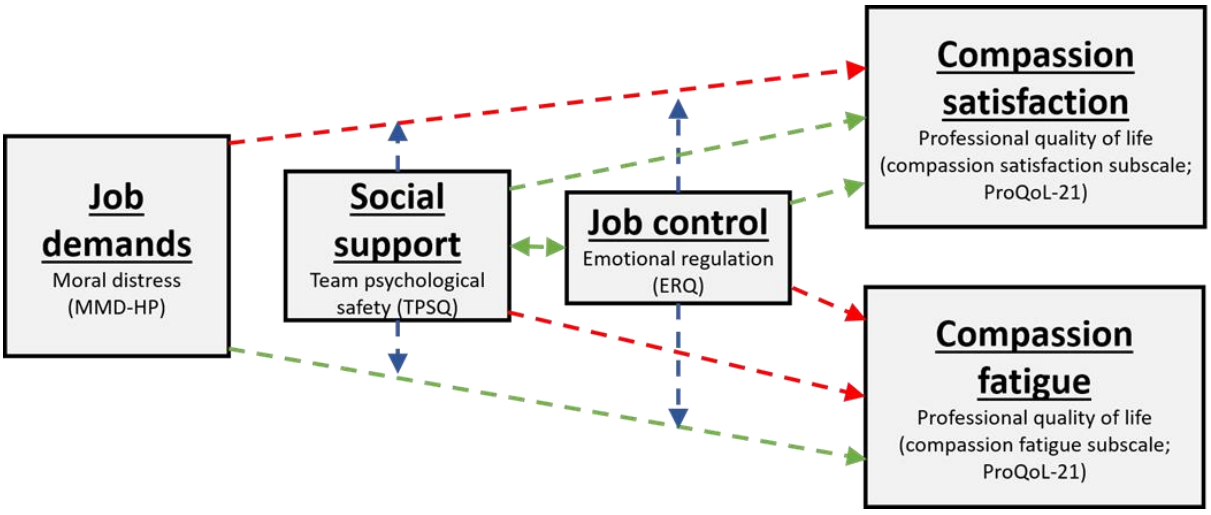

Figure 1. Hypothesised relationships between subscales used in proposed research.

aged 18+, with no maximum age limit proposed. There are no plans to exclude based on gender. There are no plans to exclude based upon working within adult, paediatric or neo-

natal services, nor based on geographic location. 180 participants will be minimum required for proposed statistical analysis.

Design

This study will utilise a quantitative cross-sectional design using an online survey methodology. Participants will answer questions from validated instruments and provide demographic details using the secure online questionnaire service, Qualtrics. Participants will also have the option of answering two open-ended questions in relation to the impacts of the current covid-19 pandemic on team psychological safety and emotion regulation, and a further open-ended question with any additional comments they wish to provide.

Three qualified critical care nurses have been consulted in relation to the survey measures, layout, and appropriateness of demographic information collected prior to distribution. Changes have been made based upon their recommendations. They have given favourable opinion in relation to survey length and content.

Measures

Job demands.

Job demands will be measured using the Moral Distress Scale for Healthcare Professionals (MMD-HP; Epstein et al., 2019). The MMD-HP measures current levels of MD. MD is a commonly experienced emotional demand for nurses working in CCU, and is associated with clinician burnout (Fumis et al., 2017). The MMD-HP is a significant revision of a previous scale following the publication of new literature. Whilst literature debates whether job demands are motivating or straining (or both), there is an implication that, for nursing, high MD is often a strain demand rather than a potential for job control. Current levels of MD are scored in the instrument as a single score. The MMD-HP is a relatively recent scale, published in 2019. Whilst the authors conducted an exploratory factor analysis on the scale and generated four factors based on root cause (patient, system and two team-

based factors), they recommend caution when using these factors as subscales. Permission is not required provided use is cited.

Job control.

Factors of job control include personal resources. This study will utilise emotion regulation, implicated as a positive predictor of work engagement and well-being (see Albrech [2011] for an overview). The Emotional Regulation Questionnaire (Gross & John, 2003) is a widely used test with two subscales to measure two elements of emotion regulation: Cognitive reappraisal (6 items) and expressive suppression (4 items). Buruck et al. (2016) demonstrated that emotion regulation skills training in the workplace increased well-being, and that a relative lack of emotion regulation skills increases the risk of mental distress (Aldao et al., 2010). Permission is not required provided use is cited.

Social support.

Social support factors include interpersonal, team-based and organisational support factors which contribute to workplace well-being. Team psychological safety is a construct defined as where the team is considered safe for interpersonal risk-taking – important in multi- and inter-disciplinary working. The Team Psychological Safety Questionnaire (Edmondson, 1999) is a standard and widely used 7-item test to measure team psychological safety in the literature. Permission is not required provided use is cited.

Participant-led considerations

An open-ended question invites nurses to detail any comments they have in relation to their workplace well-being – either generally, or specifically due to the recent covid-19 pandemic.

Outcomes.

The Professional Quality of Life Scale-V (Stamm, 2010) is commonly used in the nursing literature as an outcome (as aforementioned) and is currently the most widely used

measure of compassion (Cocker & Joss, 2016). Permission is not required provided use is cited. The shorter Professional Quality of Life-21 (Heritage, Rees & Hegney, 2018) will be used. This uses 21 of the items from the original scale (based on Rasch analysis), but unlike its predecessor, does not separate CF into burnout and secondary traumatic stress due to measurement inadequacy – instead using CF and CS alone as more robust subscales. Though compassion is workplace-specific, high CF/low CS can affect global well-being – common in ICU staff (Iacovides et al., 1999; Maslach, Schaufeli & Leiter, 2001; Poncet et al., 2007).

The above surveys total 67 survey questions overall. I will additionally collect demographic information: Age, gender, if they have been redeployed into CCU due to covid-19, time in current (CCU) role, job role (best fit from drop-down list), Country, and whether the participants are working in an adult/paediatric/neonatal CCU (drop-down list). Qualtrics estimates that this will take participants 26 minutes to complete based upon: Average reading speed; transition times between pages, questions, and choices within a question; time to answer quantitative questions; and time to type a text-entry response.

Consent

Following presentation of the participant information sheet (page 1 of the online survey), participants will provide consent using an adapted version of the FHMREC consent template for online anonymous surveys (page 2 of the online survey). Participants are informed that proceeding to page 3 of the survey will constitute consent to take part in the study.

Recruitment

The British Association of Critical Care Nurses (BACCN) have agreed to share the survey via social media channels and in their newsletter (see Appendix 1) provided they are acknowledged in any subsequent publication (in e.g. journal articles, conference presentations). BACCN have a good history of research involvement and have worked with

Dr Julie Highfield (clinical supervisor) in the past. At present, BACCN have ~2,000 members across England, Scotland, Wales and Northern Ireland. Their latest membership survey had 233 completed responses and 100 partial responses from 526 total survey visits. If a similar number completed this survey, this would be sufficient for the data analysis strategy.

It is unclear as to whether the current covid-19 pandemic will aid or hinder recruitment – additional recruitment methods have been explored to attenuate the potential for under-recruitment. The debrief sheet (final page of the survey) encourages nurses to share the survey link to further aid recruitment via snowball sampling. Further, the Irish Association of Critical Care Nurses (IACCN) are aware of the survey and have expressed an interest in assisting with recruitment, although formal confirmation of this had not been given at the time of submission for ethical approval. As the survey will be publicly available, anyone will be able to post, tweet, retweet or otherwise share survey information and survey link once it is in the public domain. Advertising materials have been developed and will be available to use on request. An optional prize draw of a £50 amazon voucher to one entrant has also been provided to encourage completion.

As the link will be distributed on social media, CCU nurses worldwide will be able to access, complete and distribute the survey.

Data Collection and Storage

Online survey information will be completed using the Qualtrics survey system and completed survey data will be stored within the Qualtrics software. This is an anonymous survey. Aggregated data will be transferred onto the University's secure servers and all analysis will be managed on these servers. Mr Thomas Rozwaha will hold guardianship of the data until the thesis is submitted, after which, Dr Ian Fletcher (research supervisor) will hold guardianship of the data. Data will be held for 10 years, after which it will be deleted by Dr Ian Fletcher.

Following the thesis *viva voce* examination, data will also be deposited in Lancaster University's institutional data repository and made available upon request with an appropriate data license. Lancaster University uses Pure as the data repository which will hold, manage, preserve and provide access to datasets produced by Lancaster University research.

As aforementioned, participants have the option to enter a prize draw, for which participants will be required to enter an email address for contact. In order to ensure survey response anonymity, participants wishing to enter the prize draw will be directed to a second Qualtrics survey which will collect and store email addresses separately from survey data. Aggregated email addresses will be similarly transferred to the University's secure servers and stored within an encrypted Microsoft Excel file. Upon completion of data collection, one email address will be selected at random from this file (using a random number generator) and the winner will be contacted. The Excel file will then be immediately deleted by Mr Thomas Rozwaha.

Proposed Analysis

An initial exploration of data will be conducted using correlations, t-tests and one-way ANOVA. Emotion regulation subscales, team psychological safety, and the overall moral distress score will be correlated against the outcome measure (compassion). T-tests and ANOVA will be used to see if demographic variables (age, gender, job role etc) lead to significant differences for each of these scales. Variables with significant relationships with the outcome measure (compassion) will be entered into a multiple regression to investigate best predictors. Assuming a preliminary multiple linear regression model for analysis using 5 tested predictors from 9 total predictors, an a-priori computation for a fixed model linear multiple regression calculated in G*Power (2017) suggests a total sample size of 180 (Critical F 3.127), assuming a .15 (medium) effect size, .01 alpha error probability, and power of .95.

