Exploring the Psychological Impact of Working in Adult, Paediatric, and Neonatal Intensive Care Units, Including Experiences During Pregnancy

Katie McHugh

Candidate Registration Number: 100458856

Primary Supervisor: Dr Elisabeth Norton
Secondary Supervisor: Dr Bob Budd

Thesis submitted in partial fulfilment of the degree of Doctorate in Clinical Psychology
University of East Anglia
Faculty of Medicine and Health Sciences

Date of Submission: 3rd March 2026

Word Count: 27,317

This copy of the thesis has been supplied on condition that anyone who consults it is understood to recognise that its copyright rests with the author and that use of any information derived therefrom must be in accordance with current UK Copyright Law. In addition, any quotation or extract must include full attribution.

Thesis Portfolio Abstract

Healthcare professionals (HCPs) working in intensive care units (ICUs) are routinely exposed to life-threatening illness, ethical complexity, and death (Curtis & Vincent, 2010; Evrin et al., 2018), placing them at risk of trauma-related psychological distress. This thesis portfolio aimed to deepen understanding of occupational trauma among ICU staff, with particular attention to neonatal intensive care units (NICUs) and the experience of pregnancy within this high-intensity environment. A systematic review and meta-analysis synthesised the prevalence of secondary traumatic stress (STS) and post-traumatic stress (PTS) symptoms among ICU staff working across adult, paediatric, and neonatal intensive care settings. Pooled estimates indicated that approximately one in six staff experienced STS symptoms and one in four experienced PTS symptoms. Elevated PTS prevalence was observed both during and outside of the COVID-19 pandemic, suggesting that trauma-related distress reflects enduring occupational stressors rather than crisis-specific effects alone. Building on these findings, a qualitative empirical study explored the experiences of 12 UK HCPs who worked on NICU while pregnant. Reflexive thematic analysis (RTA) (Braun & Clarke, 2022) developed an overarching meta-theme, *"*Navigating a dual role: managing personal pregnancy and professional responsibility in the NICU". HCPs described heightened empathy alongside anticipatory anxiety, hypervigilance, and working within a culture of coping and endurance. Professional knowledge was experienced as both protective and anxiety-provoking during pregnancy. Together, these studies highlight trauma-related distress as an occupational risk within ICU settings and identify pregnancy as a period of increased vulnerability within an already emotionally demanding context. Clinical implications emphasise trauma-informed, system-level approaches to staff wellbeing, particularly during significant life transitions.

Access Condition and Agreement

Each deposit in UEA Digital Repository is protected by copyright and other intellectual property rights, and duplication or sale of all or part of any of the Data Collections is not permitted, except that material may be duplicated by you for your research use or for educational purposes in electronic or print form. You must obtain permission from the copyright holder, usually the author, for any other use. Exceptions only apply where a deposit may be explicitly provided under a stated licence, such as a Creative Commons licence or Open Government licence.

Electronic or print copies may not be offered, whether for sale or otherwise to anyone, unless explicitly stated under a Creative Commons or Open Government license. Unauthorised reproduction, editing or reformatting for resale purposes is explicitly prohibited (except where approved by the copyright holder themselves) and UEA reserves the right to take immediate ‘take down’ action on behalf of the copyright and/or rights holder if this Access condition of the UEA Digital Repository is breached. Any material in this database has been supplied on the understanding that it is copyright material and that no quotation from the material may be published without proper acknowledgement.

Table of Contents

Thesis Portfolio Abstract 2
Table of Contents 3
List of Tables and Figures 5
List of Appendices 6
Acknowledgements 7
Declaration 8
Chapter 1: Introduction to the Thesis Portfolio 9
  Introduction 10
Chapter 2: Systematic Review 13
  Abstract 15
  Introduction 16
  Method 18
    Search strategy 18
    Inclusion criteria 18
    Screening and data extraction 19
    Quality Assessment 19
    Data analysis 20
  Results 21
    Study Characteristics 23
    Risk of bias 32
    Meta-analytic Prevalence Estimates 32
    Sensitivity Analyses 32
    Subgroup Analysis 33
    Publication Bias 33
  Discussion 34
    Implications for practice and policy 36
    Strengths, limitations, and future research directions 37
    Conclusion 38
  References 39
Chapter 3: Bridging Chapter 49
Chapter 4: Empirical Research Paper 52
  Abstract 54
  Introduction 55
  Methods 58
    Study Design 58
    Participants 59

Procedure 59
Data storage 60
Data Analysis 61
Findings 61
Theme 1. Pregnancy Highlights Connection and Conflict 62
Theme 2. Being an Expert in the Worst Case Scenario 65
Theme 3: Pregnancy in a Culture of Coping and Endurance 67
Theme 4: Mental Health and Wellbeing 69
Discussion 71
Limitations and implications for future research 73
Recommendations for clinical practice 74
Conclusion 74
References 76
Chapter 5: Additional Methodology 80
Additional Methodology 81
Design 81
Ontology and Epistemology 81
Method 82
Materials 82
Procedure 82
Ethical Considerations 83
Confidentiality 83
Potential for distress 84
Analysis 84
Analytic process 84
Reflexivity 86
Reflective journal extracts 86
Chapter six: General Discussion and Critical Evaluation 88
General Discussion and Critical Evaluation 89
Summary of the findings in the context of the literature 89
Strengths and Limitations 92
Clinical Implications 94
Directions for future research 95
Conclusion 97
Thesis Portfolio References 99
Appendices 115

List of Tables and Figures

List of Tables

Chapter 2: Systematic Review

Table 1: Search Terms 18

Table 2: Included Sample Characteristics 24

Table 3: Pooled Prevalence Estimates of STS and PTS in ICU Staff, with Subgroup, Moderator, and Sensitivity Analyses 33

Chapter 5: Additional Methodology

Table 1: Participant Demographic Characteristics 83

List of Figures

Chapter 2: Systematic Review

Figure 1: PRISMA Flow Diagram of Study Selection 22

Chapter 4: Empirical Paper

Figure 1: Themes and Subthemes 62

List of Appendices

Appendix A: Author Guidelines for the British Journal of Clinical Psychology 115

Appendix B: PRISMA Guidelines 129

Appendix C: JBI Operationalised Checklist 132

Appendix D: JBI Quality Ratings 134

Appendix E: Forrest Plots 136

Appendix F: Funnel Plots 138

Appendix G: Author Guidelines for Qualitative Health Research 140

Appendix H: Topic Guide 154

Appendix I: UEA Ethics Approval 156

Appendix J: Social Media Recruitment Poster 157

Appendix K: Participant Information Sheet 158

Appendix L: Consent Form 162

Appendix M: PPI Recruitment Poster 164

Appendix N: Debrief Sheet 165

Appendix O: Coded Transcript Extract 167

Appendix P: Initial Theme Map Ideas 169

Appendix Q: Additional Consent Form 170

Acknowledgements

Firstly, I would like to acknowledge all of the individuals who took the time out of their busy lives to participate in my research. It was a privilege to hear your experiences, and without you this project would not have been possible. Thank you.

To my wonderful supervisors, Dr Elisabeth Norton and Dr Bob Budd, thank you for your expert advice and support throughout the completion of this thesis, particularly for the encouraging words that helped me to keep going towards the end. It has been a pleasure to work with you both.

To the friends I have made on the course, thank you for all of the laughs, encouragement, and support during training. In particular, to Zoe, without whom I would never have managed to get through this course. Thank you not only for being an amazing friend, but for the patience you had when I asked a million questions, for the kindness of explaining things I didn't quite get, and, more importantly, for getting all of my Irish-isms and humour, and for making moving to the East of England feel a little more like home.

Thank you to the best Derry girls at home and my gorgeous Manchester girls — the best cheerleaders I could have asked for — who have supported me so hugely over the years. To Dad, Emma, and Lucy, thank you for always being there and for encouraging me when it got hard. Mammy, you have been with me every step of the way and threw yourself into helping me get to where I am today. I could never have done it without you.

And last, but certainly not least, to my husband Darren. Thank you for prioritising my needs over the last few years to allow me to get here. Thank you for every cup of tea, hug, and "yes, you can do it" when I needed it most. I feel blessed to have you by my side always.

Declaration

Content submitted by the author for the Thesis Proposal in partial fulfilment of the Doctorate in Clinical Psychology at the University of East Anglia has been updated and adapted throughout the preparation of this thesis portfolio.

Chapter 1: Introduction to the Thesis Portfolio

Introduction

Intensive care units (ICUs), also known as critical care, comprise of a wide multidisciplinary team, tasked with the responsibility of caring for acutely unwell patients, whose conditions are often life threatening (Marshall et al., 2017). Staff who work on ICU are responsible for making difficult ethical decisions and supporting families with life changing or end of life care (Curtis & Vincent, 2010). Additionally, evidence has found that ICU staff experience substantial occupational stress due to workload, staffing and lack of support (Urooj et al., 2025). Faced with both occupational stress and repeated exposure to death and distress, ICU staff have been found to have a higher prevalence of mental health difficulties (Ergün et al., 2016; Swapnil et al., 2016).

Previous research has focused on the impact of these difficulties with ICU staff. Post traumatic stress disorder (PTSD) may develop following exposure to actual or threatened death or serious injury and is characterised by intrusive recollections, negative changes in mood and cognition, avoidance and hyperarousal (American Psychiatric Association [APA], 2013). Due to the occupational stressors faced working in ICU, it is not surprising that evidence indicates staff on ICU experience higher levels of post-traumatic stress (PTS) symptoms (Kim & Im, 2024; Ong et al., 2016). A substantial body of research conducted during the COVID-19 pandemic investigated PTS symptoms among healthcare staff, including ICU staff, with several systematic reviews synthesising the prevalence estimates during this period (Hernández-Bojorge et al., 2024; Li et al., 2021). However, despite evidence from studies conducted outside the pandemic suggesting comparably elevated levels of PTS among ICU staff (Li et al., 2021; Mathew & Mathew, 2023; Ong et al., 2016), an overall prevalence estimate specific to ICU staff has yet to be aggregated. In addition to PTS symptoms, working in intensive care has also been associated with compassion fatigue (CF). CF comprises two related constructs: burnout, which refers to the loss of emotional concern following prolonged occupational stress, and secondary traumatic stress (STS) which arises as the result of indirect exposure to work-related traumatic events (Figley, 1995; Maslach et al., 1997; Papazian et al., 2023; Stamm, 2010). Prevalence-focused systematic reviews have synthesised estimates of burnout among ICU staff, offering insight into the extent of burnout within this population (Ramírez-Elvira et al., 2021; Sanfilippo et al., 2020). However, despite research also indicating higher levels of STS among ICU healthcare professionals (HCPs) (Ariapooran et al., 2022; Hu et al., 2024) this has yet to be consolidated to provide an overall

prevalence for ICU staff. These gaps in the literature highlight the need for a systematic review to synthesise prevalence estimates of trauma-related outcomes such as PTS and STS in ICU staff, in order to provide an understanding of the scale of occupational trauma within this population. This may help to inform system-level approaches to staff support within ICU settings.

Specialised ICU settings, such as neonatal intensive care units (NICUs), have been relatively under-researched, however, emerging evidence suggests that trauma-related symptoms are prevalent within this setting (Beck et al., 2017; Favrod et al., 2018). A recent study by Ravaldi et al. (2023) reported that working with newborn life-threatening conditions and death is linked to burnout and PTS in NICU staff. There is limited research exploring how NICU staff experience ongoing exposure to occupational stress and how this impacts their wellbeing. Qualitative research is needed to enrich existing prevalence-based findings and deepen understanding within this area.

The perinatal period is a particularly vulnerable time in relation to mental health and wellbeing. Research has found that mental health difficulties such as anxiety and depression are prevalent during pregnancy (de Jesus Silva et al., 2016; Fawcett et al., 2019; Giardinelli et al., 2012). Mental health difficulties and trauma have been linked to attachment difficulties in new mothers (Erickson et al., 2019), highlighting a need to ensure wellbeing support for pregnant people. The NHS Long Term Plan (2019) emphasised the importance of improving access to perinatal care and specifically evidence-based psychological support. Recent research exploring the experiences of HCPs who work with women during the perinatal period has further highlighted a need for resources and support networks to promote mental wellbeing during this significant life transition (Ekelöf et al., 2025). Given the routine exposure of NICU HCPs to occupational stress, pregnancy may increase vulnerability to the psychological impact of this work. Qualitative research is therefore needed to explore the experiences of HCPs working on NICU while pregnant.

In response to the gaps highlighted, this thesis aims to deepen understanding of trauma-related distress among HCPs working in intensive care. The systematic review and meta-analysis in chapter 2 synthesises the prevalence of PTS and STS among ICU staff, addressing the lack of consolidated prevalence estimates across ICU settings. Chapter 3 aims to summarise the findings from the systematic review and bridge the gap between these

findings and the rationale for the empirical study. The empirical study in Chapter 4 then explores the experiences of HCPs in the UK who worked on NICU while pregnant, examining how working in a high intensity environment is navigated during this period of increased vulnerability. Chapter 5 presents additional methodology in relation to the empirical study. The findings from both papers are critically evaluated and discussed in chapter 6. Overall, this portfolio aims to support the development of future approaches to staff wellbeing and support for those working in intensive care settings, particularly whilst experiencing significant life changes, such as pregnancy.

Chapter 2: Systematic Review

Written for publication in the *British Journal of Clinical Psychology*

(see guidelines in Appendix A)

The prevalence of Secondary Traumatic and Post Traumatic Stress in ICU staff: A systematic review and meta-analysis

Katie McHugh*[1], Dr Elisabeth Norton[1], Dr Bob Budd[1]

[1] *Department of Clinical Psychology and Psychological Therapies, Norwich Medical School University of East Anglia, UK*

*Correspondence concerning this article should be addressed to Katie McHugh, Department of Clinical Psychology, Norwich Medical School, University of East Anglia, Norwich Research Park, Norwich, Norfolk, NR4 7TJ, England, United Kingdom. Email: K.Mchugh@uea.ac.uk

Word count (excluding abstract, reference list, tables and figures): 3977

Abstract

Objectives: Healthcare professionals (HCPs) working in intensive care units (ICUs) are routinely exposed to life-threatening illness, death, and ethical complexity (Curtis & Vincent, 2010; Evrin et al., 2018), placing them at risk of trauma-related psychological distress (Li et al., 2021). This systematic review and meta-analysis aimed to estimate the pooled prevalence of secondary traumatic stress (STS) and post-traumatic stress (PTS) symptoms among ICU staff and examine whether PTS prevalence differed between COVID-19 and non-COVID-19 contexts.

Methods: The review was prospectively registered (PROSPERO CRD420251115283) and conducted in accordance with PRISMA guidelines. PubMed, CINAHL, PsycINFO, and PTSDpubs were searched from inception to November 2025 using combinations of terms relating to secondary trauma, PTSD, intensive care (ICU, NICU, PICU), healthcare staff, and prevalence. Studies reporting prevalence of STS and/or PTS symptoms in ICU staff using validated self-report measures were included. Random-effects meta-analyses were conducted to estimate pooled prevalence rates. Risk of bias was assessed using the Joanna Briggs Institute (JBI) checklist for prevalence studies, and subgroup analyses examined COVID-19–related differences.

Results: Forty-four studies (N = 20,170) met inclusion criteria. The pooled prevalence of STS was 16.3% (95% CI 4.7–33.0; k = 11) and pooled PTS prevalence was 24.1% (95% CI 19.9–28.6; k = 34), with substantial heterogeneity ($I^2 > 95\%$). PTS prevalence did not significantly differ between COVID-19 and non-COVID-19 studies.

Conclusions: Trauma-related psychological distress is common among ICU staff and is not confined to pandemic-related stressors. Findings support trauma-informed, system-level approaches to staff wellbeing within intensive care.

Keywords: Intensive care; post-traumatic stress; secondary traumatic stress; healthcare professionals; occupational trauma; meta-analysis

Introduction

Healthcare staff working in intensive care units (ICUs) are responsible for the care of acutely unwell patients who often require life-support and are at high risk of death (Evrin et al., 2018). Within this environment, staff are routinely required to make difficult ethical judgements and to support families through end-of-life decision-making (Curtis & Vincent, 2010). Faced with daily traumatic situations, staff on ICU have been found to be at higher risk of stress, depression and anxiety (Huang et al., 2022; Kumar et al., 2016; Zhang et al., 2020). As a result of working in a stressful, high intensity environment and experiencing difficulties with mental health, staff working on ICU have also reported increased compassion fatigue (CF) and post-traumatic stress (PTS) symptoms (Alharbi et al., 2020; Li et al., 2021). This negative impact on ICU staff's wellbeing has been linked to decreased clinician rated patient safety and difficulties with interpersonal teamwork (Welp et al., 2016); and may explain higher rates of ICU staff turnover (Xu et al., 2023).

Post-traumatic stress disorder (PTSD) develops after exposure to actual or threatened death or serious injury, characterised by intrusive memories, avoidance, negative changes in mood and cognition, and heightened arousal that cause significant distress (American Psychiatric Association [APA], 2013). Due to continued occupational exposure to stress, PTSD prevalence has been found to be higher in healthcare workers (14.8%) than in the general population (3-4%) (Sendler et al., 2016). Previous research has found the estimated prevalence of PTSD in nurses in the United States to be 15.4%, and an integrative review reported that whilst PTSD prevalence in nursing staff varied, organisational, interpersonal and intrapersonal factors impacted PTSD symptomatology (Rodney et al., 2022; Schuster et al., 2020). Whilst these studies indicate that PTS may be higher in healthcare workers, and particularly nurses, they do not focus on the prevalence of PTS in ICU staff, who have been found to have the highest levels of occupational stress amongst other healthcare departments (Sharma et al., 2014).

CF is often used as an umbrella term for burnout and secondary traumatic stress (STS) (Stamm, 2010). Burnout refers to the loss of emotional concern and feeling as a result of occupational stressors (Maslach et al., 1997; Papazian et al., 2023). The overall prevalence of burnout for staff on ICU has been widely reported. Systematic reviews show varied prevalence, ranging from 6-49% (Chuang et al., 2016; Ramírez-Elvira et al., 2021; Sanfilippo

et al., 2020). STS occurs as a result of indirectly witnessing or hearing about work-related traumatic events, leading to similar symptoms of post-traumatic stress (Figley, 1995; Stamm, 2010). Although another important component of CF, STS has been investigated much less as a standalone concept compared to burnout. STS prevalence has been investigated within trauma therapists (Velasco et al., 2025), social workers (Quinn & Nackerud, 2019) and mental health professionals (Henderson et al., 2025). A systematic review of STS in nurses found that STS ranges from 25% to 78%, however small sample sizes used within the study limited generalisability (Beck, 2011). Nevertheless, the evidence indicates that STS is a present difficulty within healthcare staff, and requires further exploration, particularly within departments with increased trauma exposure, such as ICU.

Recent systematic reviews have estimated the prevalence of PTS symptoms among healthcare staff during the COVID-19 pandemic, with pooled prevalences reported as 21.5% (Li et al., 2021) and 29.1% (Hernández-Bojorge et al., 2024). However, these studies do not examine ICU staff specifically or whether PTS symptoms within this population differed outside of the pandemic, limiting conclusions about the specific impact of COVID on staff who are already routinely exposed to occupational stress. A recent systematic review explored the prevalence of PTSD in ICU nurses, finding a pooled prevalence of 32.78 % (Gehisari et al., 2025). Although a helpful insight into the prevalence of PTS within ICU, this review focuses solely on nurses and so is not generalisable to all staff within ICU. Additionally, this review excluded ICU environments outside of adult ICU, despite evidence indicating high levels of STS and PTS within neonatal intensive care unit (NICU) and paediatric intensive care unit (PICU) environments (Beck et al., 2017; Jones et al., 2019).

To our knowledge no review has consolidated the overall prevalence of STS and PTS symptoms within healthcare workers on ICU, including all ICU types. Establishing this prevalence is essential in helping to understand the scale of trauma experienced and develop steps towards improving staff wellbeing, reducing turnover and ensuring the best care for the most unwell.

The aim of this systematic review and meta-analysis is to estimate the prevalence of STS and PTS symptoms in ICU staff. This review also aims to determine if COVID-19 had a significant impact on trauma experienced by staff working on ICU.

Method

The review protocol was prospectively registered with PROSPERO (CRD420251115283) before the formal screening was completed. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Page et al., 2021) checklist for this review is provided in Appendix B.

Search strategy

An extensive search strategy was undertaken on 7 November 2025, with searches conducted from database inception to this date across PubMed, CINAHL, PTSDpubs, and PsycInfo.

Search terms were developed, with Medical Subject Headings (MeSH) and other database-specific subject headings used where applicable. Searches were limited to title and abstract. Table 1 displays the full search terms used.

Table 1

Search Terms

Concept	Search terms
Trauma- related outcomes	secondary trauma* OR vicarious trauma* OR compassion fatigue OR burnout OR emotional exhaustion OR traumatic stress OR PTSD OR PTSS
Clinical setting	intensive care OR ICU OR PICU OR NICU OR critical care
Population	staff OR healthcare OR nurse OR doctor OR midwife OR professional OR worker
Prevalence/ Epidemiology	prevalence OR incidence OR rate OR epidemiology OR frequency OR proportion

Inclusion criteria

Studies were included if they reported prevalence data for STS and/or PTS symptoms among healthcare staff working in ICU or critical care, assessed using validated self-report measures. Healthcare staff were defined as doctors, nurses, allied health professionals, students, assistant healthcare workers and non-clinical staff. The decision was made to include non-clinical staff, as exposure to trauma-related stressors within ICU environments

may extend beyond direct clinical contact. All types of ICU were eligible, including NICU and PICU. Studies were required to be published in English and available in full text.

Studies were excluded if they were not conducted in an intensive care setting or if ICU-specific prevalence data could not be extracted. Studies that did not report prevalence estimates (e.g. reported only means and standard deviations) were also excluded. Additionally, qualitative studies and review articles were excluded.

Screening and data extraction

Prior to screening, duplicate records were removed. Studies were initially screened by title and abstract, followed by full-text screening, conducted by the first author. A random 20% of studies at each stage were checked by an independent researcher, with any discrepancies resolved through discussion between researchers.

Data was extracted using Microsoft Excel to collate the data. Where uncertainties arose during extraction, studies were discussed by the research team. For studies reporting multiple timepoints (Hall et al., 2022; Hovland et al., 2023; Roberts et al., 2021) data from the most recent time point was extracted, to avoid double counting and to provide prevalence estimates that best reflect the most current psychological impact within ICU settings. For Laurent et al. (2022), data was taken from phase two of the study only, due to relevance. It was agreed that for Mealer et al. (2006), data would be extracted from cohort two to avoid double counting and because this cohort included a broader sample of nurses. In a study reporting prevalence for multiple ICU's, the overall prevalence was extracted (Wojnar-Gruszka et al., 2025). Studies were classified as COVID-19–related where this was explicitly stated in the title or main text, either through a stated focus on COVID-19 clinical settings or confirmation that recruitment occurred during the COVID-19 pandemic, to ensure consistent classification across studies.

Quality Assessment

The Joanna Briggs Institute (JBI) checklist for prevalence studies (Munn et al., 2015) was used to assess risk of bias and an operationalised version of the checklist was developed to align with the aims of the review (Appendix C). The checklist comprised nine items

assessing sample characteristics, recruitment methods, the validity and reliability of STS and PTS measures, statistical analysis, and prevalence reporting. Each item was rated as either 0 (no or unclear) or 1 (yes). In line with recent healthcare related prevalence reviews (Sanaie et al., 2025; Sk Abd Razak et al., 2024), scores were presented as percentages. Studies scoring between 20%-50% were rated as low quality/ high risk of bias, 50%-80% rated as moderate quality/risk of bias and 80%-100% rated as high quality/ low risk of bias. A random sample of 20% of the studies were independently rated by a second researcher, and agreement between reviewers on overall quality scores was good (ICC = 0.87, 95% CI = 0.56-0.97). Any discrepancies between reviewers were discussed and resolved by consensus, with input from the research supervisory team where required. Full quality ratings for each study are presented in Appendix D.

Data analysis

The meta-analysis was conducted in R (Version 5.4.2) using the *metafor* package (Version 4.8-0; Viechtbauer, 2010). Extracted prevalence estimates of STS and PTS, expressed as proportions of ICU staff, were pooled separately to produce overall prevalence estimates with 95% confidence intervals. A random-effects model was used to account for the anticipated variability in prevalence estimates between studies, providing more conservative 95% confidence intervals around the pooled prevalence estimates. Prevalence estimates were arcsine transformed prior to pooling to stabilise variances and prevent confidence intervals extending below zero when prevalence estimates were low. Results were then back-transformed for ease of interpretation (Barendregt et al., 2013). Cochran's Q test (Cochran, 1954) was used to determine if heterogeneity within samples was significant, and the I^2 statistic was calculated to establish the proportion of total variation in prevalence estimates attributable to between-study heterogeneity (Higgins & Thompson, 2002). Publication bias was assessed using visual inspection of a funnel plot and regression test (Egger et al., 1997; Higgins & Altman, 2008). The 'trim-and-fill' method was applied when publication bias was identified to estimate the potential impact of missing studies on pooled prevalence estimates (Duval & Tweedie, 2000).