This seems feasible based upon the recruitment plans and may also be a suitable sample size for structural equation modelling (around 200 participants), if a conservative approach were adopted (Wang & Wang, 2012). Structural equation modelling will be considered following preliminary data exploration.

Confirmatory factor analyses (CFA) will also be considered following preliminary data exploration. Recommendations for minimum sample size has varied, but guidelines exist depending on variable-to-factor ratio and level of communality (Mundfrom, Shaw & Ke, 2005). Pending suitable data, CFAs will be conducted on: a) the MMD-HP, to evaluate the factor structure proposed by Epstein et al. (2019), and b) the ERQ, as research has suggested that the omission of question three may give a more robust factor structure (Spaapen et al., 2014; Rice et al., 2018) – CFAs will thus be conducted on both the 10-item and 9-item data to determine best fit.

Qualitative data from open-ended questions will be subject to content analysis on a per-question basis (Mayring, 2004).

Ethical Considerations

One ethical issue is the potential de-anonymisation of responses as, although survey responses and email addresses are stored separately, the researcher will have access to both prior to formal analysis. If there is a low or slow response rate, it may be possible that the researcher will be able to identify which email addresses are associated with which survey responses. To address this, the researcher will not access content until data collection is complete.

Another potential ethical issue is a low risk of distress arising from reflecting on workplace experiences during covid-19. However, links to supportive materials will be provided in both the participant information sheet and the debrief sheet. The participant information sheet and debrief sheet will also both provide participants with a phone/text

numbers to a free support service for NHS staff, and encourage participants to contact their local GP/primary care physician, line manager, and/or occupational health department if necessary.

Advertising Materials

This poster (Figure 2) will be distributed via social media and in email newsletters (as aforementioned) to encourage participation. The custom link will redirect applicants to the Qualtrics survey.

BACCN and IACCN (pending confirmation) will be advised to include the following (as a status, tweet, in the newsletter etc) when displaying the poster one social media:

"Would you like to take part in a research study? This online survey aims to better understand critical care nurses' well-being. If you're interested, visit bit.ly/nursewellbeing for more information or to take part."

Figure 2. Poster advertising the proposed study.

Participant Information Sheet

The following information will form "page 1" of the online survey on Qualtrics

For further information about how Lancaster University processes personal data for research purposes and your data rights please visit our web page.

Compassion and well-being in critical care nurses

Thank you for your interest in this research project. My name is Tom Rozwaha, and I am conducting this research as part of my role as a student on the Doctorate in Clinical Psychology programme at Lancaster University (Lancaster, United Kingdom). I am conducting the study to better understand some of the factors which may affect the well-being of nurses working on critical care. I am also looking at how some of these factors may have been affected by the current covid-19 pandemic.

This project is being supervised by Dr Ian Fletcher and Dr Sabir Giga, Senior Lecturers at Lancaster University, Lancaster, and by Dr Julie Highfield, Consultant Clinical Psychologist at the University Hospital of Wales, Cardiff.

What is the study about?

The well-being of nurses working on critical care. There are many factors which might affect someone's overall well-being at work – I am interested in researching some of these factors in a critical care environment. I am also interested in the potential effect of the recent covid-19 pandemic on these factors.

Why have I been approached?

You have been approached because we are interested in understanding factors affecting the well-being of nurses who are working on a critical care unit. Your responses, opinions and experiences would be valued.

Do I have to take part?

No. It is completely up to you to decide if you want to take part in the research. You can withdraw at any point before submitting the survey. Because your answers are anonymous, we will be unable to withdraw your completed responses after you have started to take part in the survey.

What will I be asked to do if I take part?

If you decide you would like to take part in this research, you will be asked to complete a survey. This can be accessed online and will take approximately 25 minutes to complete. The survey will ask you questions about you, your workplace and your well-being. This survey will also give you the option of writing about some of your experiences in text. After this time, the responses you have made will automatically be submitted and you will not be able to return to the survey.

Will my data be identifiable?

The data you provide in the survey will be completely anonymous and stored securely on university servers. Lancaster University will store the electronic data from the survey for ten years. If you have entered your email for entry into the prize draw, this will be stored separately and will not be linked to any responses you provide. Email addresses will be immediately deleted following the prize draw.

What will happen to the results?

The results will be analysed and reported in a thesis which will be presented at conferences, online webinars, and/or be submitted for publication in an academic journal. Raw data will be kept confidential and only accessed by the research team. However, aggregated data may be shared with other genuine researchers if requested once the project is complete.

Are there any risks?

We do not anticipate any risks to your well-being as a result of participating in this research.

Are there any benefits to taking part?

You may find taking part in the study interesting. The findings of the study may increase our understanding of critical care nurse well-being. The findings of the study may also increase our understanding of critical care nurse well-being during infectious disease pandemics. The findings of the study may help researchers or clinicians to find ways to improve critical care nurse well-being. This study has an optional prize draw, with a chance to win one £50 Amazon voucher.

Who has reviewed the project?

This study has been reviewed and approved by the Faculty of Health and Medicine Research Ethics Committee at Lancaster University.

Where can I obtain further information about the study if I need it?

If you have any questions about the study, please contact the primary researcher Tom Rozwaha (by email: t.rozwaha1@lancaster.ac.uk).

Complaints

If you wish to make a complaint or raise concerns about any aspect of this study and do not want to speak to the researcher, you can contact:

Professor Bill Sellwood, Programme Director

Tel: (+44) 1524 593998

Email: b.sellwood@lancaster.ac.uk

Faculty of Health and Medicine

(Division of Health Research)

Lancaster University

Lancaster

LA1 4YG

If you wish to speak to someone outside of the Clinical Psychology Doctorate Programme, you may also contact:

Dr Laura Machin, Chair of the Faculty of Health and Medicine Research Ethics Committee

Tel: (+44) 1524 594973

Email: l.machin@lancaster.ac.uk

Faculty of Health and Medicine

(Lancaster Medical School)

Lancaster University

Lancaster

LA1 4YG

Resources in the event of distress

Should you feel distressed either as a result of taking part, or in the future, we recommend the following:

Well-being resources

The Intensive Care Society has created well-being resource library for staff working in critical care, which you can view here.

NHS staff support hotline

A hotline for NHS staff has also been launched to support NHS staff during the covid-19 pandemic. You can view more information about the support available here.

- You can ring 0300 131 7000 between 07:00 – 23:00.
- You can text FRONTLINE to 85258 24-hours per day.

Support from your workplace

You may be able to access specialist support from your workplaces' occupational health department or through your line manager.

Support from your primary care physician

You can also seek support from your GP/Primary Care Physician.

Thank you for taking the time to read this information sheet.

Consent Form

The following information will form "page 2" of the online survey on Qualtrics

Compassion and well-being in critical care nurses.

We are asking if you would like to take part in a research project exploring factors which may affect the well-being of nurses working on critical care. If you have any questions of queries before proceeding to the survey, please speak to the principal investigator, Tom Rozwaha (email: t.rozwaha1@lancaster.ac.uk).

By proceeding to the survey, you confirm that:

- You have read the information sheet and understand what is expected of you within this study.
- You confirm that you understand that any responses/information you give will remain anonymous.
- Your participation is voluntary.
- You consent to Lancaster University keeping the anonymised data for a period of 10 years after the study has finished.
- By proceeding with the survey, you consent to taking part in the current study.

Survey Content

The following information will form the main body of the online survey on Qualtrics. All questions are forced response unless otherwise stated.

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Please click here if you wish to enter the prize draw to win 1 x £50 Amazon voucher. This will open a separate survey which will record your email address independently from any survey responses.

If you wish to complete the survey but do not wish to enter the prize draw, please proceed as normal.

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Demographic information

1. How old are you?

   [text box for age input]

2. What is your gender?

   - Male
   - Female
   - Other/Do not wish to specify

     [text box for optional gender input]

3. In which country do you currently reside?

   [drop-down list of countries – automatically generated by Qualtrics software]

4. Have you been redeployed into critical care due to the recent covid-19 pandemic?

   - Yes
   - No

5. How long have you been in your current role?

For those who have been redeployed, please respond with how long you have been in your redeployed position.

Years [text box for years input]

Months [text box for months input]

6. Which description best fits your current job role?
    - Newly-qualified staff nurse (less than one year qualified)
    - Staff nurse
    - Sister/Charge Nurse
    - Clinical Educator
    - Specialist Nurse/Advanced Nurse Practitioner
    - Nurse Manager/Ward Manager/Team Leader
    - Matron/Head Nurse
7. How would your current ward/unit be best described?
    - Neo-natal critical care ward/unit
    - Paediatric critical care ward/unit
    - Adult critical care ward/unit

Page 5

Moral distress occurs when professionals cannot carry out what they believe to be ethically appropriate actions because of constraints or barriers. This survey lists situations that occur in clinical practice. If you have experienced these situations they may or may not have been morally distressing to you.

Please indicate how frequently you have experienced each item. Also, rank how distressing these situations are for you. If you have never experienced a particular situation, select “0” (never) for frequency. Even if you have not experienced a situation, please indicate how distressed you would be if it occurred in your practice.

Note that you will respond to each item by checking the appropriate column for two dimensions: Frequency and Level of Distress. If you are answering on mobile, it may be helpful to rotate your mobile to a landscape position.

	Frequency (0 = never; 4 = very frequently)					Level of distress (0 = none; 4 = very distressing)				
	0	1	2	3	4	0	1	2	3	4
Witness healthcare providers giving "false hope" to a patient or family.	O	O	O	O	O	O	O	O	O	O
Follow the family's insistence to continue aggressive treatment even though I believe it is not in the best interest of the patient.	O	O	O	O	O	O	O	O	O	O
Feel pressured to order or carry out orders for what I consider to be unnecessary or inappropriate tests and treatments.	O	O	O	O	O	O	O	O	O	O
Be unable to provide optimal care due to pressures from managers, administrators or insurers to reduce costs.	O	O	O	O	O	O	O	O	O	O
Continue to provide aggressive treatment for a person who is most likely to die regardless of this treatment when no one will make a decision to withdraw it.	O	O	O	O	O	O	O	O	O	O

Be pressured to avoid taking action when I learn that a physician, nurse, or other team colleague has made a medical error and does not report it.	O	O	O	O	O	O	O	O	O	O
Be required to care for patients whom I do not feel qualified to care for.	O	O	O	O	O	O	O	O	O	O
Participate in care that causes unnecessary suffering or does not adequately relieve pain or symptoms.	O	O	O	O	O	O	O	O	O	O
Watch patient care suffer because of a lack of provider continuity.	O	O	O	O	O	O	O	O	O	O
	0	1	2	3	4	0	1	2	3	4
Follow a physician's or family member's request not to discuss the patient's prognosis with the patient/family.	O	O	O	O	O	O	O	O	O	O
Witness a violation of a standard of practice or a code of ethics and not feel sufficiently supported to report the violation.	O	O	O	O	O	O	O	O	O	O
Participate in care that I do not agree with, but do so because of fears of litigation.	O	O	O	O	O	O	O	O	O	O
Be required to work with other healthcare team members who are not as competent as patient care requires.	O	O	O	O	O	O	O	O	O	O
Witness low quality of patient care due to poor team communication.	O	O	O	O	O	O	O	O	O	O
Feel pressured to ignore situations in which patients have not been given adequate information to ensure informed consent.	O	O	O	O	O	O	O	O	O	O
Be required to care for more patients than I can safely care for.	O	O	O	O	O	O	O	O	O	O

Experience compromised patient care due to lack of resources/equipment/bed capacity.	O	O	O	O	O	O	O	O	O	O
Experience lack of administrative action or support for a problem that is compromising patient care.	O	O	O	O	O	O	O	O	O	O
	0	1	2	3	4	0	1	2	3	4
Have excessive documentation requirements that compromise patient care.	O	O	O	O	O	O	O	O	O	O
Fear retribution if I speak up.	O	O	O	O	O	O	O	O	O	O
Feel unsafe/bullied amongst my own colleagues.	O	O	O	O	O	O	O	O	O	O
Be required to work with abusive patients/family members who are compromising quality of care.	O	O	O	O	O	O	O	O	O	O
Feel required to overemphasize tasks and productivity or quality measures at the expense of patient care.	O	O	O	O	O	O	O	O	O	O
Be required to care for patients who have unclear or inconsistent treatment plans or who lack goals of care.	O	O	O	O	O	O	O	O	O	O
Work within power hierarchies in teams, units, and my institution that compromise patient care.	O	O	O	O	O	O	O	O	O	O
Participate on a team that gives inconsistent messages to a patient/family.	O	O	O	O	O	O	O	O	O	O
Work with team members who do not treat vulnerable or stigmatized patients with dignity and respect.	O	O	O	O	O	O	O	O	O	O
	0	1	2	3	4	0	1	2	3	4

If there are other situations in which you have felt moral distress, please write and score them here.

	Situation	Frequency (0 = never; 4 = very frequently)					Level of distress (0 = none; 4 = very distressing)				
	Brief description of situation	0	1	2	3	4	0	1	2	3	4
Situation A		O	O	O	O	O	O	O	O	O	O
Situation B		O	O	O	O	O	O	O	O	O	O
Situation C		O	O	O	O	O	O	O	O	O	O

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Below are some questions about your experiences as a nurse. Consider each of the following questions about you and your current work situation. Select the number that honestly reflects how frequently you experienced these things in the last 30 days.

For each item, please answer with a number from 1-5, where: 1 is never, 3 is sometimes and 5 is very often.

	1 (never)	2 (rarely)	3 (sometimes)	4 (often)	5 (very often)
I get satisfaction from being able to nurse people.	○	○	○	○	○
I feel invigorated after working with those I nurse.	○	○	○	○	○
I am not as productive at work because I am losing sleep over traumatic experiences of a person I nurse(d).	○	○	○	○	○
I think that I might have been affected by the traumatic stress of those I nurse.	○	○	○	○	○
I feel trapped by my job as a nurse.	○	○	○	○	○
Because of my nursing, I have felt "on edge" about various things.	○	○	○	○	○
I like my work as a nurse.	○	○	○	○	○
I feel depressed because of the traumatic experiences of people I nurse.	○	○	○	○	○
I feel as though I am experiencing the trauma of someone I have nursed.	○	○	○	○	○
I am pleased with how I am able to keep up with nursing techniques and protocols.	○	○	○	○	○
My work makes me feel satisfied.	○	○	○	○	○
I feel worn out because of my work as a nurse.	○	○	○	○	○

I have happy thoughts and feelings about those I nurse and how I could help them.	○	○	○	○	○
I feel overwhelmed because my workload seems endless.	○	○	○	○	○
I believe I can make a difference through my work.	○	○	○	○	○
I avoid certain activities or situations because they remind me of frightening experiences of the people I nurse(d).	○	○	○	○	○
I am proud of what I can do to help.	○	○	○	○	○
As a result of my nursing, I have intrusive, frightening thoughts.	○	○	○	○	○
I feel "bogged down" by the system.	○	○	○	○	○
I have thoughts that I am a "success" as a nurse.	○	○	○	○	○
I am happy that I chose to do this work.	○	○	○	○	○

Page 7

We would like to ask you some questions about your emotional life, in particular, how you control (that is, regulate and manage) your emotions. The questions below involve two distinct aspects of your emotional life. One is your emotional experience, or what you feel like inside. The other is your emotional expression, or how you show your emotions in the way you talk, gesture, or behave. Although some of the following questions may seem similar to one another, they differ in important ways.

For each item, please answer with a number from 1-7, where: 1 means you strongly disagree, 4 is neutral and 7 means you strongly agree.

	1 (strongly disagree)	2	3	4 (neither agree nor disagree)	5	6	7 (strongly agree)
When I want to feel more *positive* emotion (such as joy or amusement), I *change what I'm thinking about*.	○	○	○	○	○	○	○
I keep my emotions to myself.	○	○	○	○	○	○	○
When I want to feel less *negative* emotion (such as sadness or anger), I *change what I'm thinking about*.	○	○	○	○	○	○	○
When I am feeling *positive* emotions, I am careful not to express them.	○	○	○	○	○	○	○
When I'm faced with a stressful situation, I make myself *think about it* in a way that helps me stay calm.	○	○	○	○	○	○	○
I control my emotions by *not expressing them*.	○	○	○	○	○	○	○
When I want to feel more *positive* emotion, I *change the way I'm thinking* about the situation.	○	○	○	○	○	○	○
I control my emotions by *changing the way I think* about the situation I'm in.	○	○	○	○	○	○	○
When I am feeling *negative* emotions, I make sure not to express them.	○	○	○	○	○	○	○

When I want to feel less *negative* emotion, I *change the way I'm thinking* about the situation.	○	○	○	○	○	○	○

Finally, the following questions concern how you feel about your team on the ward/unit.