Subgroup analyses were conducted for PTS prevalence only to determine whether prevalence estimates differed between studies conducted during the COVID-19 pandemic and those conducted outside of the pandemic. This analysis was not possible for STS

prevalence due to the lower number of studies. Additional subgroup or moderator analyses of other study characteristics were not undertaken due to an insufficient number of studies and substantial methodological heterogeneity across samples.

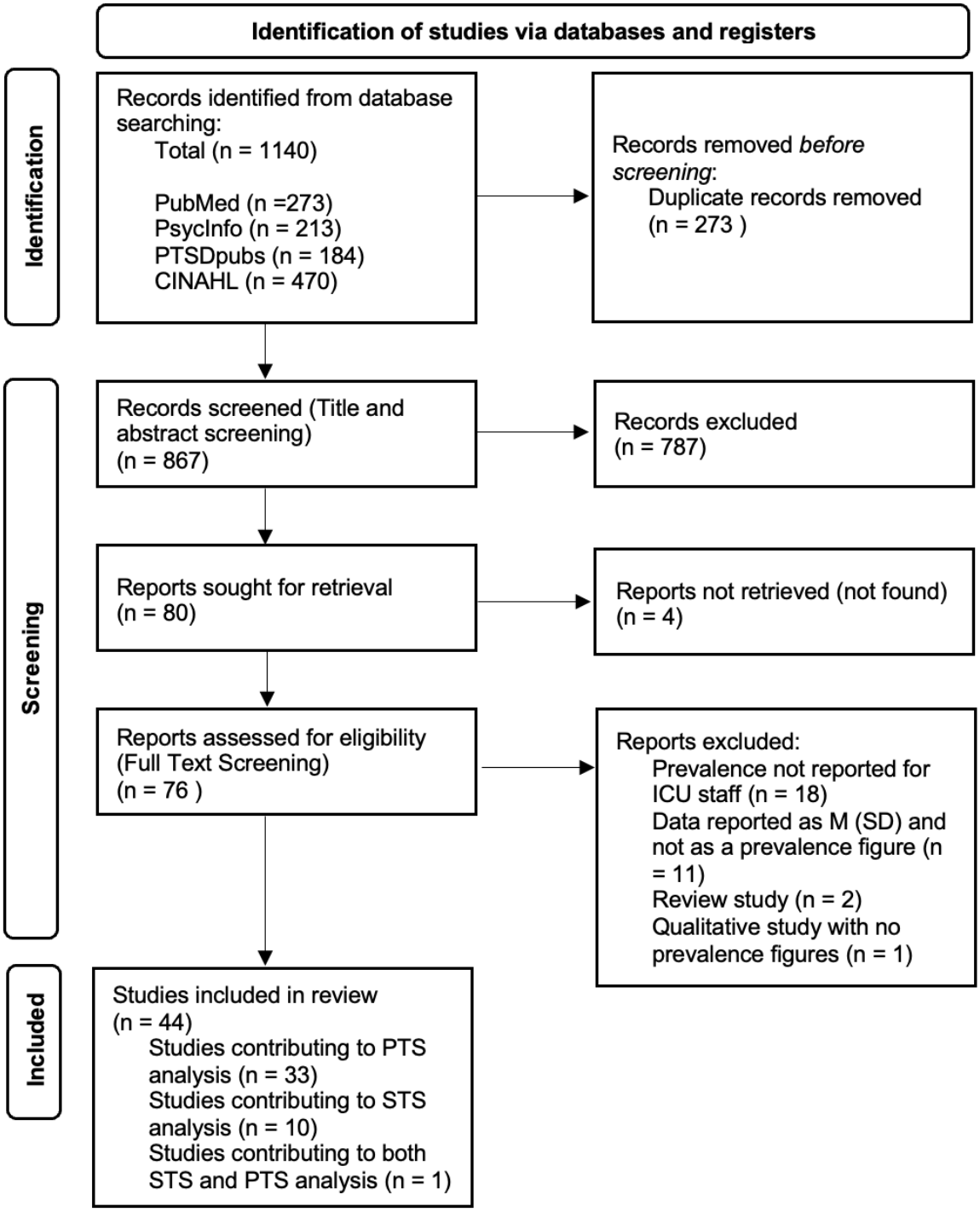
Sensitivity analyses were performed to examine the impact of study quality on pooled prevalence estimates by repeating the meta-analysis after including only studies rated as high quality, and excluding those rated as moderate and low quality. Differences observed in subgroup and sensitivity analyses were assessed for clinical significance using meta-analytic regression.

Results

A Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) flowchart (Figure 1) shows that the search initially identified 1140 references, and 273 duplicates were removed. Following the removal of duplicates, there remained 867 studies which were screened based on the title and abstract. Of the identified 80 papers, full text screening was carried out on 76 studies that were available in their full-text format.

Figure 1

PRISMA Flow Diagram of Study Selection



Study Characteristics

Following full text screening, 44 studies met the inclusion criteria for the meta-analysis, with a total of 20,170 participants. Of these, 33 studies provided PTS prevalence data, 10 reported STS prevalence, and 1 study reported both. The included studies were published between 2006 and 2025 and were conducted across 26 countries and regions, with the majority originating from high socioeconomic settings (k = 31). Twenty three studies were conducted in ICUs that were not further specified, 6 in COVID ICUs, 3 in PICU, 2 in NICU and the remainder in mixed ICUs or specialist ICU settings. A range of validated self-report measures were used to assess STS and PTS, most commonly the Impact of Event Scale–Revised (IES-R) and the PTSD Checklist-5 (PCL-5), followed by the Professional Quality of Life scale (ProQOL) and the Trauma Screening Questionnaire (TSQ). Of the studies measuring STS, 5 were completed during COVID-19 and of the studies measuring PTS, 22 were completed during COVID-19. Study characteristics are presented in Table 2.

Table 2

Included sample characteristics

Sample Demographics						Quality	N		
Study	**Country (SES)**	**ICU type**	**Age, Gender and ICU experience**	**Assessment tool**	**COVID study (Y/N)**		**Tot**	**PTS**	**STS**
Ariapooran et al. 2022	Iran (Middle)	ICU not specified	Not reported for ICU sample	STSS	Y	Moderate	79		49
Ageel & Shbeer, 2022	Saudi Arabia (High)	Mixed ICUs	Age: 22- 30: 50%, 31-40: 44%, ≥ 40: 6.7%, Gender: 83% Female	ProQOL-5, STS subscale	Y	High	238		62
Alharbi et al. 2020	Saudi Arabia (High)	ICU not specified	Not reported	ProQOL-5, STS subscale	N	Moderate	321		60
Altmayer et al. 2020	France (High)	COVID ICU	Age: Median: 33 (Full range 21-58), Gender:78% Female, ICU experience: Median: 4 years (Full range 0-28)	PCL-5	Y	Moderate	69	11	
Azoulay et al. 2021	France (High)	ICU not specified	Age: Median: 33 (IQR 28-41), Gender: 67.5% Female	IES-R	Y	High	845	240	
Azoulay et al. 2024	France (High)	ICU not specified	Median: 37 (IQR 30–45), 65% female, ICU experience:	IES-R	Y	High	950	339	

Sample Demographics						Quality	N		
Study	**Country (SES)**	**ICU type**	**Age, Gender and ICU experience**	**Assessment tool**	**COVID study (Y/N)**		**Tot**	**PTS**	**STS**
Barr, 2017	Australia (High)	NICU	Median: 7 years (IQR 3–14). Age: ≤35: 49%, >35: 51%, Gender: 98% Female, NICU experience: ≤2: 16%, 3-10: 43%, ≥11: 41%	ProQOL-5, STS subscale	N	High	140		18
Beck et al. 2017	United States (High)	NICU	Age: M: 48.77 SD: 10.98, Gender: 97% Female, NICU experience: M22.21 SD: 12.61	STSS	N	Moderate	175		86
Bucca et al. 2022	United States (High)	ICU not specified	Age: 80% reporting an age of 18- 50, Gender: 70% Female	PCL-6	Y	Moderate	212	78	
Coville et al. 2017	England (High)	Adult and Paediatric ICU	Not reported for ICU sample	TSQ	N	Moderate	334	44	
Ezzat et al. 2021	France, the UK, Italy, Mainland China, Taiwan, Egypt and Belgium (Mixed)	ICU not specified	Age: 20-30 21.3%, 31-40 43.3%, 41-50 24.3%, 51-60 1.3%, Gender: 73% Female	TSQ	Y	Moderate	515	143	

Sample Demographics						Quality	N		
Study	**Country (SES)**	**ICU type**	**Age, Gender and ICU experience**	**Assessment tool**	**COVID study (Y/N)**		**Tot**	**PTS**	**STS**
Fournier et al. 2025	France (High)	ICU not specified	Age: 20-34 46.12%, 35-49 44.77%, 50-65 8.93%, >65 0.18%, Gender: 75.18% Female	IES-R (French version)	Y	Moderate	1108	216	
Greenberg et al. 2021	England (High)	ICU not specified	Not reported	PCL-6	Y	Moderate	709	284	
Hall et al. 2022	England (High)	Mixed ICUs	Age: 16-29 17.2%, 30-44 49.1%, 45-56 30.5%, ≥60 3.3%, Gender: 72.2% Female	PCL-6	Y	Moderate	2479	714	
Harrington et al. 2025	United States (High)	Cardiothoracic ICU	Age: M: 34 SD: 9,6, Gender: 76% Female	ProQOL-5, STS subscale, PCL-5	Y	Moderate	34	15	11
Heesakkers et al. 2021	The Netherlands (High)	ICU not specified	Age: M: 45.0 SD:11.4, Gender: 73.8% Female, ICU experience: M:16.2 SD: 11.3	IES-6	Y	High	726	161	
Hovland et al. 2023	Norway (High)	COVID ICU	Age: M: 43.6 SD: 9.1, Gender: 77% Female	PCL-5	Y	Moderate	287	18	
Hu et al. 2024	China (Middle)	ICU not specified	Age: ≤30 48.5%, 31–40 47.2%, 41–50 4.4%, Gender: 86.5% Female	STSS	N	High	229		109

Sample Demographics						Quality	N		
Study	**Country (SES)**	**ICU type**	**Age, Gender and ICU experience**	**Assessment tool**	**COVID study (Y/N)**		**Tot**	**PTS**	**STS**
Jeong & Shin, 2022	South Korea (High)	ICU not specified	Age: M: 28.97 SD: 5.46, Gender: 91.8% Female, ICU experience: <2 – 29.9% 2–4.99 – 42.9% 5–9.99 – 13.6% ≥10- 13.6%	ProQOL-5, STS subscale	N	Moderate	147		0
Jones et al. 2019	UK wide (High)	PICU	Median: 35 (IQR 28–44), 86% Female, Median: 6 years (IQR 2–14)	TSQ	N	Moderate	1656	429	
Kader et al. 2021	Qatar (High)	ICU not specified	Age: 20-34 71%, 35-64 29%, Gender: 42.8% Female	PDS-5	Y	High	124	22	
Kartsonaki et al. 2022	Greece (High)	Mixed ICUs	Age: M: 41.09 SD: 7.86, Gender: 80.3% Female	ProQOL-5, STS subscale	N	Moderate	254		1
KC et al. 2024	Nepal (Low)	ICU not specified	Not reported for those who completed PCL-5	PCL-5	Y	Moderate	100	46	
Kerai et al. 2022	India (Low)	COVID ICU	Not reported	ProQOL-5, STS subscale	Y	Moderate	320		3
Kim & Im, 2024	South Korea (High)	Mixed ICUs	Age: M: 29.92 SD: 7.21,	IES-R (Korean version)	N	Moderate	153	69	

Sample Demographics						Quality	N		
Study	**Country (SES)**	**ICU type**	**Age, Gender and ICU experience**	**Assessment tool**	**COVID study (Y/N)**		**Tot**	**PTS**	**STS**
			Gender: 94.1% Female, ICU experience: M: 4.36 SD: 4.20						
Laurent et al. 2022	France (High)	ICU not specified	Age: 20-34: 49.28%, 35-49: 40.92%, 50-65: 9.61%, >65: 0.19%, Gender: 74.97% Female	IES-R (French version)	Y	High	2153	444	
Levi & Moss, 2022	United States (High)	ICU not specified	Age: M: 26.6, Gender: 90% Female, ICU experience: M: 1.95	PCL-5	Y	Moderate	10	7	
Li et al. 2021	China (Middle)	ICU not specified	Gender: 86.7% Female	PCL-C	N	High	143	32	
Lima-Setta et al. 2022	Brazil (Middle)	PICU	Age: M: 37.1 SD: 8.4, Gender: 85% Female, ICU experience: Median: 7 years (IQR 3–12)	PCL-5	Y	High	1084	116	
Mason et al. 2014	United States (High)	SICU	ICU experience: 1-10: 3.8%, 11-20: 34.6%, 21-30: 61.5%	ProQOL-5, STS subscale	N	Moderate	26		0
Mathew & Mathew, 2023	India (Low)	Adult ICU	Age: M: 33.8 SD: 11.5,	PTSS-10	N	Moderate	383	111	

Sample Demographics						Quality	N		
Study	**Country (SES)**	**ICU type**	**Age, Gender and ICU experience**	**Assessment tool**	**COVID study (Y/N)**		**Tot**	**PTS**	**STS**
			Gender: 84% Female						
Mealer et al. 2006	United States (High)	ICU not specified	Age: M: 37.5, Gender: 84% Female	PTSS-10	N	Moderate	230	55	
Mealer et al. 2011	United States (High)	Mixed ICUs	Age: M: 43.6 SD: 11.0, Gender: 91% Female	PDS	N	Moderate	744	156	
Mersin et al. 2025	Turkey (Middle)	ICU not specified	Age: Median: 27.00 FQ: 24.0 TQ: 35.0, Gender: 68% Female, ICU experience: Median: 3.00 FQ: 2.0 TQ: 7.0	PTSD short scale	N	Moderate	341	40	
Pestana et al. 2022	Brazil (Middle)	COVID ICU	Age: <38: 56.4%, >38: 43.6%, Gender: 71.5% Female	IES-R	Y	High	376	127	
Roberts et al. 2021	UK and Ireland (High)	ICU not specified	Age: 20–25: 1.7%, 26–30: 24.8%, 31–35: 26.9%, 36–40: 15.5%, 41–45: 10.5%, 46–50: 10.5%, 51–55: 5.2%, 56–60: 3.6%,	IES-R	Y	Moderate	526	51	

Sample Demographics						Quality	N		
Study	**Country (SES)**	**ICU type**	**Age, Gender and ICU experience**	**Assessment tool**	**COVID study (Y/N)**		**Tot**	**PTS**	**STS**
			>60: 1.3%, Gender: 46% Female						
Rodríguez-Rey et al. 2019	Spain (High)	PICU	Age: M: 49.77 SD: 10.98, Gender: 82.6% Female	TSQ	N	Moderate	298	60	
Roger et al. 2024	Australia, France and Hong Kong (Mixed)	ICU not specified	Not reported for those who completed the PCL-5	PCL-5	Y	Moderate	585	98	
Spencer et al. 2019	UK (High)	ICU not specified	Not reported for ICU staff specifically	TSQ	N	Moderate	58	4	
Stafseth et al. 2022	Norway (High)	COVID ICU	Age: M: 44.8 SD: 10, Gender: 77.9% Female	PCL-5	Y	High	484	31	
Wang et al. 2024	China (Middle)	ICU not specified	Not reported for ICU staff specifically	IES-R	N	Moderate	105	12	
Wojnar-Gruszka et al. 2025	Poland (High)	TICU and ICU	Age: M: 37.2 SD: 9.93, Gender: 71.26% Female, ICU experience: M: 7.92 SD: 8.37	IES-R	Y	Moderate	148	69	
Wu et al. 2025	China (Middle)	COVID ICU	Age: M: 34, Gender: 92.7% Female	IES-R	Y	High	137	55	

Sample Demographics						Quality	N		
Study	**Country (SES)**	**ICU type**	**Age, Gender and ICU experience**	**Assessment tool**	**COVID study (Y/N)**		**Tot**	**PTS**	**STS**
Ong et al. 2016	Singapore (High)	ICU not specified	Age: M: 31.7 SD: 7.3, Gender: 83% Female, ICU experience: <5: 59%	PTSS-10	N	High	101	33	

Note: SES = socioeconomic status; M = mean; SD = standard deviation; ICU = intensive care unit; NICU = neonatal intensive care unit; PICU = paediatric intensive care unit; SICU = surgical intensive care unit; STS = secondary traumatic stress; PTS = post-traumatic stress; STSS = Secondary Traumatic Stress Scale; ProQOL = Professional Quality of Life Scale; PCL = PTSD Checklist; IES-R = Impact of Event Scale–Revised; TSQ = Trauma Screening Questionnaire; PTSS-10 = Post-Traumatic Symptom Scale-10; PDS = Posttraumatic Diagnostic Scale; COVID-19–related studies were defined as those explicitly focused on COVID-19 settings or reporting recruitment during the COVID-19 pandemic.

Risk of bias

Using the tool described above, all studies were assessed for risk of bias. Fourteen studies were rated as high quality or low risk of bias and 30 were rated as moderate quality/ risk of bias.

Meta-analytic Prevalence Estimates

Random-effects meta-analyses indicated substantial levels of STS and PTS among ICU staff. The pooled prevalence of STS was 16.3% (95% CI 4.7–33.0), based on 1,963 participants across 11 studies. Considerable heterogeneity was observed (I^2 = 98.7%), and the 95% prediction interval (PI) ranged from 0.0–78.6%, indicating marked between-study variability. For PTS, pooled prevalence across 34 studies comprising 18,207 participants was 24.1% (95% CI 19.9–28.6). Heterogeneity was substantial (I^2 = 97.8%), and the 95% PI ranged from 4.9–51.9%. Full pooled prevalence estimates, confidence intervals, prediction intervals, and heterogeneity statistics are presented in Table 3. Forest plots for each meta-analysis are provided in Appendix E.

Sensitivity Analyses

When analyses were restricted to studies rated as high quality, the pooled prevalence of STS increased to 27.8% (95% CI 10.6–49.4), based on 607 participants across three studies, with high heterogeneity remaining (I^2 = 96.8%). Sensitivity analysis applied to PTS studies yielded a similar pooled prevalence estimate (23.6%, 95% CI 17.2–30.6; n = 7,123; k = 11), with persistently high heterogeneity (I^2 = 97.6%). The consistency of pooled estimates across sensitivity analyses suggests that findings were robust to study quality, however, high levels of heterogeneity and wide prediction intervals highlight marked variation in prevalence estimates between studies.

Table 3

Pooled Prevalence Estimates of STS and PTS in ICU Staff, with Subgroup, Moderator, and Sensitivity Analyses

	k	*n*	Pooled Prevalence (%)	95%CI	95%PI	I^2	*Qtest*
Secondary Traumatic Stress	11	1963	16.3	4.7 – 33.0	0.0 – 78.6	98.7	670.3*
High quality only	3	607	27.8	10.6 – 49.4	1.3 – 70.5	96.8	57.5*
Post Traumatic Stress	34	18207	24.1	19.9 – 28.6	4.9 – 51.9	97.8	917.1*
High quality only	11	7123	23.6	17.2 – 30.6	5.7 – 48.9	97.6	371.9*
COVID19							
COVID population	22	13661	25.9	20.1 – 32.2	4.4 – 57.1	98.4	783.7*
Non COVID population	12	4546	21.3	15.8 – 27.3	5.4 – 43.8	95.0	132.5*
Moderation analysis	non-significant (QM(df = 1) = 0.99, p = 0.32)						

Note. k = number of samples; n = number of participants;
*Indicates significant heterogeneity $p < 0.0001$

Subgroup Analysis

Subgroup analyses examining the impact of the COVID-19 pandemic on PTS prevalence indicated a pooled prevalence of 25.9% (95% CI 20.1–32.2) in studies conducted during the pandemic (k = 22; n = 13,661); compared with 21.3% (95% CI 15.8–27.3) in studies conducted outside of the pandemic (k = 12; n = 4,546). However, meta-analytic regression indicated that this difference was not statistically significant (QM(1) = 0.99, p = 0.32).

Publication Bias

Publication bias was assessed via visual inspection of funnel plots and Egger's regression test for both meta-analyses (Egger et al., 1997). Egger's test for funnel plot asymmetry suggested no significant publication bias for the overall STS meta-analysis (z = −0.18, p = .86). Funnel plot asymmetry was observed for the overall PTS meta-analysis, and Egger's regression test was significant (z = 2.18, p = .030). However, application of the 'trim-and-fill' method (Duval & Tweedie, 2000) to the overall PTS model did not identify any

missing studies and did not alter the pooled prevalence estimate. Funnel plots are presented in Appendix F.

Discussion

This systematic review and meta-analysis synthesised prevalence data on STS and PTS symptoms among healthcare staff working in ICU. Findings across 44 studies indicate that trauma-related psychological distress is common within this workforce. Pooled prevalence estimates suggest that approximately one in six ICU staff experience symptoms of STS and around one-quarter of ICU staff experience PTS, highlighting the considerable psychological burden associated with working in ICU settings. These pooled prevalence estimates should however be interpreted in the context of the high between-study heterogeneity and wide prediction intervals observed, which indicate marked variability in prevalence across studies and ICU settings.

The pooled prevalence of STS was 16.3%, indicating that secondary exposure to trauma represents a meaningful psychological risk for staff working in ICU settings. Although previous literature has discussed STS as a component of CF alongside burnout (Stamm, 2010), it has been investigated far less frequently than burnout as a stand-alone construct. The present findings suggest that STS is an important occupational risk to be considered in high-intensity healthcare environments, such as ICUs. While the pooled prevalence in this review is lower than previous estimates focused exclusively on nurses (Beck, 2011), this difference may reflect the inclusion of a broader range of ICU settings and roles, as well as the use of more conservative prevalence thresholds in some studies. Notably, sensitivity analyses restricted to high-quality studies yielded higher STS prevalence estimates of 27.8%, suggesting that methodological limitations may have contributed to an underestimation of STS in lower-quality research. Together, these findings highlight the importance of considering STS as a distinct occupational hazard within ICUs, rather than subsuming it under broader constructs. Secondary trauma may be particularly salient in environments characterised by repeated exposure to acutely unwell patients, death and complex ethical decision making.

The pooled prevalence of 24.1% of PTS symptoms among ICU staff is higher than that found in broader healthcare worker populations (Sendler et al., 2016). Pooled PTS

prevalence estimates remained largely unchanged when sensitivity analysis was conducted (23.6%), indicating that findings were robust to study quality.

Prior meta-analyses conducted during the COVID-19 pandemic have reported pooled PTSD prevalence estimates ranging from approximately 21% to 29% (Hernández-Bojorge et al., 2024; Li et al., 2021), which is comparable to the overall PTS prevalence found in this review. Subgroup analyses examining the impact of the COVID-19 pandemic showed slightly higher pooled PTS prevalence estimates during the pandemic (25.9%) than outside it (21.3%); however, this difference did not reach statistical significance in meta-regression analyses. This indicates that, while COVID-19 may have intensified psychological distress for some ICU staff, PTS symptoms are a pre-existing and stable common occurrence within ICU settings. These results support the interpretation that the pandemic acted as an additional stressor to an already high-risk occupational context, rather than representing the sole driver of trauma-related symptoms.

The lack of a statistically significant moderation effect may also reflect substantial heterogeneity between studies, differences in timing and measurement during the pandemic, and limited statistical power for subgroup analyses. Nonetheless, the findings highlight the importance of addressing systemic and enduring sources of trauma within ICU environments, rather than focusing solely on crisis-driven interventions. This review extends the literature by including both pandemic and non-pandemic studies, as well as a wider range of ICU settings and professional roles, suggesting that elevated PTS prevalence is not confined to pandemic-related stressors alone.

High levels of heterogeneity were observed across all analyses, with I^2 values exceeding 95% and wide prediction intervals indicating substantial between study variability beyond expected from sampling error alone. The wide prediction intervals suggest that prevalence estimates may vary considerably across settings, highlighting the importance of contextual factors in shaping staff experiences of STS and PTS. This degree of heterogeneity is likely related to several study characteristics within this review, including a wide range of different healthcare professionals, variability in the assessment tools and cut off scores used, and the variety of ICU settings. Despite this heterogeneity, pooled prevalence estimates remained consistent across sensitivity analyses, suggesting that the overall conclusions regarding the prevalence of STS and PTS among ICU staff are robust. These findings

emphasise the need for caution when interpreting point estimates while still recognising the clear indication of increased psychological distress and trauma among staff working in ICU.

No evidence of publication bias was observed for the STS meta-analysis based on funnel plot inspection and Egger's regression test (Egger et al., 1997). Although funnel plot asymmetry and Egger's regression suggested potential publication bias in the overall PTS meta-analysis; application of the 'trim-and-fill' method (Duval & Tweedie, 2000) did not identify any missing studies and did not alter pooled prevalence estimates. This suggests that the observed asymmetry in the PTS analysis may be driven by the aforementioned between-study heterogeneity rather than selective publication, supporting the robustness of the review findings.