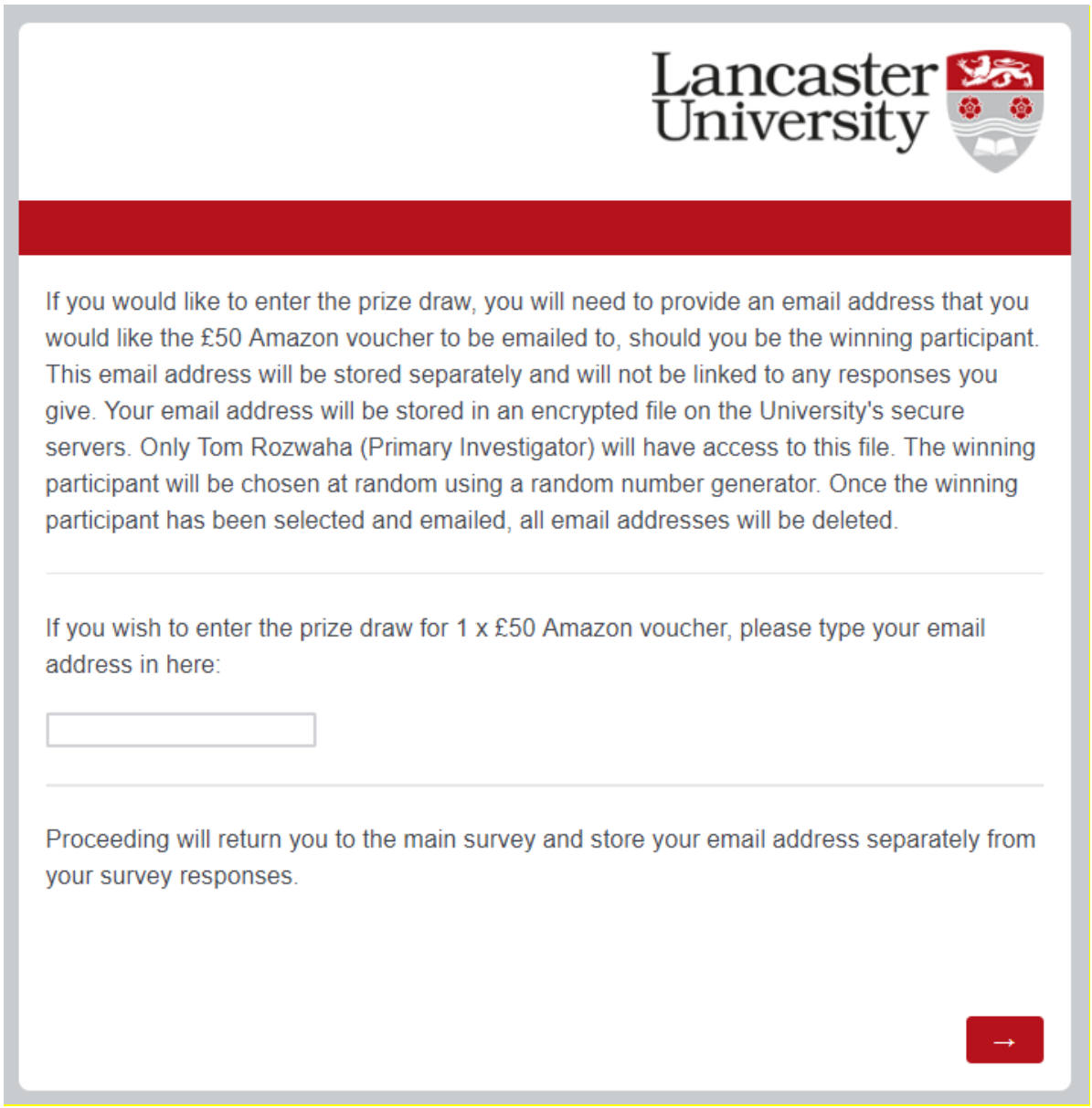
For each item, please answer with a number from 1-5, where: 1 means you strongly disagree, 3 is neutral and 5 means you strongly agree.

	1 (strongly disagree)	2 (disagree)	3 (neither agree nor disagree)	4 (agree)	5 (strongly agree)
If you make a mistake on this team, it is often held against you.	○	○	○	○	○
Members of this team are able to bring up problems and tough issues.	○	○	○	○	○
People on this team sometimes reject others for being different.	○	○	○	○	○
It is safe to take a risk on this team.	○	○	○	○	○

It is difficult to ask other members of this team for help.	○	○	○	○	○
No one on this team would deliberately act in a way that undermines my efforts.	○	○	○	○	○
Working with members of this team, my unique skills and talents are valued and utilized.	○	○	○	○	○

If you have any other comments about your well-being - either in general, or due to the recent covid-19 pandemic, please write them here:

Survey 2 Content



Debrief Sheet

The following information will form the final page of the online survey on Qualtrics

Thank you for taking the time to complete this project. Your comments and responses are valued.

If you feel it is appropriate, please distribute this survey to your colleagues. You can copy and paste this link: bit.ly/nursewellbeing

Compassion and well-being in critical care nurses

This study aimed to look at a variety of factors which may affect the well-being of nurses working on critical care. This study also looked at the possible impacts of the recent covid-19 pandemic on well-being.

What will happen to the results?

The results will be analysed and reported in a thesis which may be presented at conferences and/or be submitted for publication in an academic journal.

Where can I obtain further information about the study if I need it?

If you have any questions about the study, please contact the primary researcher Tom Rozwaha (by email: t.rozwaha1@lancaster.ac.uk).

Resources in the event of distress

Should you feel distressed either as a result of taking part, or in the future, we recommend the following:

Well-being resources

The Intensive Care Society has created well-being resource pack for staff working in critical care, which you can view here.

NHS staff support hotline

A hotline for NHS staff has also been launched to support NHS staff during the covid-19 pandemic. You can view more information here.

- You can ring 0300 131 7000 between 07:00 – 23:00.
- You can text FRONTLINE to 85258 24-hours per day.

Support from your workplace

You may be able to access specialist support from your workplaces' occupational health department or through your line manager.

Support from your primary care physician

You can also seek support from your GP/Primary Care Physician.

Thank you once again for taking the time to complete this project.

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Appendix 1

Response from BACCN providing agreement in principle to distribute survey information and link following ethical approval.

British Association of Critical Care Nurses
The Grainger Suite, Dobson House
Regent Centre
Newcastle Upon Tyne
NE3 3PF

t: 0844 800 8843
e: support@baccn.org

14 April 2020

Tom Rozwaha
Trainee Clinical Psychologist (3rd year)
Doctorate in Clinical Psychology
Faculty of Health and Medicine, Lancaster University

Dear Tom,

Thank you for your application for support for your research project. We have reviewed the proposal and questionnaire and pending appropriate ethical approval, we would be happy to share information regarding your research in our newsletter and via our social media channels.

Once you have gained ethical approval, please send us a copy of the approval letter.

Yours Sincerely,

Louise and Catherine

Louise Stayt, Catherine Plowright
Professional Advisors, BACCN

NOTABLE CORRESPONDENCE RELATING TO ETHICS APPLICATION

FE

FHM Research Ethics
Mon 20/04/2020 14:56
To: Rozwaha, Tom (Student)

Hi Tom,

I've spoken to a contact at our local R&D office and she advised that HRA approval might be needed for your study – could I please ask you to check with the HRA as soon as possible and let me know, please?

Your application is with a reviewer and due to be reviewed at our meeting on 20th, but if HRA approval is needed we will need to see an IRAS form.

Many thanks in advance,
Becky.

...

FE

FHM Research Ethics
Mon 20/04/2020 14:57
To: Rozwaha, Tom (Student)

Sorry, the meeting on 30th April, not 20th!

...

Rozwaha, Tom (Student)
Mon 20/04/2020 15:35
To: FHM Research Ethics
Cc: Fletcher, Ian; Giga, Sabir

Hi Becky,

Hope you're well. Me, Ian & Sabir had previously discussed the possibility of HRA approval, and I had contacted HRA queries via email in relation to this. We were referred to the HRA decision tool in the first instance and told that "the results obtained from the HRA's decision tools can be taken as an authoritative decision".

Whilst the proposed study does involve research participants in their role within healthcare services (including the NHS), we had referred to the algorithm for research projects involving staff (http://www.hra-decisiontools.org.uk/ethics/docs/Algorithm%20-%20Does%20my%20project%20require%20REC%20review%20v2.0%2020200304.pdf), concluding that:

- Research participants weren't being identified or recruited through Trusts, but rather, a third party
- Participants are not obliged to participate
- Participation is completely anonymous (via online survey), with demographic questions being sufficiently broad to ensure anonymisation
- Questions are not asked about a patient (or group of patients) at any point in the survey
- Whilst working in the context of covid-19 may be, for some, an emotive topic to reflect upon, participation remains completely voluntary (and withdrawal is possible at any time by closing the survey). Additionally, several sources of support are detailed in both PI and debrief sheet in the event that they are needed, including contact details for a dedicated nationwide NHS staff support service
- Research participants are being simply asked to participate by virtue of their professional role

In light of this information, we answered "no" to the question:

> *"Will your study involve potential research participants identified in the context of, or in connection with, their past or present use of services (NHS and adult social care), including participants recruited through these services as healthy controls? ... This excludes ... research involving NHS or social care staff recruited as research participants by virtue of their professional role."*

We then continued with the HRA decision tool, all other answers were also "no" and the website informed us that we did not need NHS REC review for England, Wales, Scotland or Northern Ireland. I'd be happy to provide proof of this. I will also contact HRA again directly to ensure this. I had also recently re-run the HRA tool in light of altering our original proposal in the context of covid-19 (which occurred before ethical approval submission), and which informs my points above.

Ian, Sabir - if you have any additional points, please feel free to add.

Best wishes
Tom

Tom Rozwaha
Trainee Clinical Psychologist (3rd year)

FE

FHM Research Ethics
Mon 20/04/2020 15:42
To: Rozwaha, Tom (Student)
Cc: Fletcher, Ian; Giga, Sabir

Thank you Tom, I wanted to check to prevent any further delays to your research. If the HRA decision tool has been used that is reassuring.

Thank you for following up so quickly,
Becky.

...