Implications for practice and policy

The findings of this review have important implications for clinical practice, organisational policy, and workforce planning within ICU settings. The prevalence of both STS and PTS indicates that trauma-related psychological distress is a common occupational risk for ICU staff, rather than an isolated experience. Therefore, approaches to staff wellbeing should extend beyond individual resilience-focused strategies and incorporate trauma-informed, system-level responses. Staff wellbeing services should be accessible, particularly to staff working in high intensity environments such as ICU, and routine screening for trauma-related symptoms may support early identification of distress within staff (Qian et al., 2022).

The findings in this review also highlight the need for increased recognition of STS as a distinct occupational hazard within ICU settings. While burnout has received considerable attention in policy and practice (Maslach & Leiter, 2016; Millar, 2019; Moss et al., 2016), STS remains comparatively under-recognised despite indirect exposure to trauma being common in ICU settings. Psycho-education initiatives that explicitly address STS and PTS may improve awareness, normalise these experiences, and encourage help-seeking among staff.

At an organisational level, the culture within ICU should prioritise psychological safety of its staff. Trauma-informed workplace practices such as structured debriefing, peer

support, reflective practice, and encouraged access to specialist psychological services may help moderate the impact of trauma exposure. Additionally, adequate staffing and manageable workloads may help to reduce staff turnover (Xu et al., 2023). The heterogeneity observed across studies in this review supports the need for flexible, locally tailored approaches to staff wellbeing and trauma-informed care. Policies should continue to focus on psychological distress within ICU staff, beyond that indicated by the pandemic.

Strengths, limitations, and future research directions

This review's strengths included that it was pre-registered, completed a broad search strategy for studies, and employed thorough screening and quality checking procedures. This review added to the literature by including a broad range of ICU settings and professional roles in the synthesis of STS and PTS prevalence. The use of rigorous meta-analytic methods, sensitivity analyses, and assessment of publication bias further strengthens confidence in the findings.

However, several limitations should be acknowledged in this review. The high degree of heterogeneity limits the precision of pooled estimates, and studies relied on self-report measures which can be sensitive to both under and over reporting. As the majority of studies were conducted in high-income countries, this may limit generalisability to low- and middle-income settings, where resources and working conditions differ substantially. Additionally, subgroup analyses were limited by the number of available studies, restricting exploration of potentially important moderators beyond COVID-19, such as type of ICU or healthcare worker.

Future research should prioritise longitudinal designs to better understand the development of STS and PTS symptoms over time in ICU and if years of experience impact trauma-related symptoms, as well as studies conducted in underrepresented settings such as NICU and PICU. More qualitative studies within this area are needed to understand the lived experience of those staff who are regularly exposed to occupational stress within intensive care settings. Greater consistency in measurement and reporting would also enhance comparability across studies. Intervention studies evaluating trauma-informed strategies are required to translate prevalence findings into meaningful improvements in staff wellbeing in ICU.

Conclusion

This systematic review and meta-analysis found that STS and PTS symptoms are common among healthcare staff working in ICU. Although pooled estimates should be interpreted in the context of substantial heterogeneity, results were consistent across sensitivity analyses, suggesting that trauma-related distress represents a robust and enduring occupational risk for those working on ICU. Elevated PTS prevalence was not confined to the COVID-19 pandemic, highlighting that psychological risk for healthcare workers in intensive care extends beyond crisis periods. These findings highlight the need for greater recognition of STS and PTS within staff wellbeing initiatives and support the adoption of trauma-informed, system-level approaches to protect the mental health of ICU staff and sustain high-quality care for critically unwell patients.

References

Ageel, M., & Shbeer, A. (2022). Assessment of professional quality of life among critical care nurses during the COVID-19 pandemic in Saudi Arabia. *Journal of Healthcare Leadership, 14*, 175–182. https://doi.org/10.2147/JHL.S383575

Alharbi, J., Jackson, D., & Usher, K. (2020). Compassion fatigue in critical care nurses and its impact on nurse-sensitive indicators in Saudi Arabian hospitals. *Australian Critical Care, 33*(6), 553–559. https://doi.org/10.1016/j.aucc.2020.02.002

Altmayer, V., Weiss, N., Cao, A., Marois, C., Demeret, S., Rohaut, B., & Le Guennec, L. (2020). Coronavirus disease 2019 crisis in Paris: A differential psychological impact between regular intensive care unit staff members and reinforcement workers. *Australian Critical Care, 34*(2), 142–150. https://doi.org/10.1016/j.aucc.2020.11.005

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). American Psychiatric Publishing.

Ariapooran, S., Ahadi, B., & Khezeli, M. (2022). Depression, anxiety, and suicidal ideation in nurses with and without symptoms of secondary traumatic stress during the COVID-19 outbreak. *Archives of Psychiatric Nursing, 37*, 76–81. https://doi.org/10.1016/j.apnu.2021.05.005

Azoulay, E., Pochard, F., Argaud, L., Cariou, A., Clere-Jehl, R., Guisset, O., … Kentish-Barnes, N. (2024). Resilience and mental health symptoms in ICU healthcare professionals facing repeated COVID-19 waves. *American Journal of Respiratory and Critical Care Medicine, 209*(5), 573–583. https://doi.org/10.1164/rccm.202305-0806OC

Azoulay, E., Pochard, F., Reignier, J., Argaud, L., Bruneel, F., Courbon, P., … FAMIREA Study Group. (2021). Symptoms of mental health disorders in critical care physicians facing the second COVID-19 wave: A cross-sectional study. *Chest, 160*(3), 944–955. https://doi.org/10.1016/j.chest.2021.05.023

Barendregt, J. J., Doi, S. A. R., Lee, Y. Y., Norman, R. E., & Vos, T. (2013). Meta-analysis of prevalence. *Journal of Epidemiology and Community Health, 67*(11), 974–978. https://doi.org/10.1136/jech-2013-203104

Barr, P. (2017). Compassion fatigue and compassion satisfaction in neonatal intensive care unit nurses: Relationships with work stress and perceived social support. *Traumatology, 23*(2), 214–222. https://doi.org/10.1037/trm0000115

Beck, C. T. (2011). Secondary traumatic stress in nurses: A systematic review. *Archives of Psychiatric Nursing, 25*(1), 1–10. https://doi.org/10.1016/j.apnu.2010.05.005

Beck, C. T., Cusson, R. M., & Gable, R. K. (2017). Secondary traumatic stress in NICU nurses: A mixed-methods study. *Advances in Neonatal Care, 17*(6), 478–488. https://doi.org/10.1097/ANC.0000000000000428

Bucca, A., Ullrich, L., Rahman, A., Smith, C., Johnson, M., Allanson-Dundon, A., … Bendas, E. (2022). Unmasking the truth of health care workers' well-being during the COVID-19 pandemic. *Critical Care Nurse, 42*(4), 20–26. https://doi.org/10.4037/ccn2022769

Chuang, C. H., Tseng, P. C., Lin, C. Y., Lin, K. H., & Chen, Y. Y. (2016). Burnout in the intensive care unit professionals: A systematic review. *Medicine, 95*(50), e5629. https://doi.org/10.1097/MD.0000000000005629

Cochran, W. G. (1954). The combination of estimates from different experiments. *Biometrics, 10*(1), 101–129. https://doi.org/10.2307/3001666

Colville, G. A., Smith, J. G., Brierley, J., Citron, K., Nguru, N. M., Shaunak, P. D., … Perkins-Porras, L. (2017). Coping with staff burnout and work-related posttraumatic stress in intensive care. *Pediatric Critical Care Medicine, 18*(7), e267–e273. https://doi.org/10.1097/PCC.0000000000001179

Curtis, J. R., & Vincent, J. L. (2010). Ethics and end-of-life care for adults in the intensive care unit. *The Lancet, 376*(9749), 1347–1353. https://doi.org/10.1016/S0140-6736(10)60143-2

Duval, S., & Tweedie, R. (2000). Trim and fill: A simple funnel-plot–based method of testing and adjusting for publication bias in meta-analysis. *Biometrics, 56*(2), 455–463. https://doi.org/10.1111/j.0006-341X.2000.00455.x

Egger, M., Davey Smith, G., Schneider, M., & Minder, C. (1997). Bias in meta-analysis detected by a simple, graphical test. *BMJ, 315*(7109), 629–634. https://doi.org/10.1136/bmj.315.7109.629

Ervin, J. N., Weingart, L. R., & Shields, J. M. (2018). Teamwork in the intensive care unit. *American Psychologist, 73*(4), 433–445. https://doi.org/10.1037/amp0000247

Ezzat, A., Li, Y., Holt, J., & Komorowski, M. (2021). The global mental health burden of COVID-19 on critical care staff. *British Journal of Nursing, 30*(11), 634–642. https://doi.org/10.12968/bjon.2021.30.11.634

Figley, C. R. (1995). *Compassion fatigue: Coping with secondary traumatic stress disorder in those who treat the traumatized*. Brunner/Mazel.

Fournier, A., Deltour, V., Lheureux, F., Poujol, A. L., Ecarnot, F., Binquet, C., … Laurent, A. (2025). Association between burnout and PTSD, and perceived stress in the workplace among healthcare workers in the intensive care unit: A PsyCOVID-ICU substudy. *Psychology, Health & Medicine, 30*(4), 752–769. https://doi.org/10.1080/13548506.2025.2454038

Gehisari, Z., Hashemzadeh, E., Fazlizade, S., Razaghpour, H., Abdi, M., & Aghajari, M. A. (2025). Epidemiology of post-traumatic stress disorder in intensive care nurses: A systematic review. *Iranian Journal of Public Health, 54*(12), 2566–2578. https://doi.org/10.18502/ijph.v54i12.20811

Greenberg, N., Weston, D., Hall, C., Caulfield, T., Williamson, V., & Fong, K. (2021). Mental health of staff working in intensive care during COVID-19. *Occupational Medicine, 71*(2), 62–67. https://doi.org/10.1093/occmed/kqaa220

Hall, C. E., Milward, J., Spoiala, C., Bhogal, J. K., Weston, D., Potts, H. W., … Greenberg, N. (2022). The mental health of staff working on intensive care units over the COVID-19 winter surge of 2020 in England: A cross-sectional survey. *British Journal of Anaesthesia, 128*(6), 971–979. https://doi.org/10.1016/j.bja.2022.03.016

Harrington, J., Ford, C., Cortis, E., & Nicholson, K. (2025). COVID-19 pandemic sequelae: Mental health of cardiothoracic critical care nurses. *American Journal of Critical Care, 34*(4), e32–e36. https://doi.org/10.4037/ajcc2025123

Heesakkers, H., Zegers, M., van Mol, M. M., & van den Boogaard, M. (2021). The impact of the first COVID-19 surge on the mental well-being of ICU nurses: A nationwide survey study. *Intensive and Critical Care Nursing, 65*, 103034. https://doi.org/10.1016/j.iccn.2021.103034

Henderson, A., Jewell, T., Huang, X., & Simpson, A. (2025). Personal trauma history and secondary traumatic stress in mental health professionals: A systematic review. *Journal of Psychiatric and Mental Health Nursing, 32*(1), 13–30. https://doi.org/10.1111/jpm.13082

Hernández-Bojorge, S., Campos, A., Parikh, J., Beckstead, J., Lajeunesse, M., & Wildman, D. (2024). The prevalence and risk factors of PTSD symptoms among nurses during the COVID-19 pandemic: A systematic review and meta-analysis. *International Journal of Mental Health Nursing, 33*(3), 523–545. https://doi.org/10.1111/inm.13257

Higgins, J. P. T., & Altman, D. G. (2008). Assessing risk of bias in included studies. In J. P. T. Higgins & S. Green (Eds.), *Cochrane handbook for systematic reviews of interventions* (pp. 187–241). Wiley-Blackwell.

Higgins, J. P. T., & Thompson, S. G. (2002). Quantifying heterogeneity in a meta-analysis. *Statistics in Medicine, 21*(11), 1539–1558. https://doi.org/10.1002/sim.1186

Hovland, I. S., Skogstad, L., Stafseth, S., Hem, E., Diep, L. M., Ræder, J., … Lie, I. (2023). Prevalence of psychological distress in nurses, physicians and leaders working in intensive care units during the COVID-19 pandemic: A national one-year follow-up study. *BMJ Open, 13*(12), e075190. https://doi.org/10.1136/bmjopen-2023-075190

Hu, M., Zhang, H., Wu, C., Li, L., Liang, X., Zhang, Y., & Lang, H. (2024). Relationship between moral resilience and secondary traumatic stress among ICU nurses: A cross-sectional study. *Nursing in Critical Care, 29*(6), 1363–1372. https://doi.org/10.1111/nicc.13120

Huang, H., Xia, Y., Zeng, X., & Lü, A. (2022). Prevalence of depression and depressive symptoms among intensive care nurses: A meta-analysis. *Nursing in Critical Care, 27*(6), 739–746. https://doi.org/10.1111/nicc.12734

Jeong, Y. J., & Shin, S. (2022). The relationship between secondary traumatic stress and burnout in critical care nurses: The mediating effect of resilience. *Intensive and Critical Care Nursing, 74*, 103327. https://doi.org/10.1016/j.iccn.2022.103327

Jones, G. A. L., Colville, G. A., Ramnarayan, P., Woolfall, K., Heward, Y., Morrison, R., … Inwald, D. P. (2019). Psychological impact of working in paediatric intensive care: A UK-wide prevalence study. *Archives of Disease in Childhood, 105*(5), 470–475. https://doi.org/10.1136/archdischild-2019-317439

Kader, N., Elhusein, B., Chandrappa, N. S. K., Nashwan, A. J., Chandra, P., Khan, A. W., & Alabdulla, M. (2021). Perceived stress and post-traumatic stress disorder symptoms among intensive care unit staff caring for severely ill coronavirus disease 2019 patients during the pandemic: A national study. *Annals of General Psychiatry, 20*(1), 38. https://doi.org/10.1186/s12991-021-00363-1

Kartsonaki, M. G., Georgopoulos, D., Kondili, E., Nieri, A. S., Alevizaki, A., Nyktari, V., & Papaioannou, A. (2022). Prevalence and factors associated with compassion fatigue, compassion satisfaction, and burnout in health professionals. *Nursing in Critical Care, 28*(2), 225–235. https://doi.org/10.1111/nicc.12769

KC, S., Gooden, T. E., Aryal, D., Koirala, K., Luitel, S., Haniffa, R., & Beane, A. (2024). The burden of anxiety, depression, and stress, along with the prevalence of symptoms of PTSD, and perceptions of the drivers of psychological harms, as perceived by doctors and nurses working in ICUs in Nepal during the COVID-19 pandemic: A

mixed-method evaluation. *BMC Health Services Research, 24*(1), 450. https://doi.org/10.1186/s12913-024-10724-7

Kerai, S., Doda, P., & Saxena, K. N. (2022). Professional quality of life in intensive care unit professionals during the COVID-19 pandemic: A prospective observational cross-sectional study. *Indian Journal of Critical Care Medicine, 26*(5), 604. https://doi.org/10.5005/jp-journals-10071-24212

Kim, S., & Im, Y. (2024). Factors related to post-traumatic stress disorder symptoms among intensive care unit nurses. *Asian Nursing Research, 18*(2), 159–166. https://doi.org/10.1016/j.anr.2024.04.009

Kumar, A., Pore, P., Gupta, S., & Wani, A. O. (2016). Level of stress and its determinants among intensive care unit staff. *Indian Journal of Occupational and Environmental Medicine, 20*(3), 129–132.

Laurent, A., Fournier, A., Lheureux, F., Poujol, A. L., Deltour, V., Ecarnot, F., … Quenot, J. P. (2022). Risk and protective factors for the possible development of post-traumatic stress disorder among intensive care professionals in France during the first peak of the COVID-19 epidemic. *European Journal of Psychotraumatology, 13*(1), 2011603. https://doi.org/10.1080/20008198.2021.2011603

Levi, P., & Moss, J. (2022). Intensive care unit nurses' lived experiences of psychological stress and trauma caring for COVID-19 patients. *Workplace Health & Safety, 70*(8), 358–367. https://doi.org/10.1177/21650799211064262

Li, P., Kuang, H., & Tan, H. (2021). The occurrence of post-traumatic stress disorder (PTSD), job burnout and its influencing factors among ICU nurses. *American Journal of Translational Research, 13*(7), 8302–8308.

Li, Y., Scherer, N., Felix, L., & Kuper, H. (2021). Prevalence of depression, anxiety and post-traumatic stress disorder in health care workers during the COVID-19 pandemic: A systematic review and meta-analysis. *PLOS ONE, 16*(3), e0246454. https://doi.org/10.1371/journal.pone.0246454

Lima-Setta, F., de Moraes, C. L., Silami, P. H. N. C., Reichenheim, M. E., de Mello, J. F., Stochero, L., … de Magalhães-Barbosa, M. C. (2022). Mental health and emotional disorders during the COVID-19 pandemic: Prevalence and extent in PICU staff. *Pediatric Critical Care Medicine, 24*(4), 277. https://doi.org/10.1097/PCC.0000000000003119

Maslach, C., & Leiter, M. P. (2016). Understanding the burnout experience: Recent research and its implications for psychiatry. *World Psychiatry, 15*(2), 103–111. https://doi.org/10.1002/wps.20311

Maslach, C., Jackson, S. E., & Leiter, M. P. (1997). *Maslach burnout inventory manual* (3rd ed.). Scarecrow Education.

Mason, V. M., Leslie, G., Clark, K., Lyons, P., Walke, E., Butler, C., & Griffin, M. (2014). Compassion fatigue, moral distress, and work engagement in surgical intensive care unit trauma nurses: A pilot study. *Dimensions of Critical Care Nursing, 33*(4), 215–225. https://doi.org/10.1097/DCC.0000000000000056

Mathew, C., & Mathew, C. (2023). How much is too much! The prevalence of post-traumatic stress disorder symptoms in critical care nurses of tertiary care hospitals in South India: A multicenter cross-sectional cohort study. *Indian Journal of Critical Care Medicine, 27*(5), 330. https://doi.org/10.5005/jp-journals-10071-24448

Mealer, M. L., Shelton, A., Berg, B., Rothbaum, B., & Moss, M. (2006). Increased prevalence of post-traumatic stress disorder symptoms in critical care nurses. *American Journal of Respiratory and Critical Care Medicine, 175*(7), 693–697. https://doi.org/10.1164/rccm.200606-735OC

Mealer, M., Jones, J., Newman, J., McFann, K. K., Rothbaum, B., & Moss, M. (2011). The presence of resilience is associated with a healthier psychological profile in ICU nurses: Results of a national survey. *International Journal of Nursing Studies, 49*(3), 292–299. https://doi.org/10.1016/j.ijnurstu.2011.09.015

Mersin, S., İbrahimoğlu, Ö., Naldan, M. E., & Arslanoğlu, A. (2025). The relationship between post-traumatic stress disorder and sleep quality in intensive care unit professionals. *Nursing in Critical Care, 30*(2), e13276. https://doi.org/10.1111/nicc.13276

Millar, H. L. (2019). The UK NHS experience of burnout: Time for action. *International Journal of Person Centered Medicine, 9*(3), 7–18. https://doi.org/10.5750/ijpcm.v9i3.994

Moss, M., Good, V. S., Gozal, D., Kleinpell, R., & Sessler, C. N. (2016). An official critical care societies collaborative statement: Burnout syndrome in critical care health care professionals: A call for action. *American Journal of Critical Care, 25*(4), 368–376. https://doi.org/10.1097/CCM.0000000000001885

Munn, Z., Moola, S., Riitano, D., & Lisy, K. (2015). The development of a critical appraisal tool for use in systematic reviews addressing questions of prevalence. *International*

Journal of Health Policy and Management, 4(9), 597–602. https://doi.org/10.15171/ijhpm.2014.71

Ong, Y. Z., Siddiqui, S., John, S., Chen, Z., & Chang, S. (2016). The prevalence of post-traumatic stress disorder in intensive care unit staff and the common coping strategies used. *Annals of the Academy of Medicine, Singapore, 45*(5), 215–218. https://doi.org/10.47102/annals-acadmedsg.v45n5p215

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., … Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ, 372*, n71. https://doi.org/10.1136/bmj.n71

Papazian, L., Hraiech, S., Loundou, A., Herridge, M. S., & Boyer, L. (2023). High-level burnout in physicians and nurses working in adult ICUs: A systematic review and meta-analysis. *Intensive Care Medicine, 49*(4), 387–400. https://doi.org/10.1007/s00134-023-07025-8

Pestana, D. V. S., Raglione, D., Junior, L. D., Liberatti, C. D. S. P., Braga, E. C., Ezequiel, V. A. D. L., … Malbouisson, L. M. S. (2022). Stress and substance abuse among workers during the COVID-19 pandemic in an intensive care unit: A cross-sectional study. *PLoS ONE, 17*(2), e0263892. https://doi.org/10.1371/journal.pone.0263892

Quinn, A., Ji, P., & Nackerud, L. (2019). Predictors of secondary traumatic stress among social workers: Supervision, income, and caseload size. *Journal of Social Work, 19*(4), 504–528. https://doi.org/10.1177/1468017318762450

Ramírez-Elvira, S., Romero-Bejar, J. L., Suleiman-Martos, N., Gómez-Urquiza, J. L., Monsalve-Reyes, C., Cañadas-De la Fuente, G. A., & Albendín-García, L. (2021). Prevalence, risk factors and burnout levels in intensive care unit nurses: A systematic review and meta-analysis. *International Journal of Environmental Research and Public Health, 18*(21), Article 11432. https://doi.org/10.3390/ijerph182111432

Roberts, T., Daniels, J., Hulme, W., Hirst, R., Horner, D., Lyttle, M. D., … Carlton, E. (2021). Psychological distress and trauma in doctors providing frontline care during the COVID-19 pandemic in the United Kingdom and Ireland: A prospective longitudinal survey cohort study. *BMJ Open, 11*(7), e049680. https://doi.org/10.1136/bmjopen-2021-049680

Rodney, T., Heidari, O., Miller, H. N., Thornton, C. P., Jenkins, E., & Kang, H. K. (2022). Posttraumatic stress disorder in nurses in the United States: Prevalence and effect on role. *Journal of Nursing Management, 30*(1), 226–233. https://doi.org/10.1111/jonm.13478

Rodríguez-Rey, R., Palacios, A., Alonso-Tapia, J., Pérez, E., Álvarez, E., Coca, A., … Llorente, A. (2019). Burnout and posttraumatic stress in paediatric critical care personnel: Prediction from resilience and coping styles. *Australian Critical Care, 32*(1), 46–53. https://doi.org/10.1016/j.aucc.2018.02.003

Roger, C., Ling, L., Petrier, M., Elotmani, L., Atchade, E., Allaouchiche, B., … Laupland, K. (2024). Occurrences of post-traumatic stress disorder, anxiety, depression, and burnout syndrome in ICU staff workers after two years of the COVID-19 pandemic: The international PSY-CO in ICU study. *Annals of General Psychiatry, 23*(1), 3. https://doi.org/10.1186/s12991-023-00488-5

Sanaie, N., Sarmadi, S., & Zare-Kaseb, A. (2025). Prevalence of poor sleep quality among critical care unit nurses: A systematic review and meta-analysis. *BMC Nursing, 24*(1), 1446. https://doi.org/10.1186/s12912-025-04094-6

Sanfilippo, F., Palumbo, G. J., Noto, A., Pennisi, S., Mineri, M., Vasile, F., & Astuto, M. (2020). Prevalence of burnout among intensive care physicians: A systematic review. *Revista Brasileira de Terapia Intensiva, 32*, 458–467. https://doi.org/10.5935/0103-507X.20200076

Schuster, M., & Dwyer, P. A. (2020). Post-traumatic stress disorder in nurses: An integrative review. *Journal of Clinical Nursing, 29*(15-16), 2769–2787. https://doi.org/10.1111/jocn.15288

Sendler, D. J., Rutkowska, A., & Makara-Studzinska, M. (2016). How the exposure to trauma has hindered physicians' capacity to heal: Prevalence of PTSD among healthcare workers. *The European Journal of Psychiatry, 30*(4), 321–334. http://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S0213-61632016000400007&lng=en

Sharma, P., Davey, A., Davey, S., Shukla, A., Shrivastava, K., & Bansal, R. (2014). Occupational stress among staff nurses: Controlling the risk to health. *Indian Journal of Occupational and Environmental Medicine, 18*(2), 52–56. https://pmc.ncbi.nlm.nih.gov/articles/PMC4280777/

Sk Abd Razak, R., Ismail, A., Abdul Aziz, A. F., Suddin, L. S., Azzeri, A., & Sha'ari, N. I. (2024). Post-COVID syndrome prevalence: A systematic review and meta-

analysis. *BMC Public Health, 24*(1), 1785. https://doi.org/10.1186/s12889-024-19264-5

Spencer, S. A., Nolan, J. P., Osborn, M., & Georgiou, A. (2019). The presence of psychological trauma symptoms in resuscitation providers and an exploration of debriefing practices. *Resuscitation, 142*, 175–181. https://doi.org/10.1016/j.resuscitation.2019.06.280

Stafseth, S. K., Skogstad, L., Ræder, J., Hovland, I. S., Hovde, H., Ekeberg, Ø., & Lie, I. (2022). Symptoms of anxiety, depression, and post-traumatic stress disorder in health care personnel in Norwegian ICUs during the first wave of the COVID-19 pandemic: A prospective, observational cross-sectional study. *International Journal of Environmental Research and Public Health, 19*(12), 7010. https://doi.org/10.3390/ijerph19127010

Stamm, B. H. (2010). *The concise ProQOL manual*. ProQOL.org.

Velasco, J., Sanmartín, F. J., Cuadrado, F., & Moriana, J. A. (2025). Prevalence of secondary trauma, compassion fatigue and burnout among trauma therapists in Spain. *Counselling and Psychotherapy Research, 25*(1), Article e12901. https://doi.org/10.1002/capr.12901

Viechtbauer, W. (2010). Conducting meta-analyses in R with the metafor package. *Journal of Statistical Software, 36*(3), 1–48. https://doi.org/10.18637/jss.v036.i03

Wang, L., Zhang, X., Zhang, M., Wang, L., Tong, X., Song, N., … Hu, T. (2024). Risk and prediction of job burnout in responding nurses to public health emergencies. *BMC Nursing, 23*(1), 46. https://doi.org/10.1186/s12912-024-01714-5

Welp, A., Meier, L. L., & Manser, T. (2016). The interplay between teamwork, clinicians' emotional exhaustion, and clinician-rated patient safety: A longitudinal study. *Critical Care, 20*(1), Article 110. https://doi.org/10.1186/s13054-016-1282-9

Wojnar-Gruszka, K., Miernik, M., Cichoń, J., Liberacka-Lenart, D., Płaszewska-Żywko, L., & Potocka, M. (2025). Prevalence of the symptoms of post-traumatic stress disorder (PTSD) and burnout syndrome (BOS) among intensive care unit (ICU) healthcare workers during the COVID-19 pandemic. *Psychology, Health & Medicine, 30*(4), 770–781. https://doi.org/10.1080/13548506.2025.2455468

Wu, B., Liao, Y., Kang, Z., Kong, Q., Zhang, H., Di, Z., & Wang, M. (2025). Psychological impact of COVID-19 on redeployed nurses in China: A cross-sectional survey. *Nursing Open, 12*(7), e70277. https://doi.org/10.1002/nop2.70277

Xu, G., Zeng, X., & Wu, X. (2023). Global prevalence of turnover intention among intensive care nurses: A meta-analysis. *Nursing in Critical Care, 28*(2), 159–166. https://doi.org/10.1111/nicc.12679

Zhang, H., Ye, Z., Tang, L., Zou, P., Du, C., Shao, J., & Mu, S. Y. (2020). Anxiety symptoms and burnout among Chinese medical staff of intensive care unit: The moderating effect of social support. *BMC Psychiatry, 20*(1), Article 197. https://doi.org/10.1186/s12888-020-02603-2

Chapter 3: Bridging Chapter

Bridging Chapter

The systematic review and meta-analysis aimed to synthesise the prevalence of secondary traumatic stress (STS) and post-traumatic stress (PTS) symptoms among healthcare professionals working on intensive care units (ICUs). The study found that trauma-related psychological distress is common amongst ICU staff, with around one in six ICU staff experiencing STS symptoms and around one quarter experiencing PTS symptoms. Despite considerable heterogeneity in pooled estimates, the consistency of findings across sensitivity analyses indicates that STS and PTS represent an occupational risk within ICU environments. An important finding was that comparatively high rates of PTS were observed both during and outside of the COVID-19 pandemic, suggesting that psychological risk among ICU staff is not confined to crisis-related periods and reflects ongoing occupational stressors inherent to intensive care work.

While the systematic review quantified the scale of trauma related symptoms amongst ICU staff, it does not capture the healthcare professionals (HCPs) experience of occupational trauma or contextual factors that shape how their psychological distress is experienced. Additionally, as substantial heterogeneity was observed between studies, this indicates that trauma exposure may be experienced differently across ICU settings and professional roles.

A notable gap within the literature was the under-representation of specialist ICU settings, such as neonatal intensive care units (NICUs). NICU HCPs are routinely exposed to infant illness, death, and complex ethical decision-making (Boutillier et al., 2025; Wong et al., 2023). Evidence suggests that working in NICU is associated with increased burnout and PTS (Ravaldi et al., 2023); however, few studies within the systematic review examined NICU HCP populations specifically. This limits understanding of how occupational and trauma-related stress may present among NICU HCPs and highlights the need for research that attends to the experience of those who work within NICU settings.

The Mental Health Foundation (2021) reported that adults commonly identify major life transitions as having a negative impact on their mental health, with experiences such as anxiety, distress, and trauma highlighted. In particular, pregnancy has been found to be a life transition linked to mental health difficulties, such as anxiety and depression (de Jesus Silva et al., 2016; Fawcett et al., 2019; Giardinelli et al., 2012). For HCPs working in NICU, exposure to premature birth, infant illness and loss may influence their own experiences of

pregnancy as they move into the dual role of both caregiver and expectant parent. However, the current prevalence-based systematic review is unable to explore how such exposure is experienced during pregnancy or how the repeated exposure to infant illness and death may shape expectant parents' emotional wellbeing. Qualitative research can help to bridge the gap in the literature, by capturing the lived experiences of HCPs working in NICU during pregnancy, a period recognised as a time of increased vulnerability.

The following empirical paper aimed to explore HCPs experiences of working on NICU whilst pregnant.

Chapter 4: Empirical Research Paper

Written for publication in *Qualitative Health Research* (see guidelines in Appendix G)

Health professionals' experiences of working on a neonatal intensive care unit during pregnancy: a qualitative exploration

Katie McHugh*[1], Dr Elisabeth Norton[1], Dr Bob Budd[1]

[1] *Department of Clinical Psychology and Psychological Therapies, Norwich Medical School University of East Anglia, UK*

*Correspondence concerning this article should be addressed to Katie McHugh, Department of Clinical Psychology, Norwich Medical School, University of East Anglia, Norwich Research Park, Norwich, Norfolk, NR4 7TJ, England, United Kingdom. Email: K.Mchugh@uea.ac.uk

Word count (excluding abstract and references): 6596

Abstract

Pregnancy represents a period of heightened psychological vulnerability (Manolova, 2023; NHS England, 2024); however little is known about how it is experienced by healthcare professionals (HCPs) working in high-intensity settings such as neonatal intensive care units (NICUs). This qualitative study explored the experiences of HCPs in the United Kingdom (UK) who were pregnant while working on NICU. Twelve semi-structured interviews were analysed using Braun & Clarke's reflexive thematic analysis (Braun & Clarke, 2022). An overarching meta-theme, Navigating a dual role: managing personal pregnancy and professional responsibility in the NICU, was developed, with four themes identified: pregnancy highlights connection and conflict; being an expert in the worst-case scenario; pregnancy in a culture of coping and endurance; and mental health and wellbeing. HCPs described how pregnancy deepened empathy for parents while simultaneously heightening anxiety, hypervigilance, and anticipation of adverse outcomes. Professional knowledge was described as both helpful and challenging during pregnancy. A culture of coping and endurance was discussed, with a prioritisation for service need and limited opportunities for adaptation and support. Findings highlight pregnancy as a distinct period of vulnerability within NICU work and point to the need for organisational, trauma-informed and psychologically supportive practices that attend to staff wellbeing alongside family care.

Introduction

In the UK, around 1 in 8 babies will be admitted to a neonatal intensive care unit (NICU) which specialises in looking after babies born prematurely, with a low birth weight or who are born with a condition requiring treatment (UK National Neonatal Audit Programme, 2017). The healthcare professionals (HCPs) staffed within these units consist of doctors, nurses, pharmacists and allied health professionals. HCPs working on NICUs are often faced with complex end-of-life and ethical concerns that can lead to significant stress due to the vulnerability of the baby (Dussi et al., 2023; Garten et al., 2021). Despite this, there is limited research looking at the lived experience of NICU professionals, and particularly exploring their own experience of pregnancy.

HCPs' experiences of pregnancy have been explored within the literature, particularly within midwifery populations. Church (2014) explored midwives' personal experiences of pregnancy and childbirth, finding that knowledge of complications and negative outcomes often heightened anxiety for midwives, highlighting a potential conflict between their professional expertise and personal experience of pregnancy. While this study offered valuable insight into this tension, it was based on a small, single site sample, limiting transferability to other healthcare settings. An integrative review synthesising midwives' childbearing experiences reported similar conflicts, with midwives reporting hypervigilance to potential difficulties due to their professional knowledge and feeling abandoned and unsupported with their worries as they were considered too much of an expert (Coulton Stoliar et al., 2022). However, the studies within this review displayed considerable heterogeneity within methods and quality. Comparable difficulties have also been found within nursing populations, with nurses reporting that mental and physical difficulties during pregnancy were "endured alone" alongside a lack of workplace support (Lee et al., 2020). While this literature provides helpful insights into HCP's experience of pregnancy it does not address pregnancy experiences within high-acuity environments such as NICU, where sustained exposure to infant illness and death may further intensify pregnancy-related anxiety.

A recent study by Dussi et al. (2023) explored NICU staff's experiences of pregnancy, providing a valuable perspective within this under-researched population. It was

found that NICU staff are exposed to extremely stressful emotions that may interfere with their personal and professional quality of life. Findings also highlighted dual role conflicts, including representations of parenthood being undermined by unusual worries, fears, or anticipatory anxiety connected to participants' particular professional experiences. It was noted that attention to the specific risks and needs of this population were needed in order to reduce the potential impact on pregnancy, family functioning and newborn health. However, this was a single-centre study conducted within an Italian healthcare context; therefore the findings may not be transferable to UK populations. This highlights the need for similar research to be conducted within the context of the NHS.

Working in the NICU can be highly stressful, leading to reduced morale and burnout (Fiske, 2018). Recent research indicates that around 40-50% of NICU staff experience burnout (Huang et al., 2023; Kim et al., 2025). Burnout is associated with emotional exhaustion and anxiety, with more years worked in neonatal settings associated with higher levels of burnout (Sharma et al., 2025). Working in a NICU has also been associated with an increased risk of trauma exposure and post-traumatic stress symptoms. Favrod et al. (2018) found that NICU nurses reported higher levels of secondary traumatic stress and greater exposure to traumatic stressors in the work environment than hospital midwives. Furthermore, Ravaldi et al. (2023) conducted a cross-sectional web-based survey of 227 NICU staff and reported that the majority presented with clinically significant post-traumatic stress symptoms, concluding that NICU staff require psychological support to prevent post-traumatic stress symptoms and reduce burnout. These studies provide important evidence in relation to heightened levels of trauma within this population; however, this literature relies primarily on self-report measures to determine prevalence and does not explore how occupational trauma may be experienced during life transitions such as pregnancy. This evidence suggests that HCPs working in the NICU may be more vulnerable to trauma-related difficulties. For HCPs who are pregnant, exposure to preterm birth and infant death may shape how pregnancy is experienced. Pregnant HCPs may therefore be at an increased risk of experiencing a traumatic birth, as elevated stress during pregnancy, previous exposure to trauma, and mental health difficulties have been found to be risk factors in having a negative or traumatic birth experience (Alderdice et al., 2012; Ayers et al., 2016; Nagle et al., 2022). This raises important questions about how NICU staff navigate occupational exposure to traumatic events during pregnancy and how this shapes their personal experience.

Trauma and post-traumatic stress disorder (PTSD) have been linked to attachment difficulties in new mothers. The development of a secure attachment between parent and infant is a protective factor for children's socio-emotional development and self-regulation across childhood (Tabachnick et al., 2022). Erickson et al. (2019) conducted a review indicating that women with a history of trauma, and particularly those who meet criteria for PTSD, are at elevated risk of bonding and attachment disturbances with their infants. These attachment disturbances can pose long-term effects for infants, with research suggesting that children and adolescents with weaker attachment security present with higher levels of emotional dysregulation and anxiety (Bender et al., 2015). In addition, Enlow et al. (2014) found that children whose mothers have PTSD are more vulnerable to displaying a disorganised attachment and developing PTSD themselves. This literature suggests that parental trauma in the perinatal period may shape not only maternal wellbeing, but also the wellbeing and mental health of children. As NICU staff are particularly vulnerable to occupational trauma (Favrod et al., 2018; Ravaldi et al., 2023), pregnancy may represent a period in which this vulnerability intensifies, placing them at an increased risk of attachment difficulties in the early parent–infant relationship. Despite this, little research has examined how NICU professionals' exposure to trauma shapes their experience of pregnancy and the transition to parenthood. These findings therefore highlight the importance of exploring how pregnancy is experienced by NICU staff within the context of their work.

The risks described have become increasingly recognised within national perinatal policies, as the perinatal period (pregnancy and up to one year following birth) has been linked with increased vulnerability to mental health difficulties among women (Manolova, 2023). According to recent NHS figures, around 600,000 women give birth in England each year, and research has shown that perinatal mental illness affects up to 1 in 5 new and expectant mothers (NHS England, 2024). Perinatal mental illness has been associated with adversely affecting parental cognitions and parent-infant attachment, as well as an increased risk of maternal death (Hoffman et al., 2017; Oates & Cantwell, 2011). The World Health Organization (WHO) also encourages the identification and management of pregnancy and newborn health-related risk factors (Dussi et al., 2023; WHO, 2016). Due to this, The NHS Long Term Plan (2019) details a growing national movement emphasising the importance of

perinatal care and services to ensure all women can access appropriate support, including access to evidence-based psychological care. It outlines plans to increase psychological support within NICU; however current policies focus primarily on patients within NICU rather than HCPs working within this highly stressful environment.

The above literature suggests that pregnant HCPs working in NICU may experience limited support alongside exposure to complex emotional demands and a highly stressful working environment. Such conditions may adversely affect quality of life and increase vulnerability to stress- and trauma-related difficulties. For HCPs who are pregnant, these experiences may also have implications for the developing parent–infant relationship, with potential longer-term consequences for both maternal and infant wellbeing. Despite these risks, NICU HCPs' experiences of working whilst pregnant continue to be an under-researched area within clinical psychology. The present study aimed to add to existing knowledge and address this gap by exploring HCPs' experiences of pregnancy and wellbeing whilst working in a NICU, drawing on Dussi et al.'s (2023) recommendations to further explore the dual role.

Methods

Study Design

This cross-sectional qualitative study explored HCPs' lived experiences of being pregnant whilst working in a NICU. Qualitative research helps researchers to explore the thoughts and feelings of participants, which can support the development of an understanding of the meaning that people attribute to their experiences (Sutton & Austin, 2015). Qualitative studies are also appropriate when completing research in new and under-researched areas, to provide an in-depth and rich understanding of people's perspectives (Levitt et al., 2017; Morrow, 2005). As the purpose of this study was to gain insight into participants' accounts of their pregnancy experience and how working during this time impacted their role and wellbeing, while also exploring factors that may have influenced their experiences, a 'critical realist' approach was utilised, acknowledging that there are both experiential and physical realities (Bhaskar, 1998). The lead researcher (KM) recognised the ways that the participants make meaning of their experiences whilst pregnant and, in turn, the ways the broader social

context impinges on those meanings, while retaining a focus on the material and other limits of 'reality' (Braun & Clarke, 2006; Braun & Clarke, 2022). The study was informed by ontological assumptions that recognise an objective reality, whereby being pregnant whilst working in a NICU may contribute to mental health difficulties. The research aimed to explore participants' subjective and socially constructed experiences of this reality through one-to-one semi-structured interviews.

Participants

Twelve HCPs who worked on NICU whilst pregnant were interviewed. Sample size decisions were guided by reflexive thematic analysis (RTA) principles rather than saturation as advised by Braun and Clarke (2022), and the concept of information power supported the lead researcher to reflect on the richness and relevance of the data in relation to study aims (Braun & Clarke, 2022; Malterud et al., 2016). All participants identified as female, ranged in age from 26 to 42 years and were predominantly White British. Participants had between 3 and 19 years of experience working on NICU. To be eligible for the study, participants were required to be 18 years or older, fluent in English and a HCP who worked on a UK NICU while pregnant within the last three years. The study excluded individuals who were currently pregnant or who had experienced a bereavement in the last two trimesters of pregnancy in order to minimise the risk of undue emotional distress during participation and to avoid conflating experiences of pregnancy-related distress with grief responses.

The interview topic guide (Appendix H) was reviewed by patient and public involvement (PPI), and feedback was incorporated. The contributor was compensated for their time by receiving £25, as per NIHR (2022) guidance. The topic guide was subsequently refined through discussions within the research team.

Procedure

Prior to recruitment, ethical approval was obtained from the UEA Faculty of Medicine and Health Sciences (FMH) Research Ethics Committee (ETH2425-0487) (Appendix I).

Participants were recruited using purposive sampling via an advertisement poster on social media (Appendix J), allowing participants from multiple sites across the UK to take part in the study. Purposive sampling facilitates the identification of information-rich cases, and individuals that are especially knowledgeable within the area of interest (Creswell & Plano Clark, 2018; Palinkas et al., 2015).

Participants expressed interest in the study by contacting the lead researcher (KM) via email. A participant information sheet (Appendix K) and consent form (Appendix L) were provided prior to scheduling interviews. Participants were informed of their right to withdraw from the study up until two weeks following the interview, although none of the sample withdrew in this instance. One-to-one semi-structured interviews, informed by the topic guide, were conducted via Microsoft Teams with the transcription function enabled and lasted approximately 60 minutes. Interviews took place between March and July 2025 and were conducted flexibly to accommodate participants' work patterns and caring responsibilities for young children.

Following the interview, participants were verbally debriefed and a debrief sheet with information and support was emailed to them. Each participant received a £10 Amazon voucher in gratitude for their time. Microsoft Teams transcriptions were reviewed and amended where necessary post-interview.

Data storage

Data was stored on a password protected UEA OneDrive, with consent forms stored in a separate folder to prevent identifiable information from being matched to the research data. Interviews were recorded and transcribed on Microsoft Teams which were saved on the UEA OneDrive and deleted from Microsoft Teams. In line with UEA's Information Classification and Data Management Policy (2018), data was only shared via OneDrive with those granted access by the lead researcher. The research team adhered to the requirements of the General Data Protection Regulation (Data Protection Act, 2018) in relation to the collection, storage, processing, and disclosure of personal data. In compliance with the UEA

Data Management Policy (2022), data will be securely stored in the UEA data repository for 10 years.

Data Analysis

RTA was used due to its accessible and theoretically flexible approach to qualitative data analysis (Braun & Clarke, 2012; Braun & Clarke, 2022). RTA procedures reflect the values of a qualitative approach, centring researcher subjectivity, organic coding processes, and placing importance on deep reflection on the data (Braun & Clarke, 2022). Analysis adopted the six-phase approach outlined by Braun and Clarke. Familiarisation with the data included reading and re-reading of the transcripts, and making initial analytic notes. Coding was then completed using semantic and latent levels. During the initial theme development process, candidate themes were actively developed by clustering related codes to capture broader, shared patterns of meaning across the dataset following initial code generation. Themes were reviewed and developed before being refined and named, and the write-up was completed. Emerging codes and themes were discussed with the research team and NVivo 14 was used to support the analysis.

In line with best practice and consistent with RTA procedures, a reflexive journal was used to support ongoing critical reflection on the lead researcher's assumptions, subjectivity, emotional responses, and interpretative role in the construction of themes (Braun & Clarke, 2022; Jamieson et al., 2023). As RTA values a collaborative and reflexive analytic approach to develop a richer and more nuanced reading of the data (Braun & Clarke, 2022), participants were offered the opportunity to be involved in the analysis process by reviewing themes; however, as none of the participants returned the consent form for further participation (Appendix Q), they were not contacted.

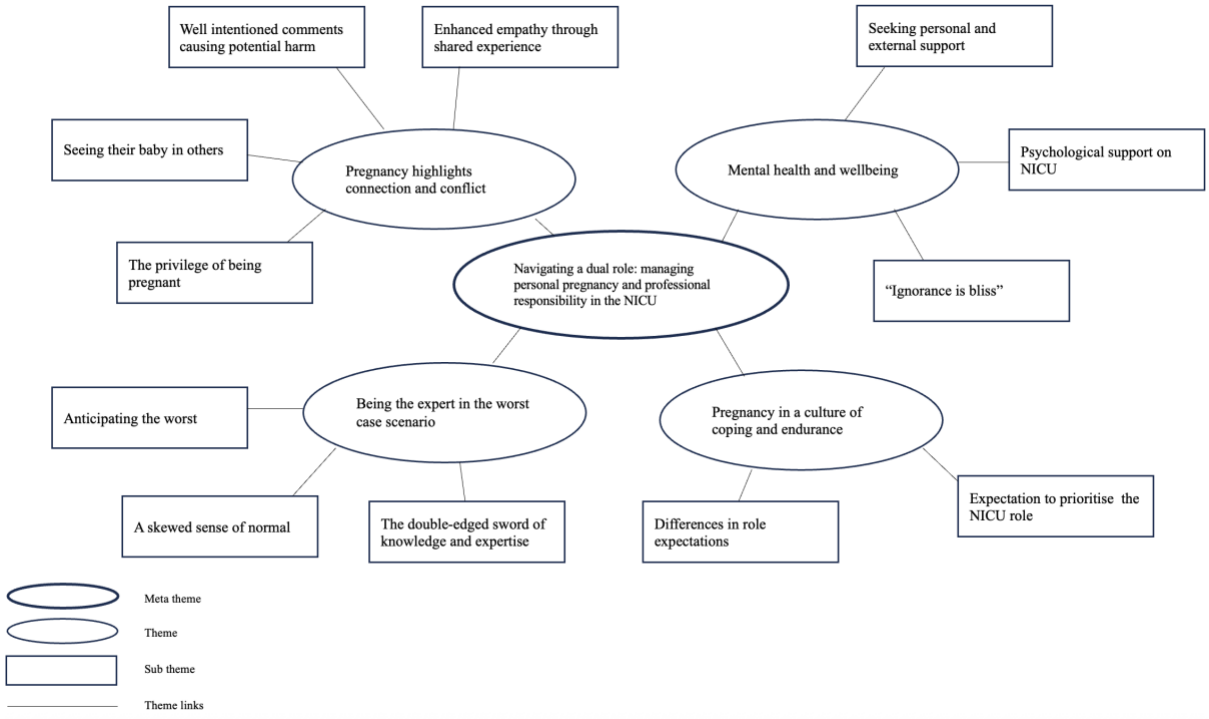
Findings

Through RTA, the overarching meta-theme, "Navigating a dual role: managing personal pregnancy and professional responsibility in the NICU," was developed. Within this meta-theme, four themes emerged: (1) "Pregnancy highlights connection and conflict"; (2) "Being an expert in the worst-case scenario"; (3) "Pregnancy in a culture of coping and

endurance"; and (4) "Mental health and wellbeing." Each theme and related subthemes (Figure 1) are presented and discussed below.

Figure 1.

Themes and subthemes



Theme 1. Pregnancy Highlights Connection and Conflict

This theme discusses the impact of interpersonal experiences of working with parents on the ward, with most noting an increased sense of empathy for parents and gratitude for their own pregnancies; however, it also highlights the tension arising from an increased awareness of how their pregnancies may be negatively impacting parents on the ward, and their own difficulties of working with babies when carrying their own. This theme highlights the difficult balance of emotions and thoughts NICU staff experience whilst pregnant and working.

Enhanced empathy through shared experience

HCPs reflected that pregnancy enhanced their empathy for parents whose babies were cared for on the NICU. Experiencing pregnancy themselves appeared to increase their capacity to understand parents' emotions and sense of responsibility. Pregnancy enabled some to adopt a parental perspective, which influenced how they approached care and support within the unit.

> *"I just was probably going a little bit, giving them that little bit more, going a little bit further for them than I was before I had been a mummy. Whenever I had no experience of the responsibility that you feel as a parent and how you blame yourself when you're pregnant for anything that happens." (P1)*

> *"While I was pregnant I was very much kind of thinking if this was my baby now, how would I want my babies to be looked after and kind of put more of the focus on that. Not that I wouldn't do that anyway, but it just really kind of makes you think like, you know, these parents here could be me. What would I want from the nurse that was looking after us?" (P11)*

Some HCPs felt their ability to support parents and perform their roles improved as a result of experiencing a pregnancy.

> *"Until you've held your own baby in your arms, you don't actually know that overwhelming love…I just felt that I was able to be more empathetic." (P12)*

Well intentioned comments causing potential harm

HCPs described how well-intentioned comments from colleagues could be experienced as emotionally difficult or distressing during pregnancy. Everyday questions commonly associated with pregnancy were sometimes experienced as "completely inappropriate" (P5) when in proximity to parents and critically unwell babies. HCPs described feeling uncomfortable when attention was drawn to their pregnancy, reporting heightened self-consciousness and concern about the impact of such interactions on parents.

"Other people in work will come and 'aww how's it going' and 'how long you got left'... your sort of like, oh that baby's over there really poorly and I don't know, I don't want to talk about it in front of their parents." (P10)

"Staff nurses would say maybe insensitively 'oh you're growing and you're looking great' and those kind of compliments and they, they mean well but… don't mention the bump and don't draw attention to me." (P2)

For some HCPs, speaking to colleagues about their pregnancies and seeking reassurance was a helpful experience "I will look for reassurance from my colleagues … I definitely felt that that helped me" (P3). However, for others, professional reassurance was experienced as less helpful and at times minimising or misaligned with their emotional needs.