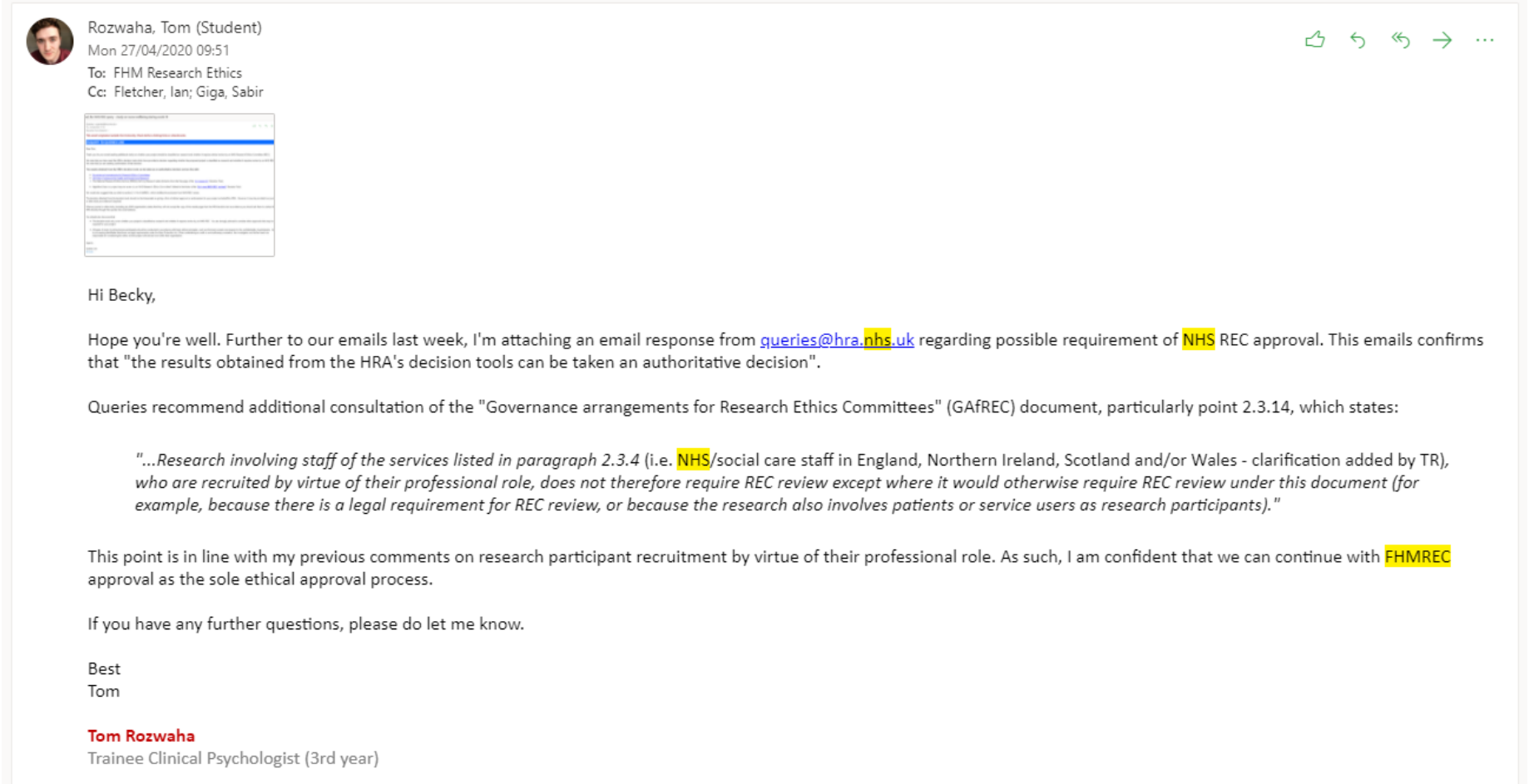
Rozwaha, Tom (Student)
Mon 20/04/2020 15:45
To: FHM Research Ethics
Cc: Fletcher, Ian; Giga, Sabir

Hi Becky,

No problem - thanks for checking! I'm in teaching today but will contact HRA tomorrow to confirm.

Best
Tom

Tom Rozwaha
Trainee Clinical Psychologist (3rd year)



Rozwaha, Tom (Student)
Mon 27/04/2020 09:51
To: FHM Research Ethics
Cc: Fletcher, Ian; Giga, Sabir

Hi Becky,

Hope you're well. Further to our emails last week, I'm attaching an email response from queries@hra.nhs.uk regarding possible requirement of NHS REC approval. This emails confirms that "the results obtained from the HRA's decision tools can be taken an authoritative decision".

Queries recommend additional consultation of the "Governance arrangements for Research Ethics Committees" (GAfREC) document, particularly point 2.3.14, which states:

> *"...Research involving staff of the services listed in paragraph 2.3.4* (i.e. NHS/social care staff in England, Northern Ireland, Scotland and/or Wales - clarification added by TR), *who are recruited by virtue of their professional role, does not therefore require REC review except where it would otherwise require REC review under this document (for example, because there is a legal requirement for REC review, or because the research also involves patients or service users as research participants)."*

This point is in line with my previous comments on research participant recruitment by virtue of their professional role. As such, I am confident that we can continue with FHMREC approval as the sole ethical approval process.

If you have any further questions, please do let me know.

Best
Tom

Tom Rozwaha
Trainee Clinical Psychologist (3rd year)

(Attached screenshot overleaf, prior to continuation of email chain)

[External] Re: NHS REC query - study on nurse wellbeing during covid-19

Q

Queries <queries@hra.nhs.uk>
Thu 23/04/2020 17:10
Rozwaha, Tom (Student)

This email originated outside the University. Check before clicking links or attachments.

ENQUIRY TO QUERIES LINE

Dear Tom,

Thank you for your email seeking additional clarity on whether your project should be classified as research and whether it requires ethical review by an NHS Research Ethics Committee (REC).

We note that you have used the HRA's decision tools which have provided a decision regarding whether the proposed project is classified as research and whether it requires review by an NHS REC. We note that you are seeking confirmation of that decision.

The results obtained from the HRA's decision tools can be taken as an authoritative decision and are line with:

- Governance Arrangements for Research Ethics Committees
- UK Policy Framework for Health and Social Care Research
- The National Research Ethics Service (NRES) *Defining Research* table (linked to from the first page of the 'Is it research?' Decision Tool)

- Algorithm *Does my project require review by an NHS Research Ethics Committee?* (linked in the footer of the 'Do I need NHS REC review?' Decision Tool)

We would also suggest that you refer to section 2.3.14 of GAfREC, which clarifies the exclusion from NHS REC review.

The decision obtained from the decision tools should not be interpreted as giving a form of ethical approval or endorsement to your project on behalf the HRA. However, it may be provided to a journal or other body as evidence if required.

Where a journal or other body (including any NHS organisation) states that they will not accept the copy of the results page from the HRA decision tool as evidence you should ask them to contact the HRA directly through this queries line email address.

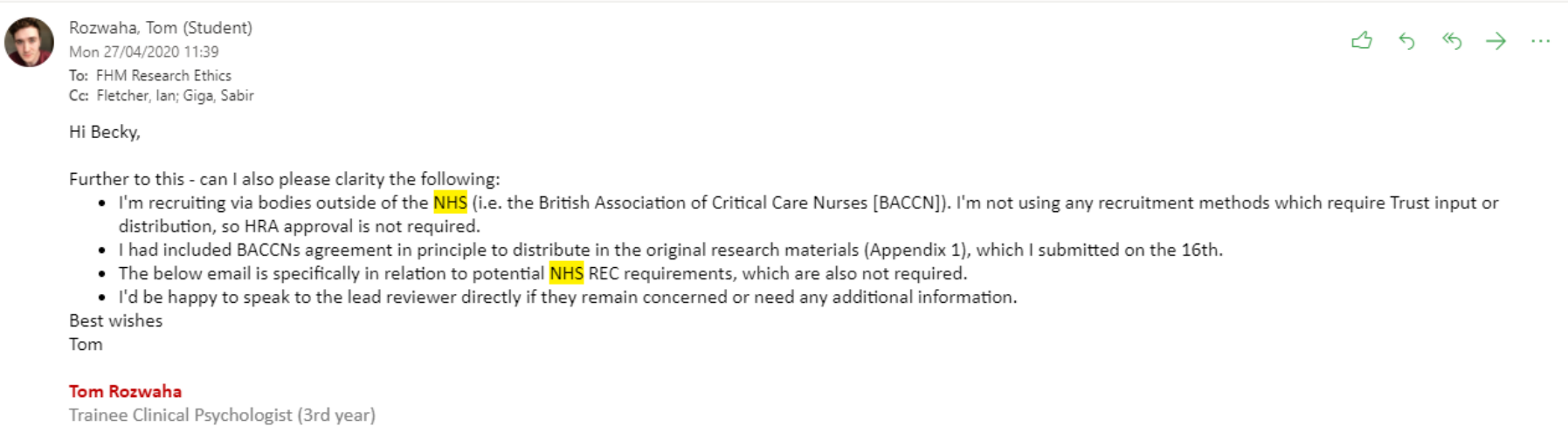
You should also be aware that:

- The decision tools only cover whether your project is classified as research and whether it requires review by an NHS REC. You are strongly advised to consider other approvals that may be required for your project.

- All types of study involving human participants should be conducted in accordance with basic ethical principles, such as informed consent and respect for the confidentiality of participants. Also, in processing identifiable data there are legal requirements under the Data Protection Act. When undertaking an audit or service/therapy evaluation, the investigator and his/her team are responsible for considering the ethics of their project with advice from within their organisation.