"One of the consultants came down to see me and she was like, trying to reassure me that, like, if you were to deliver, like, the baby would most probably just be on CPAP …she was only trying to reassure me. But in that moment, as a mum, you don't see it as oh, it's just CPAP." (P6)

Seeing their baby in others

Whilst some HCPs described a positive experience of working with babies of a similar gestation, noting that "it kind of made me appreciate my body for kind of keeping her in" (P12), others described negative emotional responses when caring for babies whose gestational age mirrored their own. For these HCPs, working with these babies elicited feelings of anxiety and distress, often imagining what it might be like if their own baby were born prematurely, with one HCP describing this experience as "quite scary" (P3).

"I thought it was quite upsetting really. Quite, quite a stressful experience to see those babies…I've worked in NICU for a very long time and it's just not something that you ever consider. But I think you feel, you're obviously very aware of preterm birth, and it's quite stressful thinking, 'Oh my goodness, this is what would happen to my baby if the worst case scenario happened and delivered at this stage." (P9)

For the HCPs who found this experience difficult, some requested to not work with babies of a similar gestation, however this was often not possible within the constraints of the ward.

> *"I also had a shift when I was like 27 weeks pregnant…I came in and a baby had just been born at 27 weeks…They were like there's no one else…That baby deteriorated my entire shift and passed away about half an hour after I left, and to be in that situation…is really hard when you're a very similar gestation and you can't help but thinking about the what ifs, do you know?" (P4)*

The privilege of being pregnant

HCPs described feeling "grateful that you're in a position that you're still carrying your baby" (P3) when working with families whose pregnancies had ended prematurely or resulted in critically unwell babies. However, they also noticed an increased awareness of differences between themselves and the parents and described feeling "embarrassed" (P10), "guilty" (P9), and "self-conscious" (P2), particularly when visibly pregnant in front of parents. HCPs reflected on the challenge of holding feelings of privilege alongside difficult emotions during pregnancy.

> *"I felt like guilty that I was carrying a healthy, well baby, and they were potentially losing theirs, which was really, really tricky and really difficult." (P12)*

> *"I found it quite difficult for parents…looking after somebody's baby that's really sick while you've got this big bump…You almost feel like you're trying to ignore it while you're at work, even though everyone can see it." (P4)*

Theme 2. Being an Expert in the Worst Case Scenario

HCPs described how their professional knowledge and experience in the NICU impacted their pregnancy. Rather than providing reassurance, their clinical expertise and exposure to unwell babies and negative outcomes often led HCPs to anticipate the worst for their babies. As one HCP reflected, "I've seen it happen, so it could happen to me" (P4). This heightened awareness influenced how they interpreted pregnancy symptoms and approached

pregnancy milestones, with a skewed sense of what was considered "normal." This often led to increased vigilance and anxiety throughout pregnancy.

Anticipating the worst

HCPs described anticipating negative outcomes during pregnancy. Exposure to rare but severe neonatal conditions appeared to sensitise HCPs to potential risks, leading many to remain constantly alert to signs of illness or abnormality within their pregnancies. As a result, some HCPs delayed preparing for their babies' arrival until later gestations and viewed milestones with more trepidation.

> *"I didn't get anything ready for the baby until 30 weeks…I refused to buy anything…most people buy loads and really enjoy getting it ready…but I was like, nope, we're not doing anything." (P2)*

> *"I had milestones in my mind…you get through the anomaly scan and that was all OK. I was assuming they would tell me there was something wrong…because obviously you just assume the worst." (P12)*

For some, memorable cases triggered specific worries and prompted additional investigations.

> *"I paid for a private scan…got this thing in my head about, oh what if baby's got a cleft lip?…probably there was someone on my caseload with a cleft lip and it just triggered a thought." (P2)*

The experience of working on NICU whilst pregnant led HCPs to assume that "at some point my baby would be born poorly, would need neonatal admission." (P8)

A skewed sense of normal

Despite knowing that "statistically, yes, these things are so rare" (P2), HCPs described how constant exposure to the worst-case scenario "skews your view" (P4) of the likelihood of experiencing an uncomplicated pregnancy and birth.

"They would say things like, well, you don't have any risk factors… I was like, there's many mummies who didn't have, have risk factors and we're still seeing them come through neonatal." (P1)

"They say that there's only 10% of babies go to the NICU, but when all you ever see is those 10%, that's what you think is normal, is preterm birth and birth that goes wrong and you know, awful infections." (P9)

The double-edged sword of knowledge and expertise

HCPs described their clinical knowledge as both helpful and challenging during pregnancy. For some, their expertise supported informed decision-making and enabled them to weigh risks and benefits of decisions made during pregnancy; however, for others, knowledge was experienced as anxiety-provoking and contributed to worries about pregnancy and the potential long-term consequences of negative outcomes.

"In terms of like decisions in pregnancy, yeah, it impacted positively because I was able to use my knowledge to kind of pros and cons and work out what was best for both me and my baby. So that was good." (P12)

"Just knowing too much, you know every possible thing that can go wrong and you know what that means and, and you know what it means not just for now, but for the future." (P10)

Although P12 noted the positive impact of knowledge on pregnancy, they reflected that "sometimes knowledge is not power, sometimes knowledge makes you really paranoid" highlighting the ongoing tension HCPs experienced when managing professional expertise during pregnancy.

Theme 3: Pregnancy in a Culture of Coping and Endurance

This theme explores how pregnancy was experienced within a workplace culture that prioritised resilience and service need. HCPs described having "to get on with it" (P1) and endured physical and emotional demands during pregnancy. Experiences of managing

pregnancy within the team varied by professional role, with an overall expectation to prioritise their work over pregnancy-related needs.

Differences in role expectations

HCPs described different experiences of managing pregnancy on NICU depending on their professional role, level of autonomy, and supervisory structures. Nurses, in particular, described limited support or workplace adaptations from staff management and an expectation to carry on working as normal in a high-intensity work environment during pregnancy. This was not described as a deliberate absence of support, but as a felt lack of flexibility due to service pressures.

> *"You were just a number, really… you were needed to cover the rota and it didn't really, like there was days you wouldn't have got your break in or anything … It was just the way the unit was busy and your role, you're a band 6, you have to fulfil your job role." (P1)*

In contrast, HCPs who had different professional roles on NICU, such as allied health professionals (AHP), described a more positive experience of workplace adaptations and greater autonomy in managing their workloads when experiencing pregnancy-related symptoms such as sickness or fatigue.

> *"So I was able to do service development, develop pathways, look at recruitment so there was lots I could be doing… I didn't have that forward facing working with parents" (P2)*

> *"I did experience quite a lot of pain and but I think as an autonomous practitioner, as an (AHP) on the unit like I just, I managed that myself and made sure that I had regular breaks" (P5)*

This highlights how expectations and workplace support on NICU during pregnancy were influenced by participants' professional roles.

Expectation to prioritise the NICU role

HCPs often found themselves prioritising their NICU role during pregnancy, even when the work was having a physical or emotional impact. HCPs reflected that the service need frequently took precedence, with little planning or support for tasks that might be more difficult for pregnant staff.

> *"There was one particular night shift. I was the only (HCP) on, I went out to quite a sick baby to stabilise it, and I fainted on shift. But they'd not planned for anything like that… I then basically had to have a slice of toast, stand up and carry on my shift." (P9)*

> *"I went down to A&E with one of them, with a baby brought in in a bin bag, while I was pregnant… a lovely term baby that was, you know, would have otherwise been healthy… that's not very nice…Even more so when you're pregnant, I think." (P10)*

Theme 4: Mental Health and Wellbeing

This theme describes the impact of working in a NICU during pregnancy on HCPs' mental health and emotional wellbeing. HCPs noted experiencing heightened anxiety and worry, often linked to their clinical knowledge and exposure to preterm and unwell babies. Experiences of psychological support varied, with some HCPs describing utilising informal support from friends and family, whilst others sought formal support outside of the NICU.

"Ignorance is bliss"

HCPs described heightened anxiety during pregnancy that they associated with their clinical knowledge and exposure to pre-term births and neonatal illness. HCPs reflected that knowing "too much" led to persistent worry, hypervigilance and "waiting for it to come to my door." (P1).

> *"Yes, I think there's truth behind ignorance is bliss sometimes, isn't there in those situations. So particularly when I knew he was about to, you know, we were going into labour, that the spiral of worry… Really played on my mind." (P7)*

"I've never experienced anxiety, but the pregnancy was, my pregnancy was great, like fine, but my anxiety was awful from working on the unit." (P10)

HCPs who had previous pregnancies before working on NICU described a marked increase in anxiety when pregnant while working in NICU.

"Probably just increased anxiety compared- so when I had my first I was in paediatric intensive care… I've had two pregnancies in neonates, and actually it was quite a marked difference… Definitely a lot of increased anxiety." (P4)

Psychological support on NICU

Some HCPs described that their units offered staff support through clinical psychologists; however, challenges in uptake were noted due to perceived organisational attitudes or personal reluctance to take time away from patient care. Support was therefore available in theory, but its accessibility and acceptability were experienced differently by NICU staff.

"So there is a clinical psychologist that works for the region…she is trying to bring in staff well-being and things like that, but the management within my department essentially, when I brought her in for a training session, I was given feedback that it's all hairy fairy stuff." (P9)

"We've got a psychologist on our unit and I'd spoken to her a lot about my first pregnancy…So I knew that that was available. I thought I could speak to (psychologist name) if I wanted to. However…they offer that support for staff as well as the families, I never want to take that time away from the families." (P5)

Seeking personal and external support

HCPs often relied on personal networks and external mental health support to manage the emotional impact of working on NICU during pregnancy. Family and friends were described as the main source of support and some HCPs accessed external therapy or took time away from work when anxiety became overwhelming, highlighting the importance of both internal and external resources in supporting wellbeing in NICU staff.

"For me, I got kind of one very close friend on the unit, so that was kind of my go to if I needed to talk things through after. And then I've got a small group of friends that are also nurses, but on different units, from university." (P11)

"It was awful and I did, I ended up…having a bit of time off from stress, I just felt so anxious…they referred me to the well-being service, so I had counselling." (P10)

"It was my therapist said you need to come out of work… I was just in a really bad state, I was crying all the time, just constant worrying, I was exhausted from just constantly waiting for something bad to happen." (P1)

Discussion

This qualitative study explored the experiences of HCPs who were pregnant whilst working in a NICU. From the 12 interviews, four main themes were developed: "Pregnancy highlights connection and conflict," "Being an expert in the worst-case scenario," "Pregnancy in a culture of coping and endurance," and "Mental health and wellbeing." HCPs reflected on the dual role of being an expectant parent whilst caring for the sickest babies, often finding that this experience led to a heightened sense of empathy for parents, alongside a new awareness of how everyday comments on the ward might be emotionally difficult for families. HCPs described anticipating worst-case scenarios for their own pregnancies, due to routine exposure to illness and death. Varied levels of support and an expectation to continue as normal, despite the high-intensity nature of the work, were reported, and for many HCPs, experiencing a pregnancy on NICU had a significant impact on their mental health and wellbeing. This study extends the work of Dussi et al. (2023) by exploring how this dual role is experienced within the context of the NHS, showing how professional and personal worlds become deeply intertwined during pregnancy and how occupational exposure to NICU babies and families shapes HCPs' emotional experiences, anticipatory anxieties, and emerging parental identities.

HCPs reflected that experiencing pregnancy enabled them to form deeper connections with parents and develop a more nuanced understandings of parent's, due to their shared experience. This study adds to existing literature by Lee et al. (2020), who reported that pregnancy enhanced nurses' sense of responsibility and empathy, with an increased ability to

provide compassionate care. The present study demonstrated how empathic shifts are experienced within the NICU setting and illustrated how pregnancy enables HCPs to adopt a parental perspective and more fully appreciate the complex emotions experienced by parents in neonatal care. This shift in empathy can be understood as a form of growth mindset (Dweck, 2006), whereby the HCPs developed a deeper sense of empathy through their pregnancy experience. The concept of guilt has also been discussed within the literature. Dussi et al. (2023) described that guilt was experienced by HCPs who felt they had not saved enough babies, and Lee et al. (2020) reported that nurses felt sorry about being a burden to colleagues. HCPs in this study added to the literature by discussing their feelings of guilt when they were visibly pregnant and working with families in the NICU.

HCPs discussed the emotional impact of caring for babies whose gestational age mirrored their own pregnancy. While this enhanced empathy, it also often led participants to imagine similar outcomes in their own pregnancies, heightening anxiety. This is an important finding, as the emotional impact of caring for patients who directly reflect clinicians' own personal circumstances appears to be a neglected area within the literature.

For some, professional knowledge enabled HCPs to make informed decisions about their pregnancy care and helped with feeling prepared (Coulton Stoliar et al., 2022, Dussi et al., 2023), however, for others, professional knowledge led to increased worry during pregnancy, similar to the findings of Church (2014) and Lee et al. (2020). Dussi et al. (2023) reported that HCPs working on NICU experienced birth related fears during pregnancy due to exposure to premature birth and infant illness. The present findings extend this by illustrating how NICU exposure fundamentally reshapes what is perceived as "normal." HCPs anticipated worst-case outcomes for their babies and ruminated about the long-term impacts of having a baby born early or unwell. This led to heightened anxiety, hypervigilance and "waiting for it to come" to their doors. Although the concepts of trauma were not specifically discussed with HCPs, their experience aligns with the findings of Favrod et al. (2018) who found that NICU nurses reported high levels of secondary traumatic stress, burnout, and anxiety. HCPs in this study remained alert to any changes during pregnancy and sought extra scans following exposure to difficult cases (P2). Further to this, HCPs discussed the impact of mental health and wellbeing whilst pregnant and working in a NICU, with some seeking external therapeutic support or taking time off work. This highlights the emotional weight of the dual role, and that HCPs who experience a pregnancy on NICU may require more than

what is currently offered, as previous research has highlighted the negative impacts on attachment that new mothers with mental health difficulties can experience (Erickson et al., 2019).

Like the nurses in Lee et al.'s (2020) study, HCPs working on NICU were expected to "get on with it" when working during their pregnancy, and a culture prioritising resilience and endurance was described. HCPs were expected to put their role as a NICU staff members first, even when the work was having an emotional impact, with few adaptations put in place for pregnant staff. Interestingly, this study found that those in allied health positions tended to have a more supportive experience on NICU whilst pregnant, adding to the findings of Dussi et al.'s (2023) NICU study.

HCPs reported utilising support through friends and family whilst they were pregnant, which is consistent with the findings of Dussi et al. (2023). Levels of psychological support varied across NICUs; this is in line with Bliss' (n.d.) report that 41% of NICUs in England do not have access to psychological support. For those who had psychologists on their ward, they worried about taking valuable time from families and therefore did not use this as a form of support. A report by the Neonatal Consultant Clinical Psychologists and ODN Psychology Leads (2022) highlighted the importance of psychological support for staff within the NICU; however, there is no specific guidance for pregnant staff.

Limitations and implications for future research

Whilst this sample included representations of HCPs from across the UK, 10 of the 12 HCPs identified as White. Furthermore, all HCPs identified as female and were heterosexual, reducing demographic diversity. Future research should consider ways of recruiting a more diverse sample in relation to ethnicity, sexual orientation, and gender identity to enrich the data. Although purposive sampling was an appropriate and sound method for this study (Creswell & Plano Clark, 2018; Palinkas et al., 2015), it introduces self-selection bias, and those who had stronger emotional experiences of being pregnant whilst working in a NICU may have been more likely to respond. Additionally, as HCPs were recruited via social media, this may have limited access to only those using specific platforms. Comparative studies across healthcare contexts could further clarify what is distinctive about NICU work during pregnancy. The results from this study indicate possible differences in the experiences

of NICU HCPs based on professional role, suggesting that future research may benefit from focusing on a single professional group within NICU to explore these role-specific experiences in greater depth. This study focused solely on the experience of pregnancy, and as several HCPs highlighted needing perinatal or postpartum therapeutic support, future research should extend beyond pregnancy to explore how NICU work shapes adjustment, wellbeing, and emerging parental identity following birth.

Recommendations for clinical practice

In addition to the recommendations made by the Neonatal Consultant Clinical Psychologists and ODN Psychology Leads (2022) and perinatal policies such as The NHS Long Term Plan (2019), this study highlights a need for NICUs to adopt a more sensitive approach to pregnant staff's wellbeing. Psychological support should be available for staff on all NICUs across the UK. Where such provision exists, staff managers should consider promoting its use, embedding a culture that prioritises wellbeing within NICU units. Psychological support for NICU staff could be integrated within units in ways that protect time for staff to engage in wellbeing support, supervision, and structured debriefs. Such provision could be positioned as enhancing compassionate care delivery for babies and families, while making explicit that protecting time for staff support does not diminish the availability of psychological services for families. Management could also adopt a trauma-informed approach when making decisions around caseloads, considering the negative impact of placing pregnant staff members with babies of a similar gestation and, where feasible, offering alternative roles, tasks, or patient allocations.

Conclusion

This study explored how pregnancy is experienced by HCPs working within the emotionally demanding context of the NICU. Findings highlight the dual role of NICU work that becomes apparent during pregnancy, whereby professional expertise and personal vulnerability become intertwined. This experience deepened empathy but also led to experiences of anxiety and negative impacts on wellbeing. HCPs described how routine exposure to neonatal illness and loss reframed pregnancy as a time to anticipate the worst, while workplace cultures of endurance often limited opportunities for self-care and support. Although national policy and professional guidance increasingly recognise the importance of

psychological support within neonatal care, this study demonstrates that the specific experiences and needs of pregnant NICU staff remain underrepresented in the literature. Through exploring these HCPs' experiences, the findings highlight the importance of trauma-informed and psychologically supportive practices that attend not only to families' needs but also to the wellbeing of the healthcare staff who care for them.

References

Alderdice, F., Lynn, F., & Lobel, M. (2012). A review and psychometric evaluation of pregnancy-specific stress measures. *Journal of Psychosomatic Obstetrics & Gynecology, 33*(2), 62–77. https://doi.org/10.3109/0167482X.2012.673040

Ayers, S., Bond, R., Bertullies, S., & Wijma, K. (2016). The aetiology of post-traumatic stress following childbirth: A meta-analysis and theoretical framework. *Psychological Medicine, 46*(6), 1121–1134. https://doi.org/10.1017/S0033291715002706

Bender, P. K., Sømhovd, M., Pons, F., Reinholdt-Dunne, M. L., & Esbjørn, B. H. (2015). The impact of attachment security and emotion dysregulation on anxiety in children and adolescents. *Emotional and Behavioural Difficulties, 20*(2), 189–204. https://doi.org/10.1080/13632752.2014.933510

Bhaskar, R. (1998). *The possibility of naturalism: A philosophical critique of the contemporary human sciences* (3rd ed.). Routledge.

Bliss. (n.d.). *Improving access to support on neonatal units*. https://www.bliss.org.uk/improving-access-to-support

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Braun, V., & Clarke, V. (2012). Thematic analysis. In H. Cooper, P. M. Camic, D. L. Long, A. T. Panter, D. Rindskopf, & K. J. Sher (Eds.), *APA handbook of research methods in psychology: Vol. 2. Research designs: Quantitative, qualitative, neuropsychological, and biological* (pp. 57–71). American Psychological Association. https://doi.org/10.1037/13620-004

Braun, V., & Clarke, V. (2022). *Thematic analysis: A practical guide.* SAGE.

Church, S. (2014). Midwives' personal experiences of pregnancy and childbirth: Exploring issues of autonomy and agency in relation to the use of professional knowledge. *Human Fertility, 17*(3), 231–235. https://doi.org/10.3109/14647273.2014.949879

Coulton Stoliar, S., Dahlen, H. G., & Sheehan, A. (2022). Insider knowledge as a double-edged sword: An integrative review of midwives' personal childbearing experiences. *BMC Pregnancy and Childbirth, 22*(1), 640. https://doi.org/10.1186/s12884-022-04962-y

Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE Publications.

Data Protection Act (2018). https://www.legislation.gov.uk/ukpga/2018/12/contents/enacted

Dussi, G., Bembich, S., Crevatin, R., Buchini, S., Schreiber, S., Bicego, L., & Dobrina, R. (2023). How is our job affecting us? Neonatal intensive care unit healthcare providers and their pregnancy: A descriptive qualitative study. *Journal of Advanced Nursing, 79*(10), 3776–3786. https://doi.org/10.1111/jan.15705

Enlow, M. B., Egeland, B., Carlson, E., Blood, E., & Wright, R. J. (2014). Mother–infant attachment and the intergenerational transmission of posttraumatic stress disorder. *Development and Psychopathology, 26*(1), 41–65. https://doi.org/10.1017/S0954579413000515

Erickson, N., Julian, M., & Muzik, M. (2019). Perinatal depression, PTSD, and trauma: Impact on mother–infant attachment and interventions to mitigate the transmission of risk. *International Review of Psychiatry, 31*(3), 245–263. https://doi.org/10.1080/09540261.2018.1563529

Favrod, C., Jan du Chêne, L., Martin Soelch, C., Garthus-Niegel, S., Tolsa, J. F., Legault, F., & Horsch, A. (2018). Mental health symptoms and work-related stressors in hospital midwives and NICU nurses: A mixed methods study. *Frontiers in Psychiatry, 9*, Article 364. https://doi.org/10.3389/fpsyt.2018.00364

Fiske, E. (2018). Nurse stressors and satisfiers in the NICU. *Advances in Neonatal Care, 18*(4), 276–284. https://doi.org/10.1097/ANC.0000000000000514

Garten, L., Danke, A., Reindl, T., Prass, A., & Bührer, C. (2021). End-of-life care–related distress in the PICU and NICU: A cross-sectional survey in a German tertiary center. *Frontiers in Pediatrics, 9*, Article 709649. https://doi.org/10.3389/fped.2021.709649

Hoffman, C., Dunn, D. M., & Njoroge, W. F. (2017). Impact of postpartum mental illness upon infant development. *Current Psychiatry Reports, 19*(12), Article 100. https://doi.org/10.1007/s11920-017-0857-8

Huang, Z. P., Huang, F., Liang, Q., Liao, F. Z., Tang, C. Z., Luo, M. L., & Wu, B. (2023). Socioeconomic factors, perceived stress, and social support effect on neonatal nurse burnout in China: A cross-sectional study. *BMC Nursing, 22*, Article 218. https://doi.org/10.1186/s12912-023-01380-z

Jamieson, M. K., Govaart, G. H., & Pownall, M. (2023). Reflexivity in quantitative research: A rationale and beginner's guide. *Social and Personality Psychology Compass, 17*(4), e12735. https://doi.org/10.1111/spc3.12735

Kim, S., Jun, J., Carle, A. C., Hall, P., & Tubbs-Cooley, H. L. (2025). Association between perceived stress and burnout among neonatal intensive care nurses. *Advances in Neonatal Care*. https://doi.org/10.1097/ANC.0000000000001303

Lee, H., Chang, H. E., & Ha, J. (2020). Nurses' clinical work experience during pregnancy. *Healthcare, 9*(1), Article 16. https://doi.org/10.3390/healthcare9010016

Levitt, H. M., Motulsky, S. L., Wertz, F. J., Morrow, S. L., & Ponterotto, J. G. (2017). Recommendations for designing and reviewing qualitative research in psychology: Promoting methodological integrity. *Qualitative Psychology, 4*(1), 2–22. https://doi.org/10.1037/qup0000082

Malterud, K., Siersma, V. D., & Guassora, A. D. (2016). Sample size in qualitative interview studies: Guided by information power. *Qualitative Health Research, 26*(13), 1753–1760. https://doi.org/10.1177/1049732315617444

Manolova, G., Waqas, A., Chowdhary, N., Salisbury, T. T., & Dua, T. (2023). *Integrating perinatal mental healthcare into maternal and perinatal services in low and middle income countries*. BMJ, 381, e073343. https://doi.org/10.1136/bmj-2022-073343

Morrow, S. L. (2005). Quality and trustworthiness in qualitative research in counseling psychology. *Journal of Counseling Psychology, 52*(2), 250–260. https://doi.org/10.1037/0022-0167.52.2.250

Nagle, U., Naughton, S., Ayers, S., Cooley, S., Duffy, R. M., & Dikmen-Yildiz, P. (2022). A survey of perceived traumatic birth experiences in an Irish maternity sample–prevalence, risk factors and follow up. *Midwifery, 113*, Article 103419. https://doi.org/10.1016/j.midw.2022.103419

Neonatal Consultant Clinical Psychologists and ODN Psychology Leads. (2022). *Psychology staffing on the neonatal unit: Recommendations for psychological provision*. https://hubble-live-assets.s3.amazonaws.com/bapm/redactor2_assets/files/1241/Psychology_Staffing_on_the_Neonatal_Unit.pdf

NHS England. (2019). *The NHS long term plan*. https://www.longtermplan.nhs.uk/publication/nhs-long-term-plan/

NHS England. (2024, May 2). *Record numbers of women accessing perinatal mental health support*.https://www.england.nhs.uk/2024/05/record-numbers-of-women-accessing-perinatal-mental-health-support/

Oates, M., & Cantwell, R. (2011). Deaths from psychiatric causes. *BJOG: An International Journal of Obstetrics and Gynaecology, 118*(Suppl 1), 132–142. https://doi.org/10.1111/j.1471-0528.2010.02847.x

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and Policy in Mental Health and Mental Health Services Research, 42*(5), 533–544. https://doi.org/10.1007/s10488-013-0528-y

Ravaldi, C., Mosconi, L., Mannetti, L., Checconi, M., Bonaiuti, R., Ricca, V., & Vannacci, A. (2023). Post-traumatic stress symptoms and burnout in healthcare professionals working in neonatal intensive care units: Results from the STRONG study. *Frontiers in Psychiatry, 14*, Article 1050236. https://doi.org/10.3389/fpsyt.2023.1050236

Sharma, V., Mishra, B. R., Gupta, M. K., Garg, A., & Malathi, L. (2025). Mental health challenges among neonatal intensive care unit (NICU) healthcare workers: A study on burnout, anxiety, and coping strategies during high-stress care. *Vascular and Endovascular Review, 8*(13s), 256–261. https://verjournal.com/index.php/ver/article/view/1018

Sutton, J., & Austin, Z. (2015). Qualitative research: Data collection, analysis, and management. *The Canadian Journal of Hospital Pharmacy, 68*(3), 226–231. https://doi.org/10.4212/cjhp.v68i3.1456

Tabachnick, A. R., He, Y., Zajac, L., Carlson, E. A., & Dozier, M. (2022). Secure attachment in infancy predicts context-dependent emotion expression in middle childhood. *Emotion, 22*(2), 258–272. https://doi.org/10.1037/emo0000985

UK National Neonatal Audit Programme. (2017). *National Neonatal Audit Programme (NNAP) annual report on 2016 data*. Royal College of Paediatrics and Child Health

World Health Organization. (2016). *WHO recommendations on antenatal care for a positive pregnancy experience.* World Health Organization. https://www.who.int/publications/i/item/9789241549912

Chapter 5: Additional Methodology

Additional Methodology

The purpose of this chapter is to provide further information on the methodology of the empirical paper in chapter 4. The design, methods, analysis and reflexivity will be discussed.

Design

Ontology and Epistemology

Ontology refers to assumptions about the nature of reality or being, and epistemology concerns theories about how knowledge is understood and produced. Together, these theoretical positions underpin all research (Braun & Clarke, 2022). Ontological assumptions range from realism to relativism. As this empirical study sought to explore healthcare professionals' (HCPs) accounts of pregnancy and how working during this time shaped their role and wellbeing, while also considering factors influencing these experiences, a critical realist approach was adopted. This stance acknowledges there are both experiential and physical realities (Bhaskar,1998).

Through a critical realist lens the lead researcher (KM) recognised that participants actively construct meaning of their pregnancy experiences while also attending to the ways broader social context impinges on those meanings and to the material limits of 'reality' (Braun & Clarke, 2006; Braun & Clarke, 2022). An objective reality was therefore recognised, whereby being pregnant whilst working on a neonatal intensive care unit (NICU) may contribute to mental health difficulties.

Epistemological assumptions are often positioned along a continuum from positivism to constructivism, with contextualism representing an intermediate stance. Contextualism acknowledges truth as context-dependent and is shaped through language and meaning, thereby recognising the possibility of multiple accounts of reality (Braun & Clarke, 2022). The research aimed to explore participants' subjective and socially constructed experiences of this reality.

Method

Materials

Patient and public involvement (PPI) includes the involvement of patients, carers and the public as active partners in the design, delivery and dissemination of research to ensure that it is relevant and beneficial (Jennings et al., 2018). A member of the public was recruited as PPI via a poster on relevant social media pages (Appendix M). It was specified that the PPI contributor should be a HCP with experience of working on a NICU.

Prior to the meeting, the PPI member was sent the study materials, including the interview topic guide (Appendix H), consent form (Appendix L), participant information sheet (Appendix K) and debrief sheet (Appendix N). KM met with the PPI member via Microsoft Teams to discuss the materials and obtain feedback to ensure the questions and materials were relative and reflective of the research. The PPI member received £25 for their time, in line with NIHR (2022) guidance on payment for public involvement. Feedback was subsequently discussed with the research team, and the final materials were produced.

Due to time and budget constraints, only one PPI contributor was consulted for this research; however, involving a broader PPI group may have further enriched the development of the research materials.

Procedure

Following PPI consultation and ethical approval for the study (Appendix I), recruitment began via purposive sampling on social media using a poster (Appendix J). Participants emailed KM to indicate their interest in the study, and KM then responded by reiterating the inclusion and exclusion criteria and providing the relevant materials, including the consent form (Appendix L), which participants were asked to return. Once consent forms were signed and returned, an interview time was agreed and a Microsoft Teams link sent. Interviews were scheduled at times that best suited participants to accommodate work and childcare commitments, reflecting recommendations that arranging interviews at convenient times enhances participant engagement and data quality (Drabble et al., 2016). On the day of the interview, participants were asked if they had any questions regarding the participant information sheet and were reminded of their right to withdraw. Demographic questions were

asked as these can help provide broader social and structural context to the experiences of individuals (Call et al., 2023). Age, gender, sexual orientation, ethnicity, religious belief, role, employment status, years worked in NICU, and country of residence were collected and can be seen in Table 1. Interviews were recorded and transcribed on Teams, and interviews lasted an average of 45 minutes.

Table 1

Participant Demographic Characteristics (N=12)

Participant	Age	Gender	Sexual orientation	Ethnicity	Religious belief	Employment status	Professional role	Years in NICU	Country of residence
1	42	Female	Heterosexual	White Northern Irish	Catholic	Full-time	Neonatal nurse	14	Northern Ireland
2	40	Female	Heterosexual	White British	None	Part-time	AHP	3.5	England
3	37	Female	Heterosexual	White British	None	Full-time	Neonatal nurse	4	Scotland
4	33	Female	Heterosexual	White Scottish	None	Full-time	Neonatal nurse	8	Scotland
5	36	Female	Heterosexual	White British	None	Part-time	AHP	5	England
6	26	Female	Heterosexual	Asian	Christian	Part-time	Neonatal nurse	3	Wales
7	28	Female	Heterosexual	White Welsh	None	Part-time	Neonatal nurse	7	Wales
8	29	Female	Heterosexual	Mixed White and Asian	None	Full-time	Neonatal nurse	9	England
9	40	Female	Heterosexual	White British	Christian	Full-time	ANNP	16	England
10	30	Female	Heterosexual	White British	None	Part-time	Neonatal nurse	9	England
11	29	Female	Heterosexual	White British	Christian	Part-time	Neonatal nurse	3	Wales
12	42	Female	Heterosexual	White British	Christian	Part-time	ANNP	19	England

Note: AHP = Allied Health Professional (including Clinical Psychologists and Occupational Therapists); ANNP = Advanced Neonatal Nurse Practitioner

Ethical Considerations

Confidentiality

Participant confidentiality was prioritised throughout the study. Participants received study materials in advance of the interview to review, and the voluntary nature of

participation, including the right to withdraw up to two weeks post-interview, was discussed at the beginning of each interview. Interviews were conducted via Microsoft Teams to enable UK-wide participation and to flexibly accommodate participants' work and caregiving commitments. When arranging interviews, care was taken to ensure the participant would have access to a safe and confidential environment, and they were advised to set aside an hour to complete the interview, so they did not feel rushed. Participants' personal information and interview data were stored securely on a password-protected university OneDrive. Microsoft Teams recordings and identifiable information were deleted following completion of the analytic process, as outlined in the participant information sheet (Appendix K).

Potential for distress

Due to the sensitive nature of the topics discussed during the interviews, additional care was taken to ensure that participants felt supported. At the end of the interview, time was allocated for the participant to debrief with the researcher, where needed. In addition, participants were provided with a debrief sheet (Appendix N) that included signposting information and relevant support contacts should they feel distressed or negatively affected by taking part in the study. Participants were also given a £10 Amazon voucher as a gesture of appreciation for their time and contribution to the research

Analysis

Analytic process

Reflexive thematic analysis (RTA) is a qualitative approach that emphasises the researcher's active role in coding and theme development, recognising subjectivity as integral to the analytic process and requiring reflexivity on how researcher assumptions shape meaning-making (Braun & Clarke, 2022). This analytic approach was appropriate given the exploratory nature of the research and its flexibility, allowing for a rich and detailed account of the data. Additionally, it lends to producing qualitative analyses suited to informing policy development (Braun & Clarke, 2006). RTA requires ongoing thought and decision-making that extends beyond the analysis itself, shaped by wider aspects of the research process (Braun & Clarke, 2022). Analytic engagement began during interviews, with initial reflections and early code ideas recorded in a reflexive journal. Supervision supported reflexive consideration of how these emerging codes shaped ongoing interviews and analytic

decisions. The RTA approach to analysing data adopts the following approach: Familiarisation with the data, initial code generation, generating (initial) themes, theme review, theme defining and naming and report production. KM began by familiarising and immersing themselves in the data. Microsoft Teams transcripts were reviewed using the recording to ensure each line had been transcribed correctly. Transcripts were also anonymised during this time. Transcripts were then read and re-read, and initial notes and reflections were made in the reflective journal. Once transcripts were anonymised and finalised, they were uploaded to NVivo 14 to begin coding. Each transcript was read through, and initial codes were produced, holding the research aims and question in mind. Initial codes were semantic in nature, and as transcripts were read and then reviewed, latent codes were developed (Braun & Clarke, 2022) An extract from a coded transcript can be found in Appendix O.

Themes are understood as patterns of shared meaning across the dataset (Braun & Clarke, 2006; Braun & Clarke, 2022). Quotations from the transcripts were organised in relation to emerging codes and candidate themes. Supervision was used as a collaborative space to critically reflect on and refine developing themes, enhancing their clarity and relevance to the research questions. Themes were then reviewed and an initial thematic map ideas were developed (Appendix P). Transcripts were re-read at this stage to ensure that developing themes, sub themes and quotations were coherent and aligned with the research. Themes and sub themes were then refined through discussions within the research team, with attention given to clarity and relevance of language. Writing up formed part of the analytic process and supported further refinement of themes, as the researcher constructed the narrative linking themes, subthemes, and quotations. Throughout this process, care was taken to ensure participants voices were heard as equally as possible. Research supervision provided a space to reflect on the selection of quotations that most meaningfully illustrated the themes in relation to the research questions.

During analysis participant involvement can provide perspective on taken-for-granted researcher assumptions, provide socio-cultural insights, and improve the thoroughness of interpretation (Tuffrey-Wijne & Butler, 2010). This also lends to RTA, which values a collaborative and reflexive analytic approach, to develop a richer and more nuanced reading of the data (Braun & Clark, 2022). All participants were provided with an additional consent form (Appendix Q) to be contacted for further involvement in the analysis stage following

interview; however, as none were returned, participants were not involved. As a result, reflexivity and analytic rigor were supported through reflexive journalling, and regular collaborative discussions within the research team, in line with RTA principles.

Reflexivity

Reflexive practice allows qualitative researchers to ensure rigor and quality in their work (Berger, 2015). When completing qualitative research, it is therefore important to recognise that the researchers' own prior experiences, assumptions and beliefs will influence the research process (Dodgson, 2019). The lead researcher (KM) identifies as a White Irish female and is training within clinical psychology, with experience of working in healthcare settings, but without direct experience of working within high-acuity environments such as neonatal intensive care, and so assumed an insider-outsider position when completing interviews. Sharing a gender and similar cultural backgrounds with participants may have supported rapport and openness during interviews, however not having experience working in a NICU or being a parent created differences in lived experience. Participants' shared their accounts of anticipating worst-case outcomes during pregnancy which exposed the researcher to pregnancy-related risks and complications that they were previously unaware of. As someone who hopes to become pregnant in the future, engaging with these accounts prompted personal reflection on the researcher's own potential pregnancy journey, and reinforced the importance of remaining reflexively aware of emerging personal anxieties when engaging with participants' narratives. The first extract from KM's journal below reflects on this process following the completion of an interview. The second extract illustrates the researcher's reflections on managing her own perceived level of knowledge and expertise when speaking with NICU professionals, including moments of not fully understanding clinical language or abbreviated terminology. Research supervision was central to reflexive practice, offering a space to explore KM's positionality, emotional responses to participants' experiences, and how these may have shaped analytic decisions.

Reflective journal extracts

The extracts below present reflections on the impact of hearing about HCPs' experiences of pregnancy while working in the NICU, and on the researcher's level of knowledge during the interview process.

“Listening to participants chat about their worst-case scenarios during pregnancy has made me think about my own possible future pregnancy journey more than I expected. It feels like there are so many complications and risks I had never even considered before, will I forget about these by the time it’s my own experience or will they stick with me? Will it impact my own ability to be hopeful during pregnancy? Am I taking on anxieties that belong to a professional field I am not part of? Or maybe this is just what happens in qual research when you listen and can somewhat relate to their experiences? I want to make sure that I stick with the participants’ experiences and meanings, rather than letting my own ‘what ifs’ that have popped up now and again following interviews shape how I interpret what they shared. Note to discuss in supervision”

“I’ve noticed feeling bad when asking for clarification on clinical shorthand or NICU-specific language. Part of me worries that asking will mark me as someone who ‘doesn’t get it’ — the very concern P10 spoke about when describing experiences of mental health professionals outside the unit. Should I know more, should I have read more, immersed myself more deeply in the medical language used in NICU before these interviews, but also I could never know already about the rare genetic disabilities that haven been mentioned or spoken about so maybe that’s ok? I wonder whether pretending to understand would be more disingenuous than asking openly.”

Chapter six: General Discussion and Critical Evaluation

General Discussion and Critical Evaluation

This chapter will synthesise and critically evaluate the findings from the systematic review and the empirical paper. Clinical implications and future research recommendations will also be discussed.

This thesis aimed to explore occupational trauma among healthcare professionals (HCPs) working in intensive care units (ICUs), with a focus on HCPs who work in neonatal intensive care units (NICUs). It examined how HCPs experienced the dual role of being both expectant parents and caregivers within a high-intensity, occupationally stressful environment (Urooj et al., 2025).

The thesis portfolio adopted a mixed-methods approach. A systematic review and meta-analysis synthesised the prevalence of secondary traumatic stress (STS) and post-traumatic stress (PTS) symptoms among ICU staff, and the empirical paper qualitatively explored HCPs' experiences of pregnancy while working on NICU.

Summary of the findings in the context of the literature

Pooled estimates in the systematic review indicated that approximately one in six staff experience STS symptoms and around one quarter experience PTS symptoms. Despite considerable heterogeneity across studies, sensitivity analyses highlighted that STS and PTS appear to be occupational risks in ICU settings. Elevated PTS symptoms were found both outside of and during the COVID-19 pandemic, indicating that trauma-related stress is an inherent occupational risk in ICU and not just found during crisis driven periods.

In the empirical study, reflexive thematic analysis (RTA) (Braun & Clarke, 2022) was used to analyse the 12 interviews conducted with HCPs. An overarching meta-theme of "Navigating a dual role: managing personal pregnancy and professional responsibility in the NICU" was established. Within this overarching meta-theme, four key themes were developed. The first theme, "Pregnancy highlights connection and conflict" consisted of four subthemes: "Enhanced empathy through shared experience", "Well intentioned comments causing potential harm," "Seeing their baby in others," and "The privilege of being pregnant". This theme captured the emotional complexity of working with parents on NICU whilst pregnant. The second theme, "Being an expert in the worst case scenario" included the

subthemes “Anticipating the worst,” “A skewed sense of normal,” and “The double-edged sword of knowledge and expertise”. This theme explored how pregnant HCPs experienced increased vigilance and anticipation of the worst-case outcomes due to their professional knowledge and exposure. The third theme, “Pregnancy in a culture of coping and endurance” comprised the subthemes “Differences in role expectation” and “Expectation to prioritise the NICU role”. This theme explored how organisational culture and role expectations shaped HCPs’ experience of pregnancy. The fourth theme “Mental health and wellbeing” consisted of the subthemes “Ignorance is bliss,” “Psychological support on NICU,” and “Seeking personal and external support”. This theme captured the impact of working in a NICU during pregnancy on HCPs’ mental health, and their experiences of accessing support.

Together, the findings from these studies provide a nuanced understanding of the psychological impact of working in intensive care by highlighting both the scale of trauma-related distress within this population and how occupational stress is experienced and managed during periods of heightened vulnerability, such as pregnancy.

The systematic review reported PTS prevalence estimates during the COVID-19 pandemic that were broadly consistent with those described in existing reviews (Hernández-Bojorge et al., 2024; Li et al., 2021). However, this review went on to highlight that PTS symptoms are also elevated outside of pandemic based reports, suggesting that psychological risk is inherent to the nature of intensive care work. The findings from the empirical paper extend this by exploring how ongoing exposure to premature birth, infant illness, and death impact HCPs working in NICU during pregnancy. HCPs described increased vigilance and anticipatory anxiety during pregnancy, which appeared to amplify existing occupational stressors. These findings were similar to that of studies investigating midwives experience of pregnancy (Church, 2014). These findings suggest that pregnancy may intensify the emotional and personal significance of the enduring trauma exposure identified in the systematic review.

The systematic review identified trauma-related stress as particularly prevalent among ICU staff, with higher prevalence estimates than those reported in studies of broader HCP populations (14.8%) and nursing samples (Rodney et al., 2022; Sendler et al., 2016). While these findings highlight the extent of trauma-related stress among ICU staff, prevalence estimates do not capture how such distress may be shaped by professional identity or life

stage. This gap is addressed by the empirical paper through its exploration of the dual role occupied by pregnant NICU HCPs as both caregivers and expectant parents. HCPs described how professional knowledge often led to fear and worst-case thinking during pregnancy, echoing the findings of Dussi et al. (2023), who reported that HCPs working in a NICU experienced birth-related fears during pregnancy. Overall, these findings add to the literature suggesting that significant life events such as pregnancy leave individuals more vulnerable to mental health difficulties (Fawcett et al., 2019; Mental Health Foundation, 2021) and extend this literature by suggesting that working in high-intensity environments such as ICU may further heighten this vulnerability.

The systematic review highlighted trauma-related distress as an occupational risk across ICU settings, offering a potential explanation for existing literature documenting difficulties in interpersonal teamwork and higher rates of staff turnover within ICU environments (Welp et al., 2016; Xu et al., 2023). The empirical study highlighted that HCPs working on NICU during pregnancy were immersed in a workplace culture broadly characterised by coping and endurance, often prioritising service needs over their own wellbeing. This finding aligns with existing literature indicating that pregnant nurses often experience organisational cultures that overlook or minimise pregnancy-related difficulties (Lee et al., 2020). These experiences may also be considered within the context of moral distress, which arises when HCPs recognise an ethically appropriate course of action but are unable to act on it due to organisational pressures, resource limitations, or systemic constraints (Jameton, 1984; Morley, 2018). Research has demonstrated that moral distress is widespread across professions in UK ICUs and is associated with guilt, emotional exhaustion, and increased intention to leave, positioning it as a significant psychological vulnerability in ICU settings (Boulton et al., 2023). Pregnancy may therefore occur within an already morally and emotionally demanding workplace context, potentially intensifying the experience of coping and enduring described by HCPs. Together, these findings suggest that systemic and organisational factors within ICU settings contribute to heightened psychological risk, with pregnancy representing an additional layer of vulnerability for HCPs working in this environment.

The systematic review indicated that trauma-related symptoms, such as STS and PTS, are common among ICU staff. This adds to the existing literature that highlights that mental health difficulties such as anxiety, depression, and stress are prominent amongst those who

work in intensive care (Huang et al., 2022; Kumar et al., 2016; Zhang et al., 2020) and suggests heightened psychological vulnerability amongst this workforce. The findings from the empirical paper extend this by highlighting that vulnerability to psychological distress may be heightened during pregnancy, with HCPs describing increased anxiety and varied access to psychological support. Existing literature indicates that the perinatal period represents a time of increased risk for mental health difficulties (Manolova, 2023; NHS England, 2024), and the findings described in this portfolio support this position. Research has also demonstrated that psychological distress and mental health difficulties during the perinatal period may have implications for early parent–infant relationships and attachment (Enlow et al., 2014; Hoffman et al., 2017). These findings indicate that ICU staff, and particularly pregnant NICU staff, may be more vulnerable to mental health difficulties and may require trauma-informed support.

Strengths and Limitations

A strength of the thesis portfolio is its mixed-method design as it provided both a quantified prevalence of trauma-related symptoms amongst ICU staff and explored the lived experience of HCPs working within a specialised ICU setting during a period of heightened vulnerability, leading to a breadth and depth of understanding (Creswell & Plano Clark, 2018).

The systematic review is, to the authors' knowledge, the first to synthesise prevalence estimates of STS and PTS symptoms across a range of ICU settings, including paediatric intensive care units (PICU) and NICU. Additionally, this review extends the existing literature by examining PTS prevalence among ICU staff both during and outside of the COVID-19 pandemic, addressing a gap as previous reviews focused solely on the prevalence of trauma among healthcare staff during the pandemic period (Hernández-Bojorge et al., 2024; Li et al., 2021). The review was pre-registered on PROSPERO and followed the PRISMA guidelines to aid research transparency (Page et al., 2021).

A strength of the qualitative empirical study is its exploration of an under-researched area: HCPs working on NICU during pregnancy. This study offers novel insight into how occupational stress may be experienced and shaped during a significant life stage and period of heightened vulnerability. The use of Braun and Clarke's (2022) RTA was well suited to

the exploratory aims of the research, with reflexivity considered throughout the research process in line with RTA guidance.

The thesis portfolio is not without its limitations. Although a random-effects model was used to account for variation across studies in the systematic review, the considerable heterogeneity amongst studies remains an important consideration. Differences in study design, ICU setting, sample characteristics and measurement tools likely contributed to this heterogeneity, meaning that pooled prevalence estimates should be interpreted with caution.

The systematic review used self-report measures to assess STS and PTS symptoms. Whilst the use of self-report measures is appropriate for prevalence research, variations in how symptom severity is determined, as well as self-report bias, may have led to over- or underestimation of trauma-related symptom prevalence.

Due to insufficient data and methodological heterogeneity across studies, subgroup analyses were limited, and exploration of differences by ICU type, professional role, or years of ICU experience was not possible, thus, restricting conclusions regarding which ICU settings or professional groups may be more susceptible to trauma-related stress.

While the empirical study's sample size was consistent with guidance for RTA (Braun & Clarke, 2022), the sample consisted predominantly of White British participants who identified as female and heterosexual, which may limit the transferability of the findings to individuals from more diverse backgrounds. Additionally, transferability may have been influenced by the recruitment strategy used in this study. Purposive sampling was employed, as it was appropriate to the aims of the qualitative study and the analytic approach conducted (Braun & Clarke, 2022; Creswell & Plano Clark, 2018; Palinkas et al., 2015). However, recruitment via social media may have resulted in self-selection bias, with HCPs who had more challenging experiences being more likely to take part, potentially limiting the representation of more positive experiences. Nonetheless, purposive sampling facilitated the generation of rich, in-depth data within an under-researched area, prioritising depth of understanding over generalisability (Palinkas et al., 2015).

As interviews were conducted retrospectively following pregnancy, accounts may have been shaped by subsequent reflection or recall bias; however, this process may also

support meaning-making, consistent with qualitative research and RTA principles (Braun & Clarke, 2022).

Despite these limitations, this thesis portfolio makes a valuable contribution to the evidence base, particularly given the limited existing research in this area.

Clinical Implications

The findings from this thesis portfolio provide several clinical implications for supporting the wellbeing of HCPs working in intensive care settings.

Firstly, HCPs in the empirical study described working within a culture of coping and endurance, in which service demands often took priority over personal wellbeing. As discussed above, this may exacerbate existing psychological vulnerabilities, including moral distress (Boulton et al., 2023). Consistent with this, research indicates that trauma-related stress and moral distress are associated with burnout in ICU staff (Guttormson et al., 2022). Together, these findings highlight the need for system-level, organisational approaches that actively support staff wellbeing and acknowledge the trauma-related stress and moral distress inherent in ICU work, as individual-led or one-off interventions are unlikely to be sufficient for ICU staff (Maben et al., 2024). From an organisational perspective, adopting a trauma-informed approach to staff wellbeing may help to address the psychological distress associated with working in ICU environments. Such approaches require leadership practices that acknowledge the emotional burden of intensive care work, rather than normalising endurance and coping as part of the professional role. In practice, this may involve routine provision of psychologically informed supervision, reflective practice forums, and structured debriefs, as well as onward referrals for staff requiring therapeutic support. As STS has previously been under-recognised and under-researched, despite its prevalence amongst ICU staff, access to psychoeducation in relation to trauma-related stress, including PTS and STS, may be beneficial for those working in intensive care. Regular screening for mental health and trauma-related difficulties and access to psychological assessments could help instigate early intervention and potentially reduce negative outcomes (Qian et al., 2022). Clinical psychologists are well placed to facilitate and support these spaces within ICU teams (Beadman & Carraretto, 2023).