Regards,

Queries Line
REF 81/81



Rozwaha, Tom (Student)
Mon 27/04/2020 11:39
To: FHM Research Ethics
Cc: Fletcher, Ian; Giga, Sabir

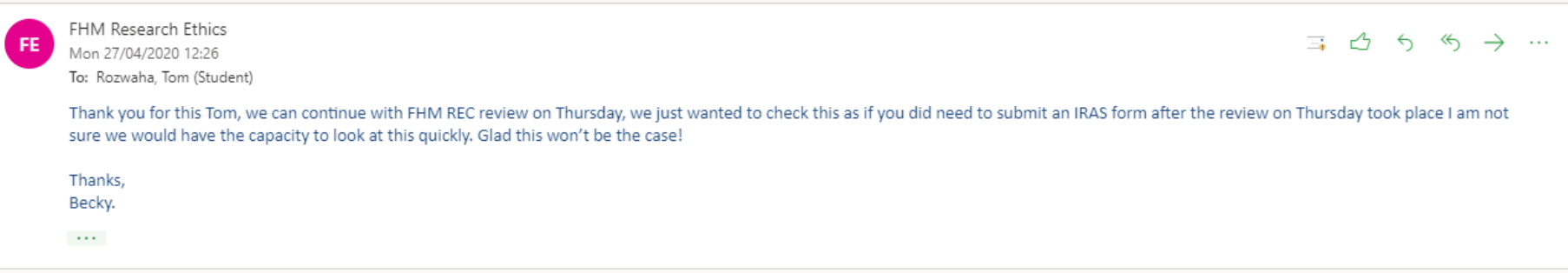
Hi Becky,

Further to this - can I also please clarity the following:

- I'm recruiting via bodies outside of the NHS (i.e. the British Association of Critical Care Nurses [BACCN]). I'm not using any recruitment methods which require Trust input or distribution, so HRA approval is not required.
- I had included BACCNs agreement in principle to distribute in the original research materials (Appendix 1), which I submitted on the 16th.
- The below email is specifically in relation to potential NHS REC requirements, which are also not required.
- I'd be happy to speak to the lead reviewer directly if they remain concerned or need any additional information.

Best wishes
Tom

Tom Rozwaha
Trainee Clinical Psychologist (3rd year)



FE

FHM Research Ethics
Mon 27/04/2020 12:26
To: Rozwaha, Tom (Student)

Thank you for this Tom, we can continue with FHM REC review on Thursday, we just wanted to check this as if you did need to submit an IRAS form after the review on Thursday took place I am not sure we would have the capacity to look at this quickly. Glad this won't be the case!

Thanks,
Becky.

...

FE

FHM Research Ethics
Mon 04/05/2020 14:51
To: Rozwaha, Tom (Student)
Cc: Fletcher, Ian; Giga, Sabir

FHMREC19083 Tom Rozwaha ...
1 MB

Dear Tom,

Please find attached your original application, in which detailed feedback has been marked up (with 'sticky notes'). Please address these comments and discuss this feedback with your supervisor/research team as appropriate.

Please ensure that you re-submit the *entire* application document and all materials (including those which did not require any changes) as *a single PDF* with any changes highlighted. It is this document which will go forward for approval.

Note that the documentation you submit must be the final version, with all participant materials complete in the format in which they will be used. Any changes at a later date must be submitted for review as part of an amendment application.

Please also note that the University has asked that all face-to-face research be paused. If this applies to you, please either confirm by e-mail when you know the revised start and end dates for your research, or please amend your methodology (we understand this won't always be possible) to explain how data will be collected without face-to-face participant contact.

If you have any queries, please let me know.

Best wishes
Becky

Rozwaha, Tom (Student)
Tue 02/06/2020 11:59
To: FHM Research Ethics
Cc: Fletcher, Ian; Giga, Sabir

Letter to the reviewer 02Jun2...
271 KB

TR FHMREC 19083 amended ...
1 MB

2 attachments (1 MB) Download all Save all to OneDrive - Lancaster University

Dear research ethics team,

Please find attached my resubmission of the ethics materials as requested. Changes have been highlighted in yellow.

I'm also attaching a letter to the reviewer outlining the changes made in response to their feedback.

Best wishes
Tom

Tom Rozwaha
Trainee Clinical Psychologist (3rd year)

LETTER TO THE REVIEWER

Dear Reviewer,

Thank you for reviewing my submission to the Faculty of Health and Medicine Research Ethics Committee. I made the following changes based upon the committee's comments. The edits have been also highlighted in yellow in the ethics documentation.

Survey duration

Feedback: If no maximum will survey close after 180 participants, or after a certain length of time?

- I have clarified the survey duration ambiguity with the following information: The survey will remain open for up to six months. (Application for Ethical Approval for Research, Section Three, Question Three).

The prize draw

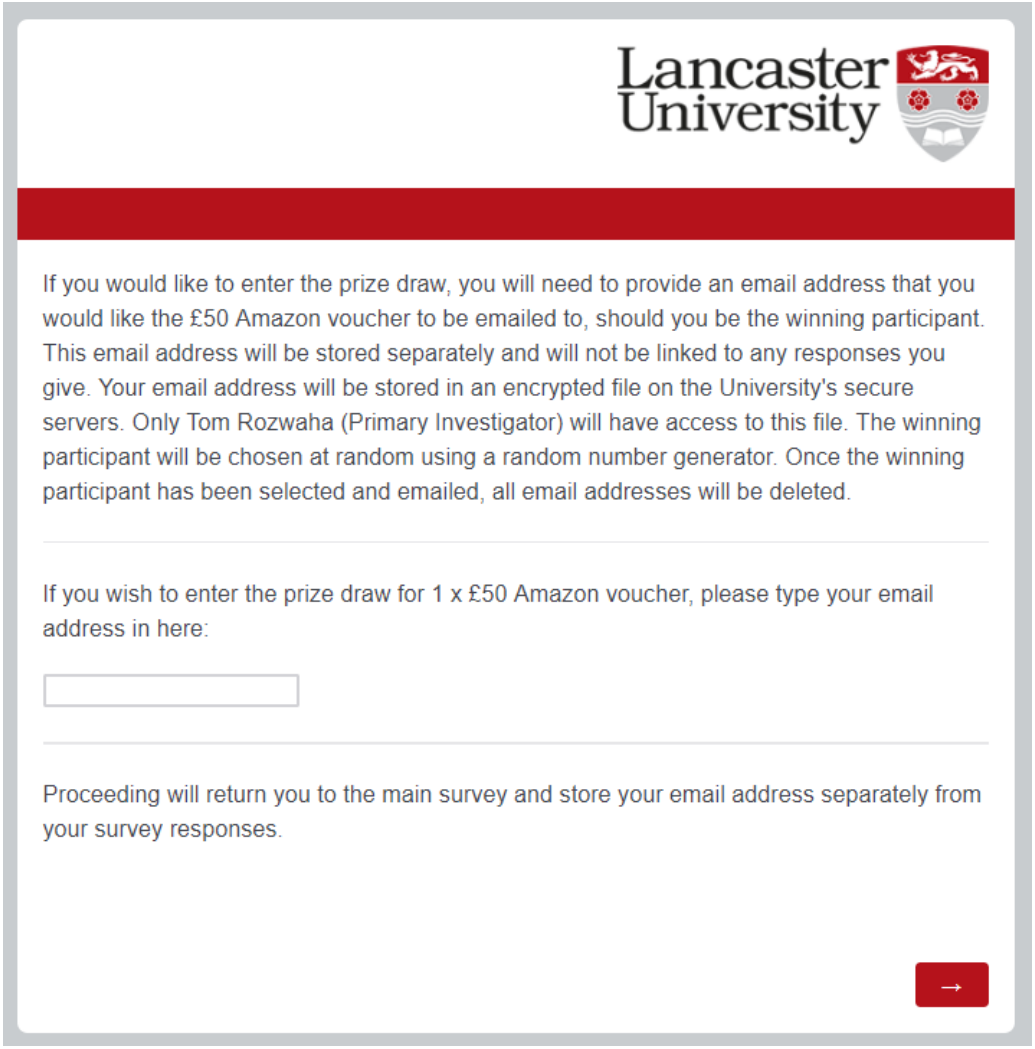
Feedback: How will the participants be selected (for the prize draw)?

- I have clarified the selection process for the winner of the prize draw with the following information: Aggregated email addresses from a secondary (prize draw-specific) Qualtrics survey will be stored within an encrypted Microsoft Excel file (separate to the file containing the survey data), with each entrants' email address assigned a unique identifier ranging from "1" up to the total number of entrants. Upon completion of data collection, a random number generator using the same range of numbers will be used to determine the winning entrant. Once the gift card has been emailed, the Excel file and all correspondence will then be immediately deleted by Mr Thomas Rozwaha. Please see Question 13 for further information regarding the prize draw. (Application for Ethical Approval for Research, Section Three, Question Four).

Feedback: If the Survey is anonymous how will the participant receive the voucher? Please explain this in the PIS too.

- I have clarified the mechanism by which the participant will receive the electronic voucher with the following information: Should participants wish to enter the prize draw, they will be directed to a secondary survey. The secondary survey will ask participants to indicate they are choosing to opt-in to the prize draw, and will ask participants to provide the email address they would like an Amazon voucher to be forwarded to should they win the prize draw. Following completion of this, participants are re-directed back to the primary survey. The data collected in the secondary survey will not be linked to the primary anonymised survey, and this is made clear to participants within both surveys and within the information sheet. The email addresses will be aggregated in an encrypted Microsoft Excel file, with each entrants' email address assigned a unique identifier ranging from '1' up to the total number of entrants. A random number generator drawing from the same range of numbers will be used to determine winners. The student (T. Rozwaha) will forward winning participant an electronic £50 Amazon voucher via email. Immediately following this, the Microsoft Excel file and all correspondence will be deleted by the student (T. Rozwaha). (Application for Ethical Approval for Research, Section Three, Question Thirteen)

- I have amended the PIS with the following information to detail this mechanism:



(Research Materials, Survey 2 Content).

Survey distribution

Feedback: First posts on which social media accounts? University? Individual accounts should not be used, especially Facebook. Facebook group administrators can post on your behalf.

- I have clarified the process by which the first posts will be made: The first posts will be made on the BACCN Twitter account (using their association Twitter handle) & Facebook account (by a group administrator, not an individual user account), and on

the Lancaster DClinPsy twitter account (using the DClinPsy's Twitter Handle).

(Application for Ethical Approval for Research, Section Three, Question Four)

Initial exploration of data

Feedback: For which variables? (…will an initial exploration of data be conducted; added for clarity).

- I have clarified the strategy for initial data exploration prior to multiple regression modelling: An initial exploration of data will be conducted using correlations, t-tests and one-way ANOVA. Emotion regulation subscales, team psychological safety, and the overall moral distress score will be correlated against the outcome measure (compassion). T-tests and ANOVA will be used to see if demographic variables (age, gender, job role etc) lead to significant differences for each of these scales.

  (Application for Ethical Approval for Research, Section Three, Question Five).

Relevance of Covid-19 to the present research

Feedback: However, at the end, this COVID seems to be more relevant in the research – if this is the case please make clearer throughout the application.

- Following discussion with the research team, it was decided that the focus of the research would be around critical care nurse well-being, rather than the specific impacts of Covid-19 on survey responses. The following covid-specific aspects of the survey have been removed to reflect this:
  - Research Materials, Survey Content, Page 5 (Moral Distress)
    - Is the covid-19 pandemic changing how much work you have to do on an average shift?

        - Is the Covid-19 pandemic changing the number of morally distressing events you experience on an average shift?
        - Is the covid-19 changing how distressing these events are?
    - Research Materials, Survey Content, Page 7
        - If you have any comments about how you have been regulating and managing your emotions at work, or if this has been affected by the recent covid-19 pandemic, please write them here.
        - If you have any comments about how you feel about your team on the ward/unit, or if this has been affected by the recent covid-19 pandemic, please write them here.
    - References to these questions have been similarly removed in the "Measures" subsection of the Research Materials.
- However, the survey will acknowledge that covid-19 may have affected both nurse well-being and the responses nurses give throughout the survey. One open-ended question will remain in the survey, which has been edited to read the following:
    - Research Materials, Survey Content, Page 7
        - If you have any comments about your well-being at work – either in general, or due to the recent covid-19 pandemic, please write them here.
    - A new subsection of the "Measures" Section of the Research Materials has been added to reflect this, entitled "participant-led considerations", and reading: An open-ended question invites nurses to detail any comments they have in relation to their workplace well-being – either generally, or specifically due to the recent covid-19 pandemic.

Survey length

Feedback: This is likely to take at least one hour to fill in?

- Qualtrics automatically generates a completion time based upon a number of quantitative data. I have added this information for clarity: Qualtrics estimates that this will take participants 26 minutes to complete based upon: Average reading speed; transition times between pages, questions, and choices within a question; time to answer quantitative questions; and time to type a text-entry response. (Research Materials, Measures, Outcomes).

Advertising materials

Feedback: Lack of clarity with the use of the word "some" in the recommended advertising message (paraphrased).

- I have edited the recommended advertising message to open with "Would you like to take part in a research study?" rather than "Would you like to take part in some research?" to clear up the lack of clarity (Research Materials, Advertising Materials).
- The title has been similarly edited on the electronic flyer (Research Materials, Advertising Materials, Figure 2).

Feedback: Mismatch of research title with recommended advertising message (paraphrased).

- I have edited sentence two of the recommended advertising message to read "This online survey aims to better understand critical care nurses' workplace well-being" rather than "This online survey aims to better understand critical care nurses' well-being during covid-19" to better match the research aims (Research Materials, Advertising Materials).
- The description has been similarly edited on the electronic flyer (Research Materials, Advertising Materials, Figure 2).

Participant Information Sheet

Feedback: Please include the GDPR statement and privacy notice (on the PIS template on FHM REC website).

- The GDPR notice "For further information about how Lancaster University processes personal data for research purposes and your data rights please visit our web page." Has been moved from the "Will my data be identifiable?" subheading to the head of the page, centralised and highlighted in red for participant clarity. (Research Materials, Participant Information Sheet).

Feedback: Please change (external complaints contact; added for clarity) to Laura Machin FHM REC Chair.

- The external complaints contact has been changed to Dr Laura Machin:

  Dr Laura Machin, Chair of the Faculty of Health and Medicine Research Ethics Committee

  Tel: (+44) 1524 594973

  Email: l.machin@lancaster.ac.uk

  Faculty of Health and Medicine

  (Lancaster Medical School)

  Lancaster University

  Lancaster

  LA1 4YG

Uneven questionnaire response spacing

Feedback: Will the uneven spacing between these circles (Measure of Moral Distress for Healthcare Professionals) be fixed on Qualtrics?

- The uneven spacing is an artefact of the Qualtrics software. As the “0” and “4” options contain the descriptors “Never/None” and “Very frequently/Very distressing” respectively, this offsets the spacing between these and the other responses. This has been resolved by placing the descriptors within the title headers for each of these responses (Research Materials, Survey Content, Page 5)

ETHICAL APPROVAL LETTER

Lancaster University

Applicant: Tom Rozwaha
Supervisor: Ian Fletcher and Sabir Giga
Department: DHR
FHMREC Reference: FHMREC19083

11 June 2020

Re: FHMREC19083
Compassion and well-being in critical care nurses: A quantitative investigation

Dear Tom Rozwaha,

Thank you for submitting your research ethics application for the above project for review by the **Faculty of Health and Medicine Research Ethics Committee (FHMREC)**. The application was recommended for approval by FHMREC, and on behalf of the Chair of the Committee, I can confirm that approval has been granted for the amendment to this research project.

As principal investigator your responsibilities include:

- ensuring that (where applicable) all the necessary legal and regulatory requirements in order to conduct the research are met, and the necessary licenses and approvals have been obtained;
- reporting any ethics-related issues that occur during the course of the research or arising from the research to the Research Ethics Officer at the email address below (e.g. unforeseen ethical issues, complaints about the conduct of the research, adverse reactions such as extreme distress);
- submitting details of proposed substantive amendments to the protocol to the Research Ethics Officer for approval.

Please contact me if you have any queries or require further information.

Email:- fhmresearchsupport@lancaster.ac.uk

Yours sincerely,

E. Suri-Payer

Dr. Elisabeth Suri-Payer,
Interim Research Ethics Officer, Secretary to FHMREC.

ADDITIONAL APPENDICES

Appendix 5-A: Author submission guidance for target journal "International Journal of Nursing Studies"

Abstract.

All submissions (except letters and editorials) should include an abstract of 400 words or less.

In general, the following detail is required: Background, Objectives, Design, Settings (including geographical location if important), Participants; Methods; Results; and Conclusions, which should relate to study aims and hypotheses. Abstracts for Discussion Papers should provide a concise summary of the line of argument pursued and conclusions.

When reporting quantitative results in the abstract report parameter estimates and confidence intervals in preference to p-values (e.g. "risk of death was reduced [Odds ratio 0.9, 95% confidence interval 0.87-0.92]" rather than "risk of death was significantly reduced [p=0.001]")

Study registration details (e,g, ISRCTN number) should be included at the end of the abstract.

Abstracts should not include references or abbreviations other than standard system international (SI) units. Abstracts of research papers must be structured and should adopt the headings suggested by the relevant reporting guidelines.

Tweetable abstract.

Optionally authors may add a 'tweetable abstract' to the end of the abstract as a final section. The tweetable abstract should be 140 characters or fewer (to allow people using it to add additional hashtags, links to the article and other twitter handles). Tweetable abstracts

should provide the main conclusions or the key message of a paper in a way that is easily understood.

Contribution of the Paper

All submissions (with the exception of Letters and Editorials) should include "Contribution of the Paper" statements comprising a series of short single sentence bullet points under the headings "What is already known about the topic?" (2 or 3 bullets) and "What this paper adds" (2 or 3 bullets). The statements should be placed in the manuscript file between the Abstract and the main body of text, as well as supplied as a separate standalone file at submission.

'What is already known' should identify existing research knowledge relating to the specific research question / topic, rather than general background detail.

'What the paper adds' should summarise new knowledge (outcomes) as opposed to offering process statements of what the paper does. eg. "This review demonstrates that nurse-led intermediate care reduces hospital stay but increases total inpatient stay" (outcome) NOT "This review considers the impact of nurse-led intermediate care on acute stay and total inpatient stay" (process).

Keywords.

Provide between four and ten key words that accurately identify the paper's subject, purpose, method and focus. Use the Medical Subject Headings (MeSH) thesaurus (see http://www.nlm.nih.gov/mesh/meshhome.html) or Cumulative Index to Nursing and Allied Health (CINAHL) headings where possible. Give keywords in alphabetical order.

Main manuscript text.

Up to 7000 words

Structure: For most papers the basic structure: Abstract, Introduction, Methods, Results, Discussion should be used. Authors should consult the relevant reporting guidelines for their methods and complete the relevant checklist to ensure essential detail is included (see our Author checklist and the equator Network: http://www.equator-network.org/)

As part of the discussion, authors should describe limitations of the work. A sub-heading before the final conclusions is recommended.