The findings from this thesis portfolio indicate that pregnancy is a time of heightened vulnerability for HCPs working in a NICU and highlights the need for psychological support to be available across NICUs in the UK. Routine exposure to premature birth, infant illness, and death may heighten anxiety and shape how pregnancy is experienced by staff. NICUs could consider implementing perinatal wellbeing support for staff, including drop-in supervision, reflective debriefs, and psychoeducation. Providing protected time for staff to engage with psychological support may reduce concerns that accessing psychology takes time away from families, and instead positions reflection and supervision as an integral part of delivering safe and compassionate care. Organisational policies that offer a flexible approach to role allocation and workload for HCPs who are pregnant may help minimise exposure to particularly difficult situations, such as caring for babies of a similar gestation or involvement in palliative care cases. Where clinically appropriate, such adaptations may help to mitigate distress whilst retaining skilled NICU staff. Providing timely psychological support to HCPs experiencing increased anxiety whilst pregnant may not only prioritise staff wellbeing, but also help to minimise potential risks to parent–infant relationships associated with perinatal mental health difficulties (Enlow et al., 2014; Hoffman et al., 2017).

The application of these recommendations within ICU environments may help to address broader workforce challenges, including staff retention, team functioning, and patient safety (Welp et al., 2016; Xu et al., 2023). These recommendations also align with the NHS Long Term Workforce Plan (2023), which emphasises the importance of prioritising staff mental health and wellbeing to support staff retention and the delivery of safe and compassionate care.

Directions for future research

This thesis portfolio explored the ways in which occupational stress and trauma exposure impact HCPs working in ICU settings. The findings from the systematic review and empirical paper point to several different directions for future research that may deepen understanding of psychological risk and support needs for staff working in intensive care.

Both papers highlight the need for profession-specific and context-specific research. Considerable heterogeneity across studies was observed in the systematic review which led to limited subgroup analysis opportunities for ICU type and professional role, thus limiting the

extent to which trauma-related symptoms can be applied based on these characteristics. Recent research has indicated that less experienced ICU staff are at a higher risk of PTS symptoms (Li et al., 2021), but due to a lack of studies reporting years of ICU experience this was not included in the subgroup analysis. Similarly, the empirical paper described differences in autonomy, workload and staff support depending on professional role when working on NICU during pregnancy. Future research could benefit from focusing on professional roles within ICU settings such as nurses or allied health professionals to gain a deeper understanding of their experiences of working on ICU during pregnancy. Additionally, more PTS and STS prevalence studies in specialised ICU settings such as NICU and PICU, evaluating factors associated with trauma, such as years of experience, could indicate whether differences in trauma-related stress exist depending on ICU context or years worked in that setting.

In the empirical study, several HCPs reported that they sought therapeutic support either during or following their pregnancy experience on NICU, highlighting that psychological risk may persist following birth. This is consistent with evidence that the perinatal period is associated with mental health difficulties amongst parents (Manolova, 2023; NHS England, 2024). Given the heightened anxiety and stress described by HCPs during pregnancy, future research should explore how occupational trauma exposure during pregnancy influences postpartum adjustment and parent–infant relationships. Longitudinal designs could capture how anticipatory anxieties during pregnancy are carried forward, intensified, or resolved over time, and how ongoing NICU work intersects with early parenthood. Longitudinal research would also strengthen trauma-related prevalence studies in ICU settings. By tracking trauma-related symptoms over time, researchers could determine whether symptoms persist, fluctuate, or reduce, and whether post-traumatic growth emerges. Growing evidence suggests that nurses commonly experience post-traumatic growth, describing positive psychological changes following exposure to trauma (Wang et al., 2023). Examining both distress and growth trajectories may therefore provide a more nuanced understanding of psychological adaptation and support within ICU environments.

As highlighted in the limitations above, the systematic review relied solely on self-report measures to estimate STS and PTS symptoms in ICU staff. While such measures are helpful for estimating the prevalence of HCPs experiencing trauma-related stress, the self-report measures provide limited insight on how trauma is experienced within HCPs' personal

and professional lives. The empirical study demonstrates the value of qualitative research in highlighting difficulties such as anticipatory anxiety, hypervigilance, and the impact of professional knowledge on wellbeing. However, the study focuses on a single specialised ICU setting, during a specific life transition, limiting transferability. Additionally, although some HCPs described experiences suggestive of STS, this was not formally assessed in the study, limiting conclusions regarding the presence or severity of trauma-related stress in this population. Future research would benefit from mixed-methods designs that integrate trauma measures with qualitative exploration, to complement prevalence data with a richer understanding of how trauma is experienced while working in intensive care.

The National Institute for Health and Care Research (NIHR) (2022) recommends routine mental health screening for parents following a NICU admission, based on evidence demonstrating high levels of anxiety and PTS in this population. In contrast, little research has examined how early identification of trauma-related stress may be implemented for HCPs in ICU settings, despite literature demonstrating elevated levels of trauma in ICU staff (Gehisari et al., 2025; Kim & Im, 2024; Ong et al., 2016). Research has identified barriers to accessing psychological support in ICU contexts, including stigma and perceptions of psychological support as intimidating or inaccessible (Sutton & Norton, 2022). However, there remains limited evaluation of which forms of support are acceptable and beneficial for staff working in critical care. Future research should therefore examine the feasibility and impact of routine trauma screening alongside psychologically informed initiatives, such as wellbeing check-ins, reflective debriefs, and psychoeducation programmes. Intervention studies evaluating the impact of psychology provision and support within NICU settings may be particularly valuable, given the findings of the empirical study. Focusing research in this area would help to bridge gaps in the literature and inform evidence-based support for ICU staff.

Conclusion

This thesis portfolio contributes to the evidence base by advancing understanding of trauma-related stress among HCPs working in intensive care settings, with a particular focus on those working in NICU during pregnancy. The systematic review and meta-analysis demonstrated that STS and PTS symptoms are prevalent among staff working in intensive care environments and that such distress was not confined to the COVID pandemic alone, but

is an enduring occupational risk within ICU. The qualitative empirical study explored HCPs' lived experiences of working on NICU whilst pregnant and highlighted how occupational exposure to infant illness, premature birth, and loss shaped professionals' emotional wellbeing during a period of heightened vulnerability. The findings highlight a need for trauma-informed organisational practices across ICU settings that acknowledge the psychological impact of repeated exposure to acute illness, death, and ethical complexity. Ensuring accessible psychological support within ICU teams may facilitate reflective practice, structured debriefs, and contribute to reducing stigma associated with occupational distress. In particular, pregnant NICU staff may benefit from protected access to clinical psychology on the ward and clear screening and signposting to additional mental health support where required. By recognising the impact of trauma-related stress on ICU staff and implementing access to psychological support within the workplace, organisations can work towards improving staff mental health and wellbeing, supporting staff retention and ensuring the best delivery of care to patients (NHS Long Term Workforce Plan, 2023). Further research is required to expand these findings, particularly through exploring the experiences of different professional roles within ICU settings, the use of longitudinal designs, and the development and evaluation of system-level interventions that translate evidence into practice.

Thesis Portfolio References

Ageel, M., & Shbeer, A. (2022). Assessment of professional quality of life among critical care nurses during the COVID-19 pandemic in Saudi Arabia. *Journal of Healthcare Leadership, 14*, 175–182. https://doi.org/10.2147/JHL.S383575

Alderdice, F., Lynn, F., & Lobel, M. (2012). A review and psychometric evaluation of pregnancy-specific stress measures. *Journal of Psychosomatic Obstetrics & Gynecology, 33*(2), 62–77. https://doi.org/10.3109/0167482X.2012.673040

Alharbi, J., Jackson, D., & Usher, K. (2020). Compassion fatigue in critical care nurses and its impact on nurse-sensitive indicators in Saudi Arabian hospitals. *Australian Critical Care, 33*(6), 553–559. https://doi.org/10.1016/j.aucc.2020.02.002

Altmayer, V., Weiss, N., Cao, A., Marois, C., Demeret, S., Rohaut, B., & Le Guennec, L. (2020). Coronavirus disease 2019 crisis in Paris: A differential psychological impact between regular intensive care unit staff members and reinforcement workers. *Australian Critical Care, 34*(2), 142–150. https://doi.org/10.1016/j.aucc.2020.11.005

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). American Psychiatric Publishing.

Ariapooran, S., Ahadi, B., & Khezeli, M. (2022). Depression, anxiety, and suicidal ideation in nurses with and without symptoms of secondary traumatic stress during the COVID-19 outbreak. *Archives of Psychiatric Nursing, 37*, 76–81. https://doi.org/10.1016/j.apnu.2021.05.005

Ayers, S., Bond, R., Bertullies, S., & Wijma, K. (2016). The aetiology of post-traumatic stress following childbirth: A meta-analysis and theoretical framework. *Psychological Medicine, 46*(6), 1121–1134. https://doi.org/10.1017/S0033291715002706

Azoulay, E., Pochard, F., Argaud, L., Cariou, A., Clere-Jehl, R., Guisset, O., … Kentish-Barnes, N. (2024). Resilience and mental health symptoms in ICU healthcare professionals facing repeated COVID-19 waves. *American Journal of Respiratory and Critical Care Medicine, 209*(5), 573–583. https://doi.org/10.1164/rccm.202305-0806OC

Azoulay, E., Pochard, F., Reignier, J., Argaud, L., Bruneel, F., Courbon, P., … FAMIREA Study Group. (2021). Symptoms of mental health disorders in critical care physicians

facing the second COVID-19 wave: A cross-sectional study. *Chest, 160*(3), 944–955. https://doi.org/10.1016/j.chest.2021.05.023

Barendregt, J. J., Doi, S. A. R., Lee, Y. Y., Norman, R. E., & Vos, T. (2013). Meta-analysis of prevalence. *Journal of Epidemiology and Community Health, 67*(11), 974–978. https://doi.org/10.1136/jech-2013-203104

Barr, P. (2017). Compassion fatigue and compassion satisfaction in neonatal intensive care unit nurses: Relationships with work stress and perceived social support. *Traumatology, 23*(2), 214–222. https://doi.org/10.1037/trm0000115

Beadman, M., & Carraretto, M. (2023). Key elements of an evidence-based clinical psychology service within adult critical care. *Journal of the Intensive Care Society, 24*(2), 215–221. https://doi.org/10.1177/17511437211047178

Beck, C. T. (2011). Secondary traumatic stress in nurses: A systematic review. *Archives of Psychiatric Nursing, 25*(1), 1–10. https://doi.org/10.1016/j.apnu.2010.05.005

Beck, C. T., Cusson, R. M., & Gable, R. K. (2017). Secondary traumatic stress in NICU nurses: A mixed-methods study. *Advances in Neonatal Care, 17*(6), 478–488. https://doi.org/10.1097/ANC.0000000000000428

Bender, P. K., Sømhovd, M., Pons, F., Reinholdt-Dunne, M. L., & Esbjørn, B. H. (2015). The impact of attachment security and emotion dysregulation on anxiety in children and adolescents. *Emotional and Behavioural Difficulties, 20*(2), 189–204. https://doi.org/10.1080/13632752.2014.933510

Berger, R. (2015). Now I see it, now I don't: Researcher's position and reflexivity in qualitative research. *Qualitative Research, 15*(2), 219–234. https://doi.org/10.1177/1468794112468475

Bhaskar, R. (1998). *The possibility of naturalism: A philosophical critique of the contemporary human sciences* (3rd ed.). Routledge.

Bliss. (n.d.). *Improving access to support on neonatal units*. https://www.bliss.org.uk/improving-access-to-support

Boulton, A. J., Slowther, A. M., Yeung, J., & Bassford, C. (2023). Moral distress among intensive care unit professions in the UK: A mixed-methods study. *BMJ Open, 13*(4), e068918. https://doi.org/10.1136/bmjopen-2022-068918

Boutillier, B., Juneau, A. L., Reichherzer, M., Tremblay, C., & Janvier, A. (2025). Managing moral distress and complex ethical challenges in the NICU. *Seminars in Perinatology, 49*(3), 152050. https://doi.org/10.1016/j.semperi.2025.152050

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Braun, V., & Clarke, V. (2012). Thematic analysis. In H. Cooper, P. M. Camic, D. L. Long, A. T. Panter, D. Rindskopf, & K. J. Sher (Eds.), *APA handbook of research methods in psychology: Vol. 2. Research designs: Quantitative, qualitative, neuropsychological, and biological* (pp. 57–71). American Psychological Association. https://doi.org/10.1037/13620-004

Braun, V., & Clarke, V. (2022). *Thematic analysis: A practical guide.* SAGE.

Bucca, A., Ullrich, L., Rahman, A., Smith, C., Johnson, M., Allanson-Dundon, A., … Bendas, E. (2022). Unmasking the truth of health care workers' well-being during the COVID-19 pandemic. *Critical Care Nurse, 42*(4), 20–26. https://doi.org/10.4037/ccn2022769

Call, C. C., Eckstrand, K. L., Kasparek, S. W., Boness, C. L., Blatt, L., Jamal-Orozco, N., … Scholars for Elevating Equity and Diversity (SEED). (2023). An ethics and social-justice approach to collecting and using demographic data for psychological researchers. *Perspectives on Psychological Science, 18*(5), 979–995. https://doi.org/10.1177/17456916221137350

Chuang, C. H., Tseng, P. C., Lin, C. Y., Lin, K. H., & Chen, Y. Y. (2016). Burnout in the intensive care unit professionals: A systematic review. *Medicine, 95*(50), e5629. https://doi.org/10.1097/MD.0000000000005629

Church, S. (2014). Midwives' personal experiences of pregnancy and childbirth: Exploring issues of autonomy and agency in relation to the use of professional knowledge. *Human Fertility, 17*(3), 231–235. https://doi.org/10.3109/14647273.2014.949879

Cochran, W. G. (1954). The combination of estimates from different experiments. *Biometrics, 10*(1), 101–129. https://doi.org/10.2307/3001666

Colville, G. A., Smith, J. G., Brierley, J., Citron, K., Nguru, N. M., Shaunak, P. D., … Perkins-Porras, L. (2017). Coping with staff burnout and work-related posttraumatic stress in intensive care. *Pediatric Critical Care Medicine, 18*(7), e267–e273. https://doi.org/10.1097/PCC.0000000000001179

Coulton Stoliar, S., Dahlen, H. G., & Sheehan, A. (2022). Insider knowledge as a double-edged sword: An integrative review of midwives' personal childbearing experiences. *BMC Pregnancy and Childbirth, 22*(1), 640. https://doi.org/10.1186/s12884-022-04962-y

Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE Publications.

Curtis, J. R., & Vincent, J. L. (2010). Ethics and end-of-life care for adults in the intensive care unit. *The Lancet, 376*(9749), 1347–1353. https://doi.org/10.1016/S0140-6736(10)60143-2

Data Protection Act (2018). https://www.legislation.gov.uk/ukpga/2018/12/contents/enacted

de Jesus Silva, M. M., Peres Rocha Carvalho Leite, E., Alves Nogueira, D., & Clapis, M. J. (2016). Depression in pregnancy: Prevalence and associated factors. *Investigación y Educación en Enfermería, 34*(2), 342–350. https://doi.org/10.17533/udea.iee.v34n2a14

Dodgson, J. E. (2019). Reflexivity in qualitative research. *Journal of Human Lactation, 35*(2), 220–222. https://doi.org/10.1177/0890334419830990

Drabble, L., Trocki, K. F., Salcedo, B., Walker, P. C., & Korcha, R. A. (2016). Conducting qualitative interviews by telephone: Lessons learned from a study of alcohol use among sexual minority and heterosexual women. *Qualitative Social Work, 15*(1), 118–133. https://doi.org/10.1177/1473325015585613

Dussi, G., Bembich, S., Crevatin, R., Buchini, S., Schreiber, S., Bicego, L., & Dobrina, R. (2023). How is our job affecting us? Neonatal intensive care unit healthcare providers and their pregnancy: A descriptive qualitative study. *Journal of Advanced Nursing, 79*(10), 3776–3786. https://doi.org/10.1111/jan.15705

Duval, S., & Tweedie, R. (2000). Trim and fill: A simple funnel-plot–based method of testing and adjusting for publication bias in meta-analysis. *Biometrics, 56*(2), 455–463. https://doi.org/10.1111/j.0006-341X.2000.00455.x

Egger, M., Davey Smith, G., Schneider, M., & Minder, C. (1997). Bias in meta-analysis detected by a simple, graphical test. *BMJ, 315*(7109), 629–634. https://doi.org/10.1136/bmj.315.7109.629

Ekelöf, K., Tangen, G. A., Nyström, C. D., Löf, M., & Thomas, K. (2025). Mental wellbeing during pregnancy and the transition to motherhood: An explorative study through the lens of healthcare professionals. *BMC Pregnancy and Childbirth, 25*(1), 803. https://doi.org/10.1186/s12884-025-07894-5

Enlow, M. B., Egeland, B., Carlson, E., Blood, E., & Wright, R. J. (2014). Mother–infant attachment and the intergenerational transmission of posttraumatic stress disorder. *Development and Psychopathology, 26*(1), 41–65. https://doi.org/10.1017/S0954579413000515

Ergün, R., Ergün, D., & Ergan, B. (2016). Anxiety and depression in intensive care unit staff. *Journal of Critical and Intensive Care, 7*(3), 93–98.

Erickson, N., Julian, M., & Muzik, M. (2019). Perinatal depression, PTSD, and trauma: Impact on mother–infant attachment and interventions to mitigate the transmission of risk. *International Review of Psychiatry, 31*(3), 245–263. https://doi.org/10.1080/09540261.2018.1563529

Ervin, J. N., Weingart, L. R., & Shields, J. M. (2018). Teamwork in the intensive care unit. *American Psychologist, 73*(4), 433–445. https://doi.org/10.1037/amp0000247

Ezzat, A., Li, Y., Holt, J., & Komorowski, M. (2021). The global mental health burden of COVID-19 on critical care staff. *British Journal of Nursing, 30*(11), 634–642. https://doi.org/10.12968/bjon.2021.30.11.634

Favrod, C., Jan du Chêne, L., Martin Soelch, C., Garthus-Niegel, S., Tolsa, J. F., Legault, F., & Horsch, A. (2018). Mental health symptoms and work-related stressors in hospital midwives and NICU nurses: A mixed methods study. *Frontiers in Psychiatry, 9*, Article 364. https://doi.org/10.3389/fpsyt.2018.00364

Fawcett, E. J., Fairbrother, N., Cox, M. L., White, I. R., & Fawcett, J. M. (2019). The prevalence of anxiety disorders during pregnancy and the postpartum period: A multivariate Bayesian meta-analysis. *The Journal of Clinical Psychiatry, 80*(4), 18r12527. https://doi.org/10.4088/JCP.18r12527

Figley, C. R. (1995). *Compassion fatigue: Coping with secondary traumatic stress disorder in those who treat the traumatized*. Brunner/Mazel.

Fiske, E. (2018). Nurse stressors and satisfiers in the NICU. *Advances in Neonatal Care, 18*(4), 276–284. https://doi.org/10.1097/ANC.0000000000000514

Fournier, A., Deltour, V., Lheureux, F., Poujol, A. L., Ecarnot, F., Binquet, C., … Laurent, A. (2025). Association between burnout and PTSD, and perceived stress in the workplace among healthcare workers in the intensive care unit: A PsyCOVID-ICU substudy. *Psychology, Health & Medicine, 30*(4), 752–769. https://doi.org/10.1080/13548506.2025.2454038

Garten, L., Danke, A., Reindl, T., Prass, A., & Bührer, C. (2021). End-of-life care–related distress in the PICU and NICU: A cross-sectional survey in a German tertiary center. *Frontiers in Pediatrics, 9*, Article 709649. https://doi.org/10.3389/fped.2021.709649

Gehisari, Z., Hashemzadeh, E., Fazlizade, S., Razaghpour, H., Abdi, M., & Aghajari, M. A. (2025). Epidemiology of post-traumatic stress disorder in intensive care nurses: A

systematic review. *Iranian Journal of Public Health, 54*(12), 2566–2578. https://doi.org/10.18502/ijph.v54i12.20811

Giardinelli, L., Innocenti, A., Benni, L., Stefanini, M. C., Lino, G., Lunardi, C., … Faravelli, C. (2012). Depression and anxiety in perinatal period: Prevalence and risk factors in an Italian sample. *Archives of Women's Mental Health, 15*(1), 21–30. https://doi.org/10.1007/s00737-011-0249-8

Greenberg, N., Weston, D., Hall, C., Caulfield, T., Williamson, V., & Fong, K. (2021). Mental health of staff working in intensive care during COVID-19. *Occupational Medicine, 71*(2), 62–67. https://doi.org/10.1093/occmed/kqaa220

Guttormson, J. L., Calkins, K., McAndrew, N., Fitzgerald, J., Losurdo, H., & Loonsfoot, D. (2022). Critical care nurse burnout, moral distress, and mental health during the COVID-19 pandemic: A United States survey. *Heart & Lung, 55*, 127–133. https://doi.org/10.1016/j.hrtlng.2022.04.015

Hall, C. E., Milward, J., Spoiala, C., Bhogal, J. K., Weston, D., Potts, H. W., … Greenberg, N. (2022). The mental health of staff working on intensive care units over the COVID-19 winter surge of 2020 in England: A cross-sectional survey. *British Journal of Anaesthesia, 128*(6), 971–979. https://doi.org/10.1016/j.bja.2022.03.016

Harrington, J., Ford, C., Cortis, E., & Nicholson, K. (2025). COVID-19 pandemic sequelae: Mental health of cardiothoracic critical care nurses. *American Journal of Critical Care, 34*(4), e32–e36. https://doi.org/10.4037/ajcc2025123

Heesakkers, H., Zegers, M., van Mol, M. M., & van den Boogaard, M. (2021). The impact of the first COVID-19 surge on the mental well-being of ICU nurses: A nationwide survey study. *Intensive and Critical Care Nursing, 65*, 103034. https://doi.org/10.1016/j.iccn.2021.103034

Henderson, A., Jewell, T., Huang, X., & Simpson, A. (2025). Personal trauma history and secondary traumatic stress in mental health professionals: A systematic review. *Journal of Psychiatric and Mental Health Nursing, 32*(1), 13–30. https://doi.org/10.1111/jpm.13082

Hernández-Bojorge, S., Campos, A., Parikh, J., Beckstead, J., Lajeunesse, M., & Wildman, D. (2024). The prevalence and risk factors of PTSD symptoms among nurses during the COVID-19 pandemic: A systematic review and meta-analysis. *International Journal of Mental Health Nursing, 33*(3), 523–545. https://doi.org/10.1111/inm.13257

Higgins, J. P. T., & Altman, D. G. (2008). Assessing risk of bias in included studies. In J. P. T. Higgins & S. Green (Eds.), *Cochrane handbook for systematic reviews of interventions* (pp. 187–241). Wiley-Blackwell.

Higgins, J. P. T., & Thompson, S. G. (2002). Quantifying heterogeneity in a meta-analysis. *Statistics in Medicine, 21*(11), 1539–1558. https://doi.org/10.1002/sim.1186

Hoffman, C., Dunn, D. M., & Njoroge, W. F. (2017). Impact of postpartum mental illness upon infant development. *Current Psychiatry Reports, 19*(12), Article 100. https://doi.org/10.1007/s11920-017-0857-8

Hovland, I. S., Skogstad, L., Stafseth, S., Hem, E., Diep, L. M., Ræder, J., … Lie, I. (2023). Prevalence of psychological distress in nurses, physicians and leaders working in intensive care units during the COVID-19 pandemic: A national one-year follow-up study. *BMJ Open, 13*(12), e075190. https://doi.org/10.1136/bmjopen-2023-075190

Hu, M., Zhang, H., Wu, C., Li, L., Liang, X., Zhang, Y., & Lang, H. (2024). Relationship between moral resilience and secondary traumatic stress among ICU nurses: A cross-sectional study. *Nursing in Critical Care, 29*(6), 1363–1372. https://doi.org/10.1111/nicc.13120

Huang, H., Xia, Y., Zeng, X., & Lü, A. (2022). Prevalence of depression and depressive symptoms among intensive care nurses: A meta-analysis. *Nursing in Critical Care, 27*(6), 739–746. https://doi.org/10.1111/nicc.12734

Huang, Z. P., Huang, F., Liang, Q., Liao, F. Z., Tang, C. Z., Luo, M. L., & Wu, B. (2023). Socioeconomic factors, perceived stress, and social support effect on neonatal nurse burnout in China: A cross-sectional study. *BMC Nursing, 22*, Article 218. https://doi.org/10.1186/s12912-023-01380-z

Jameton, A. (1984). *Nursing practice: The ethical issues*. Prentice-Hall.