Word limits: Full papers up to 7000 words (excluding tables, figures, and references, editorials up to 1000 words and letters up to 1000 words. Shorter papers are preferred.

Tables and figures: Up to 5 in total. The corresponding caption should be placed directly below the figure or table. Additional tables / figures (including large tables) can be included as supplementary material.

Ethical approval and informed consent: details must be given in the methods as specified above

Abbreviations: No abbreviations should be used other than as specified below in our general notes on style.

References

There are no strict requirements on reference formatting at submission. References can be in any style or format as long as the style is consistent and references are complete and accurate. Where applicable, author(s) name(s), journal title/book title, chapter title/article title, year of publication, volume number/book chapter and the article number or pagination must be present.

Use of DOI is highly encouraged. The reference style used by the journal will be applied to the accepted article by Elsevier at the proof stage.

…

4. Style and specific requirements

4.1. Language (usage and editing services)

Please write your text in good English (American or British usage is accepted, but not a mixture of these). Authors who feel their English language manuscript may require editing to eliminate possible grammatical or spelling errors and to conform to correct scientific English may wish to use the English Language Editing service available from Elsevier's WebShop.

Use of inclusive language

Articles should make no assumptions about the beliefs or commitments of any reader, should contain nothing that might imply that one individual is superior to another on the grounds of ethnic background, sex, culture or any other characteristic, and should use inclusive language throughout. We ask authors to consider that the term 'race' is closely associated with ideologies of scientific racism and has no clearly defined scientific meaning.

We recognise that the recipients of healthcare are firstly people. In many cases, it is not appropriate to refer to them as "patients". For example, "people with diabetes" is preferable to "diabetes patients" although recipients of health care in general might be referred to as patients in some circumstances. Never refer to people as 'sufferers' or 'victims' of a condition.

Authors should ensure that writing is free from gender bias, for instance by using 'he or she', 'his/her' instead of 'she' or 'her', and by making use of job titles that are gender neutral (e.g. 'chairperson' instead of 'chairman' and 'flight attendant' instead of 'stewardess'). Nurse is a gender neutral term.

Abbreviations, acronyms and initialisms

The International Journal of Nursing Studies does not permit the use of abbreviations, acronyms and initialisms (abbreviations for brevity). We make a limited number of exceptions but we do not allow the use of any abbreviations that are not widely recognised.

The limited exceptions include cases where the abbreviated form has near universal recognition (e.g. USA), statistical terms and tests (e.g. df, t, ANOVA) and instruments and products that are generally identified by their initials or an abbreviation (e.g. SF36, SPSS). For additional guidance, see the editorial policy/style on abbreviations, initialisms and acronyms.

Any abbreviations which the authors intend to use in the body of your paper should be written out in full, followed by the letters in brackets the first time they appear. Thereafter only the letters should be used. Please note that SPSS is the full name of the product, not an abbreviation. Abbreviations used in tables need to be fully defined at the foot of each table where the abbreviation is used.

Tables

Please submit tables as editable text and not as images. Tables can be placed next to the relevant text in the article. Number tables consecutively in accordance with their appearance in the text and place any table notes below the table body. Be sparing in the use of tables (maximum 5 tables and figures in the body text) and ensure that the data presented in them do not simply duplicate results described elsewhere in the article. Additional tables can be submitted as online supplemental material but these must be referred to in the text (supplemental material table X etc.). Please avoid using vertical rules. Abbreviations used in tables need to be fully defined at the foot of each table where the abbreviation is used.

Footnotes

Do not use footnotes other than where abbreviations or other symbols have been used in a table, in which case the notes should be below the table, not the foot of the page.

Statistics

Standard methods of presenting statistical material should be used. Where methods used are not widely recognised explanation and full reference to widely accessible sources must be given. Identify the statistical package used (including version).

Wherever possible give both point estimates and 95% confidence intervals for all parameters estimated by the study (e.g. group differences, frequency of characteristics). Exact p values should be given to no more than three decimal places. Do not interpret non-significant results as evidence that there is no difference / relationship. Please refer to the journal's position paper on reporting statistical significance and p-values https://doi.org/10.1016/j.ijnurstu.2019.07.001

Citations and references

In text citations and reference lists will be reformatted to journal style if the article is accepted. The journal uses an author (date) citation style. Please ensure that every reference cited in the text is also present in the reference list (and vice versa). When copying references, please be careful as they may already contain errors. Use of the DOI is highly encouraged.

Unpublished results and personal communications are not to be included the reference list, but may be mentioned in the text. Citation of a reference as 'in press' implies that the item has been accepted for publication.

Web references. As a minimum, the full URL should be given and the date when the reference was last accessed. Any further information, if known (DOI, author names, dates,

reference to a source publication, etc.), should also be given. Web references can be listed separately (e.g., after the reference list) under a different heading if desired, or can be included in the reference list.

Data references. This journal encourages you to cite underlying or relevant datasets in your manuscript by citing them in your text and including a data reference in your Reference List. Data references should include the following elements: author name(s), dataset title, data repository, version (where available), year, and global persistent identifier. Add [dataset] immediately before the reference so we can properly identify it as a data reference. The [dataset] identifier will not appear in your published article.

…

4.7. Supplementary material

Supplementary material such as applications, images and sound clips, can be published with your article to enhance it. Please submit your material together with the article and supply a concise, descriptive caption for each supplementary file. Submitted supplementary items are published exactly as they are received (Excel or PowerPoint files will appear as such online). If you wish to make changes to supplementary material during any stage of the process, please make sure to provide an updated file. Do not annotate any corrections on a previous version. Please switch off the 'Track Changes' option in Microsoft Office files.

For papers reporting the development of scales, measures, questionnaires or other instruments we will only publish if authors are willing and able to provide a copy of the scale in the original language and (where relevant) in English. Authors may retain copyright and if they wish to do so should include a copyright line. They can also give details on permissions

and restrictions for use and / or add a creative commons license (see https://creativecommons.org/).

Where authors do not own the copyright, they are responsible for gaining permission from the copyright holder and giving full acknowledgement. This includes permission to translate scales where a third party holds the copyright.

If accepted for publication, the any additional material to be made available online should include a reference to the International Journal of Nursing Studies paper and we ask that you add a preliminary reference to your article with "to be published in the International Journal of Nursing Studies" at the point of submission, updating later if needed.

…

Artwork

General points

Make sure you use uniform lettering and sizing of your original artwork.

Preferred fonts: Arial (or Helvetica), Times New Roman (or Times), Symbol, Courier.

Number the illustrations according to their sequence in the text.

Use a logical naming convention for your artwork files.

Indicate per figure if it is a single, 1.5 or 2-column fitting image.

For Word submissions only, you may still provide figures and their captions, and tables within a single file at the revision stage.

Please note that individual figure files larger than 10 MB must be provided in separate source files.

Regardless of the application used, when your electronic artwork is finalized, please 'save as' or convert the images to one of the following formats (note the resolution requirements for line drawings, halftones, and line/halftone combinations given below): EPS (or PDF): Vector drawings. Embed the font or save the text as 'graphics'. TIFF (or JPG): Color or grayscale photographs (halftones): always use a minimum of 300 dpi. TIFF (or JPG): Bitmapped line drawings: use a minimum of 1000 dpi. TIFF (or JPG): Combinations bitmapped line/half-tone (color or grayscale): a minimum of 500 dpi is required. A detailed guide on electronic artwork is available.

Figure captions

Ensure that each illustration has a caption. A caption should comprise a brief title (not on the figure itself) and a description of the illustration. Keep text in the illustrations themselves to a minimum but explain all symbols and abbreviations used.

Colour artwork

If, together with your accepted article, you submit usable colour figures then Elsevier will ensure, at no additional charge, that these figures will appear in colour online (e.g., ScienceDirect and other sites) regardless of whether or not these illustrations are reproduced in colour in the printed version.

For colour reproduction in print, you will receive information regarding the costs from Elsevier after receipt of your accepted article. Please indicate your preference for colour: in print or online only. Because of technical complications that can arise by converting colour figures to 'gray scale' (for the printed version should you not opt for colour in print) please submit in addition usable black and white versions of all the colour illustrations.

For further information on the preparation of electronic artwork, please see https://www.elsevier.com/artworkinstructions.

…

Research data

This journal encourages and enables you to share data that supports your research publication where appropriate, and enables you to interlink the data with your published articles. Research data refers to the results of observations or experimentation that validate research findings. To facilitate reproducibility and data reuse, this journal also encourages you to share your software, code, models, algorithms, protocols, methods and other useful materials related to the project. Below are a number of ways in which you can associate data with your article or make a statement about the availability of your data when submitting your manuscript. If you are sharing data in one of these ways, you are encouraged to cite the data in your manuscript and reference list. Please refer to the "References" section for more information about data citation. For more information on depositing, sharing and using research data and other relevant research materials, visit the research data page.

Data statement

To foster transparency, we encourage you to state the availability of your data in your submission. This may be a requirement of your funding body or institution. If your data is unavailable to access or unsuitable to post, you will have the opportunity to indicate why during the submission process, for example by stating that the research data is confidential. The statement will appear with your published article on ScienceDirect. For more information, visit the Data Statement page.

Appendix 5-B: Raw qualitative data for analysis separate from the present thesis.

[Raw data presented for examination has been removed in line with ethics protocols (pg. 4-22) but can made available to genuine researchers upon request with an appropriate data license.]