Jamieson, M. K., Govaart, G. H., & Pownall, M. (2023). Reflexivity in quantitative research: A rationale and beginner's guide. *Social and Personality Psychology Compass, 17*(4), e12735. https://doi.org/10.1111/spc3.12735

Jennings, H., Slade, M., Bates, P., Munday, E., & Toney, R. (2018). Best practice framework for patient and public involvement (PPI) in collaborative data analysis of qualitative mental health research: Methodology development and refinement. *BMC Psychiatry, 18*(1), 213. https://doi.org/10.1186/s12888-018-1794-8

Jeong, Y. J., & Shin, S. (2022). The relationship between secondary traumatic stress and burnout in critical care nurses: The mediating effect of resilience. *Intensive and Critical Care Nursing, 74*, 103327. https://doi.org/10.1016/j.iccn.2022.103327

Jones, G. A. L., Colville, G. A., Ramnarayan, P., Woolfall, K., Heward, Y., Morrison, R., … Inwald, D. P. (2019). Psychological impact of working in paediatric intensive care: A UK-wide prevalence study. *Archives of Disease in Childhood, 105*(5), 470–475. https://doi.org/10.1136/archdischild-2019-317439

Kader, N., Elhusein, B., Chandrappa, N. S. K., Nashwan, A. J., Chandra, P., Khan, A. W., & Alabdulla, M. (2021). Perceived stress and post-traumatic stress disorder symptoms among intensive care unit staff caring for severely ill coronavirus disease 2019 patients during the pandemic: A national study. *Annals of General Psychiatry, 20*(1), 38. https://doi.org/10.1186/s12991-021-00363-1

Kartsonaki, M. G., Georgopoulos, D., Kondili, E., Nieri, A. S., Alevizaki, A., Nyktari, V., & Papaioannou, A. (2022). Prevalence and factors associated with compassion fatigue, compassion satisfaction, and burnout in health professionals. *Nursing in Critical Care, 28*(2), 225–235. https://doi.org/10.1111/nicc.12769

KC, S., Gooden, T. E., Aryal, D., Koirala, K., Luitel, S., Haniffa, R., & Beane, A. (2024). The burden of anxiety, depression, and stress, along with the prevalence of symptoms of PTSD, and perceptions of the drivers of psychological harms, as perceived by doctors and nurses working in ICUs in Nepal during the COVID-19 pandemic: A mixed-method evaluation. *BMC Health Services Research, 24*(1), 450. https://doi.org/10.1186/s12913-024-10724-7

Kerai, S., Doda, P., & Saxena, K. N. (2022). Professional quality of life in intensive care unit professionals during the COVID-19 pandemic: A prospective observational cross-sectional study. *Indian Journal of Critical Care Medicine, 26*(5), 604. https://doi.org/10.5005/jp-journals-10071-24212

Kim, S., & Im, Y. (2024). Factors related to post-traumatic stress disorder symptoms among intensive care unit nurses. *Asian Nursing Research, 18*(2), 159–166. https://doi.org/10.1016/j.anr.2024.04.009

Kim, S., Jun, J., Carle, A. C., Hall, P., & Tubbs-Cooley, H. L. (2025). Association between perceived stress and burnout among neonatal intensive care nurses. *Advances in Neonatal Care*. https://doi.org/10.1097/ANC.0000000000001303

Kumar, A., Pore, P., Gupta, S., & Wani, A. O. (2016). Level of stress and its determinants among intensive care unit staff. *Indian Journal of Occupational and Environmental Medicine, 20*(3), 129–132.

Laurent, A., Fournier, A., Lheureux, F., Poujol, A. L., Deltour, V., Ecarnot, F., … Quenot, J. P. (2022). Risk and protective factors for the possible development of post-traumatic

stress disorder among intensive care professionals in France during the first peak of the COVID-19 epidemic. *European Journal of Psychotraumatology, 13*(1), 2011603. https://doi.org/10.1080/20008198.2021.2011603

Lee, H., Chang, H. E., & Ha, J. (2020). Nurses' clinical work experience during pregnancy. *Healthcare, 9*(1), Article 16. https://doi.org/10.3390/healthcare9010016

Levi, P., & Moss, J. (2022). Intensive care unit nurses' lived experiences of psychological stress and trauma caring for COVID-19 patients. *Workplace Health & Safety, 70*(8), 358–367. https://doi.org/10.1177/21650799211064262

Levitt, H. M., Motulsky, S. L., Wertz, F. J., Morrow, S. L., & Ponterotto, J. G. (2017). Recommendations for designing and reviewing qualitative research in psychology: Promoting methodological integrity. *Qualitative Psychology, 4*(1), 2–22. https://doi.org/10.1037/qup0000082

Li, P., Kuang, H., & Tan, H. (2021). The occurrence of post-traumatic stress disorder (PTSD), job burnout and its influencing factors among ICU nurses. *American Journal of Translational Research, 13*(7), 8302–8308.

Li, Y., Scherer, N., Felix, L., & Kuper, H. (2021). Prevalence of depression, anxiety and post-traumatic stress disorder in health care workers during the COVID-19 pandemic: A systematic review and meta-analysis. *PLOS ONE, 16*(3), e0246454. https://doi.org/10.1371/journal.pone.0246454

Lima-Setta, F., de Moraes, C. L., Silami, P. H. N. C., Reichenheim, M. E., de Mello, J. F., Stochero, L., … de Magalhães-Barbosa, M. C. (2022). Mental health and emotional disorders during the COVID-19 pandemic: Prevalence and extent in PICU staff. *Pediatric Critical Care Medicine, 24*(4), 277. https://doi.org/10.1097/PCC.0000000000003119

Maben, J., *et al.* (2024). *Care under pressure 2: A realist synthesis of causes of psychological ill-health and interventions to mitigate psychological ill-health in nurses, midwives and paramedics*. NIHR Health Services and Delivery Research, 12(9). https://doi.org/10.3310/TWDU4109

Malterud, K., Siersma, V. D., & Guassora, A. D. (2016). Sample size in qualitative interview studies: Guided by information power. *Qualitative Health Research, 26*(13), 1753–1760. https://doi.org/10.1177/1049732315617444

Manolova, G., Waqas, A., Chowdhary, N., Salisbury, T. T., & Dua, T. (2023). *Integrating perinatal mental healthcare into maternal and perinatal services in low and middle income countries*. BMJ, 381, e073343. https://doi.org/10.1136/bmj-2022-073343

Marshall, J. C., Bosco, L., Adhikari, N. K., Connolly, B., Diaz, J. V., Dorman, T., … Zimmerman, J. (2017). What is an intensive care unit? A report of the task force of the World Federation of Societies of Intensive and Critical Care Medicine. *Journal of Critical Care, 37*, 270–276. https://doi.org/10.1016/j.jcrc.2016.07.015

Maslach, C., & Leiter, M. P. (2016). Understanding the burnout experience: Recent research and its implications for psychiatry. *World Psychiatry, 15*(2), 103–111. https://doi.org/10.1002/wps.20311

Maslach, C., Jackson, S. E., & Leiter, M. P. (1997). *Maslach burnout inventory manual* (3rd ed.). Scarecrow Education.

Mason, V. M., Leslie, G., Clark, K., Lyons, P., Walke, E., Butler, C., & Griffin, M. (2014). Compassion fatigue, moral distress, and work engagement in surgical intensive care unit trauma nurses: A pilot study. *Dimensions of Critical Care Nursing, 33*(4), 215–225. https://doi.org/10.1097/DCC.0000000000000056

Mathew, C., & Mathew, C. (2023). How much is too much! The prevalence of post-traumatic stress disorder symptoms in critical care nurses of tertiary care hospitals in South India: A multicenter cross-sectional cohort study. *Indian Journal of Critical Care Medicine, 27*(5), 330. https://doi.org/10.5005/jp-journals-10071-24448

Mealer, M. L., Shelton, A., Berg, B., Rothbaum, B., & Moss, M. (2006). Increased prevalence of post-traumatic stress disorder symptoms in critical care nurses. *American Journal of Respiratory and Critical Care Medicine, 175*(7), 693–697. https://doi.org/10.1164/rccm.200606-735OC

Mealer, M., Jones, J., Newman, J., McFann, K. K., Rothbaum, B., & Moss, M. (2011). The presence of resilience is associated with a healthier psychological profile in ICU nurses: Results of a national survey. *International Journal of Nursing Studies, 49*(3), 292–299. https://doi.org/10.1016/j.ijnurstu.2011.09.015

Mental Health Foundation. (2021). *State of a generation: Upheaval, uncertainty and change — The mental health of adults in Great Britain during 2021* (Report). https://www.mentalhealth.org.uk/sites/default/files/2022-08/MHF-state-of-a-generation-upheaval-uncertainty-and-change-report-2021.pdf

Mersin, S., İbrahimoğlu, Ö., Naldan, M. E., & Arslanoğlu, A. (2025). The relationship between post-traumatic stress disorder and sleep quality in intensive care unit professionals. *Nursing in Critical Care, 30*(2), e13276. https://doi.org/10.1111/nicc.13276

Millar, H. L. (2019). The UK NHS experience of burnout: Time for action. *International Journal of Person Centered Medicine, 9*(3), 7–18. https://doi.org/10.5750/ijpcm.v9i3.994

Morley, G. (2018). What is "moral distress" in nursing? How, can and should we respond to it? *Journal of Clinical Nursing, 27*(19–20), 3443–3445. https://doi.org/10.1111/jocn.14332

Morrow, S. L. (2005). Quality and trustworthiness in qualitative research in counseling psychology. *Journal of Counseling Psychology, 52*(2), 250–260. https://doi.org/10.1037/0022-0167.52.2.250

Moss, M., Good, V. S., Gozal, D., Kleinpell, R., & Sessler, C. N. (2016). An official critical care societies collaborative statement: Burnout syndrome in critical care health care professionals: A call for action. *American Journal of Critical Care, 25*(4), 368–376. https://doi.org/10.1097/CCM.0000000000001885

Munn, Z., Moola, S., Riitano, D., & Lisy, K. (2015). The development of a critical appraisal tool for use in systematic reviews addressing questions of prevalence. *International Journal of Health Policy and Management, 4*(9), 597–602. https://doi.org/10.15171/ijhpm.2014.71

Nagle, U., Naughton, S., Ayers, S., Cooley, S., Duffy, R. M., & Dikmen-Yildiz, P. (2022). A survey of perceived traumatic birth experiences in an Irish maternity sample–prevalence, risk factors and follow up. *Midwifery, 113*, Article 103419. https://doi.org/10.1016/j.midw.2022.103419

National Institute for Health and Care Research. (2022). *Neonatal care: Parents may need long-term psychological support* (NIHR Evidence alert). https://evidence.nihr.ac.uk/alert/neonatal-care-parents-may-need-long-term-psychological-support/

National Institute for Health and Care Research. (2022). *Payment guidance for researchers and professionals*. https://www.nihr.ac.uk/documents/payment-guidance-for-researchers-and-professionals/27392

Neonatal Consultant Clinical Psychologists and ODN Psychology Leads. (2022). *Psychology staffing on the neonatal unit: Recommendations for psychological provision*. https://hubble-live-assets.s3.amazonaws.com/bapm/redactor2_assets/files/1241/Psychology_Staffing_on_the_Neonatal_Unit.pdf

NHS England. (2019). *The NHS long term plan*. https://www.longtermplan.nhs.uk/publication/nhs-long-term-plan/

NHS England. (2023). *NHS Long Term Workforce Plan*. https://www.england.nhs.uk/publication/nhs-long-term-workforce-plan/

NHS England. (2024, May 2). *Record numbers of women accessing perinatal mental health support*.https://www.england.nhs.uk/2024/05/record-numbers-of-women-accessing-perinatal-mental-health-support/

Oates, M., & Cantwell, R. (2011). Deaths from psychiatric causes. *BJOG: An International Journal of Obstetrics and Gynaecology, 118*(Suppl 1), 132–142. https://doi.org/10.1111/j.1471-0528.2010.02847.x

Ong, Y. Z., Siddiqui, S., John, S., Chen, Z., & Chang, S. (2016). The prevalence of post-traumatic stress disorder in intensive care unit staff and the common coping strategies used. *Annals of the Academy of Medicine, Singapore, 45*(5), 215–218. https://doi.org/10.47102/annals-acadmedsg.v45n5p215

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., … Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ, 372*, n71. https://doi.org/10.1136/bmj.n71

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and Policy in Mental Health and Mental Health Services Research, 42*(5), 533–544. https://doi.org/10.1007/s10488-013-0528-y

Papazian, L., Hraiech, S., Loundou, A., Herridge, M. S., & Boyer, L. (2023). High-level burnout in physicians and nurses working in adult ICUs: A systematic review and meta-analysis. *Intensive Care Medicine, 49*(4), 387–400. https://doi.org/10.1007/s00134-023-07025-8

Pestana, D. V. S., Raglione, D., Junior, L. D., Liberatti, C. D. S. P., Braga, E. C., Ezequiel, V. A. D. L., … Malbouisson, L. M. S. (2022). Stress and substance abuse among workers during the COVID-19 pandemic in an intensive care unit: A cross-sectional study. *PLoS ONE, 17*(2), e0263892. https://doi.org/10.1371/journal.pone.0263892

Qian, J., Wang, W., Sun, S., Liu, L., Sun, Y., & Yu, X. (2022). Interventions to reduce post-traumatic stress disorder symptoms in healthcare professionals from 2011 to 2021: A scoping review. *BMJ Open, 12*(1), e058214. https://doi.org/10.1136/bmjopen-2021-058214

Quinn, A., Ji, P., & Nackerud, L. (2019). Predictors of secondary traumatic stress among social workers: Supervision, income, and caseload size. *Journal of Social Work, 19*(4), 504–528. https://doi.org/10.1177/1468017318762450

Ramírez-Elvira, S., Romero-Bejar, J. L., Suleiman-Martos, N., Gómez-Urquiza, J. L., Monsalve-Reyes, C., Cañadas-De la Fuente, G. A., & Albendín-García, L. (2021). Prevalence, risk factors and burnout levels in intensive care unit nurses: A systematic review and meta-analysis. *International Journal of Environmental Research and Public Health, 18*(21), Article 11432. https://doi.org/10.3390/ijerph182111432

Ravaldi, C., Mosconi, L., Mannetti, L., Checconi, M., Bonaiuti, R., Ricca, V., & Vannacci, A. (2023). Post-traumatic stress symptoms and burnout in healthcare professionals working in neonatal intensive care units: Results from the STRONG study. *Frontiers in Psychiatry, 14*, Article 1050236. https://doi.org/10.3389/fpsyt.2023.1050236

Roberts, T., Daniels, J., Hulme, W., Hirst, R., Horner, D., Lyttle, M. D., … Carlton, E. (2021). Psychological distress and trauma in doctors providing frontline care during the COVID-19 pandemic in the United Kingdom and Ireland: A prospective longitudinal survey cohort study. *BMJ Open, 11*(7), e049680. https://doi.org/10.1136/bmjopen-2021-049680

Rodney, T., Heidari, O., Miller, H. N., Thornton, C. P., Jenkins, E., & Kang, H. K. (2022). Posttraumatic stress disorder in nurses in the United States: Prevalence and effect on role. *Journal of Nursing Management, 30*(1), 226–233. https://doi.org/10.1111/jonm.13478

Rodríguez-Rey, R., Palacios, A., Alonso-Tapia, J., Pérez, E., Álvarez, E., Coca, A., … Llorente, A. (2019). Burnout and posttraumatic stress in paediatric critical care personnel: Prediction from resilience and coping styles. *Australian Critical Care, 32*(1), 46–53. https://doi.org/10.1016/j.aucc.2018.02.003

Roger, C., Ling, L., Petrier, M., Elotmani, L., Atchade, E., Allaouchiche, B., … Laupland, K. (2024). Occurrences of post-traumatic stress disorder, anxiety, depression, and burnout syndrome in ICU staff workers after two years of the COVID-19 pandemic: The international PSY-CO in ICU study. *Annals of General Psychiatry, 23*(1), 3. https://doi.org/10.1186/s12991-023-00488-5

Sanaie, N., Sarmadi, S., & Zare-Kaseb, A. (2025). Prevalence of poor sleep quality among critical care unit nurses: A systematic review and meta-analysis. *BMC Nursing, 24*(1), 1446. https://doi.org/10.1186/s12912-025-04094-6

Sanfilippo, F., Palumbo, G. J., Noto, A., Pennisi, S., Mineri, M., Vasile, F., & Astuto, M. (2020). Prevalence of burnout among intensive care physicians: A systematic review. *Revista Brasileira de Terapia Intensiva, 32*, 458–467. https://doi.org/10.5935/0103-507X.20200076

Schuster, M., & Dwyer, P. A. (2020). Post-traumatic stress disorder in nurses: An integrative review. *Journal of Clinical Nursing, 29*(15-16), 2769–2787. https://doi.org/10.1111/jocn.15288

Sendler, D. J., Rutkowska, A., & Makara-Studzinska, M. (2016). How the exposure to trauma has hindered physicians' capacity to heal: Prevalence of PTSD among healthcare workers. *The European Journal of Psychiatry, 30*(4), 321–334. http://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S0213-61632016000400007&lng=en

Sharma, P., Davey, A., Davey, S., Shukla, A., Shrivastava, K., & Bansal, R. (2014). Occupational stress among staff nurses: Controlling the risk to health. *Indian Journal of Occupational and Environmental Medicine, 18*(2), 52–56. https://pmc.ncbi.nlm.nih.gov/articles/PMC4280777/

Sharma, V., Mishra, B. R., Gupta, M. K., Garg, A., & Malathi, L. (2025). Mental health challenges among neonatal intensive care unit (NICU) healthcare workers: A study on burnout, anxiety, and coping strategies during high-stress care. *Vascular and Endovascular Review, 8*(13s), 256–261. https://verjournal.com/index.php/ver/article/view/1018

Sk Abd Razak, R., Ismail, A., Abdul Aziz, A. F., Suddin, L. S., Azzeri, A., & Sha'ari, N. I. (2024). Post-COVID syndrome prevalence: A systematic review and meta-analysis. *BMC Public Health, 24*(1), 1785. https://doi.org/10.1186/s12889-024-19264-5

Spencer, S. A., Nolan, J. P., Osborn, M., & Georgiou, A. (2019). The presence of psychological trauma symptoms in resuscitation providers and an exploration of debriefing practices. *Resuscitation, 142*, 175–181. https://doi.org/10.1016/j.resuscitation.2019.06.280

Stafseth, S. K., Skogstad, L., Ræder, J., Hovland, I. S., Hovde, H., Ekeberg, Ø., & Lie, I. (2022). Symptoms of anxiety, depression, and post-traumatic stress disorder in health

care personnel in Norwegian ICUs during the first wave of the COVID-19 pandemic: A prospective, observational cross-sectional study. *International Journal of Environmental Research and Public Health, 19*(12), 7010. https://doi.org/10.3390/ijerph19127010

Stamm, B. H. (2010). *The concise ProQOL manual*. ProQOL.org.

Sutton, J., & Austin, Z. (2015). Qualitative research: Data collection, analysis, and management. *The Canadian Journal of Hospital Pharmacy, 68*(3), 226–231. https://doi.org/10.4212/cjhp.v68i3.1456

Sutton, O. R., & Norton, E. A. (2022). Psychological needs of critical care staff and barriers to accessing support: A qualitative study. *Nursing & Health Sciences, 24*(3), 652–660. https://doi.org/10.1111/nhs.12958

Swapnil, B., Harshali, R., & Snehal, C. (2016). Prevalence of low mental health among nurses in medical intensive care units. *International Journal of Contemporary Medical Research, 3*(8), 2444–2447.

Tabachnick, A. R., He, Y., Zajac, L., Carlson, E. A., & Dozier, M. (2022). Secure attachment in infancy predicts context-dependent emotion expression in middle childhood. *Emotion, 22*(2), 258–272. https://doi.org/10.1037/emo0000985

Tuffrey-Wijne, I., & Butler, G. (2010). Co-researching with people with learning disabilities: An experience of involvement in qualitative data analysis. *Health Expectations, 13*(2), 174–184. https://doi.org/10.1111/j.1369-7625.2009.00576.x

UK National Neonatal Audit Programme. (2017). *National Neonatal Audit Programme (NNAP) annual report on 2016 data*. Royal College of Paediatrics and Child Health.

Urooj, R., Sarwar, H., Javed, S., Mushtaq, A., & Ernest, M. (2025). Stress among intensive care unit nurses in private hospitals. *Journal of Health, Wellness and Community Research*, e1020. https://doi.org/10.61919/m3ecg059

Velasco, J., Sanmartín, F. J., Cuadrado, F., & Moriana, J. A. (2025). Prevalence of secondary trauma, compassion fatigue and burnout among trauma therapists in Spain. *Counselling and Psychotherapy Research, 25*(1), Article e12901. https://doi.org/10.1002/capr.12901

Viechtbauer, W. (2010). Conducting meta-analyses in R with the metafor package. *Journal of Statistical Software, 36*(3), 1–48. https://doi.org/10.18637/jss.v036.i03

Wang, L., Zhang, X., Zhang, M., Wang, L., Tong, X., Song, N., … Hu, T. (2024). Risk and prediction of job burnout in responding nurses to public health emergencies. *BMC Nursing, 23*(1), 46. https://doi.org/10.1186/s12912-024-01714-5

Welp, A., Meier, L. L., & Manser, T. (2016). The interplay between teamwork, clinicians' emotional exhaustion, and clinician-rated patient safety: A longitudinal study. *Critical Care, 20*(1), Article 110. https://doi.org/10.1186/s13054-016-1282-9

Wojnar-Gruszka, K., Miernik, M., Cichoń, J., Liberacka-Lenart, D., Płaszewska-Żywko, L., & Potocka, M. (2025). Prevalence of the symptoms of post-traumatic stress disorder (PTSD) and burnout syndrome (BOS) among intensive care unit (ICU) healthcare workers during the COVID-19 pandemic. *Psychology, Health & Medicine, 30*(4), 770–781. https://doi.org/10.1080/13548506.2025.2455468

Wong, J. Q. H., Charles, J. S., Mok, H. T., Tan, T. S. Z., Amin, Z., & Ng, Y. P. M. (2023). Experiences of healthcare personnel with death in the neonatal intensive care unit: A systematic review of qualitative studies. *Archives of Disease in Childhood–Fetal and Neonatal Edition, 108*(6), 617–622. https://doi.org/10.1136/archdischild-2023-325566

World Health Organization. (2016). *WHO recommendations on antenatal care for a positive pregnancy experience.* World Health Organization. https://www.who.int/publications/i/item/9789241549912

Wu, B., Liao, Y., Kang, Z., Kong, Q., Zhang, H., Di, Z., & Wang, M. (2025). Psychological impact of COVID-19 on redeployed nurses in China: A cross-sectional survey. *Nursing Open, 12*(7), e70277. https://doi.org/10.1002/nop2.70277

Xu, G., Zeng, X., & Wu, X. (2023). Global prevalence of turnover intention among intensive care nurses: A meta-analysis. *Nursing in Critical Care, 28*(2), 159–166. https://doi.org/10.1111/nicc.12679

Zhang, H., Ye, Z., Tang, L., Zou, P., Du, C., Shao, J., & Mu, S. Y. (2020). Anxiety symptoms and burnout among Chinese medical staff of intensive care unit: The moderating effect of social support. *BMC Psychiatry, 20*(1), Article 197. https://doi.org/10.1186/s12888-020-02603-2

Appendices

Appendix A: Author Guidelines for the *British Journal of Clinical Psychology*

AUTHOR GUIDELINES

Sections

1. Submission
2. Aims and Scope
3. Manuscript Categories and Requirements
4. Preparing the Submission
5. Editorial Policies and Ethical Considerations
6. Author Licensing
7. Publication Process After Acceptance
8. Post Publication
9. Editorial Office Contact Details

1. SUBMISSION

Authors should kindly note that submission implies that the content has not been published or submitted for publication elsewhere except as a brief abstract in the proceedings of a scientific meeting or symposium.

New submissions should be made via the Research Exchange submission portal. You may check the status of your submission at any time by logging on to submission.wiley.com and clicking the "My Submissions" button. For technical help with the submission system, please review our FAQs or contact submissionhelp@wiley.com.

All papers published in the *British Journal of Clinical Psychology* are eligible for Panel A: Psychology, Psychiatry and Neuroscience in the Research Excellence Framework (REF).

Data protection:

By submitting a manuscript to or reviewing for this publication, your name, email address, and affiliation, and other contact details the publication might require, will be used for the regular operations of the publication, including, when necessary, sharing with the publisher (Wiley) and partners for production and publication. The publication and the publisher recognize the importance of protecting the personal information collected from users in the operation of these services, and have practices in place to ensure that steps are taken to maintain the security, integrity, and privacy of the personal data collected and processed. You can learn more at https://authorservices.wiley.com/statements/data-protection-policy.html.

Preprint policy:

This journal will consider for review articles previously available as preprints. Authors may also post the submitted version of a manuscript to a preprint server at any time. Authors

are requested to update any pre-publication versions with a link to the final published article.

2. AIMS AND SCOPE

The *British Journal of Clinical Psychology* publishes original research, both empirical and theoretical, on all aspects of clinical psychology:

- clinical and abnormal psychology featuring descriptive or experimental studies
- aetiology, assessment and treatment of the whole range of psychological disorders irrespective of age group and setting
- biological influences on individual behaviour
- studies of psychological interventions and treatment on individuals, dyads, families and groups

For specific submission requirements, read the Author Guidelines.

The Journal is catholic with respect to the range of theories and methods used to answer substantive scientific problems. Studies of samples with no current psychological disorder will only be considered if they have a direct bearing on clinical theory or practice.

The following types of paper are invited:

- papers reporting original empirical investigations;
- theoretical papers, provided that these are sufficiently related to empirical data;
- review articles, which need not be exhaustive, but which should give an interpretation of the state of research in a given field and, where appropriate, identify its clinical implications;
- Brief Reports and Comments.

3. MANUSCRIPT CATEGORIES AND REQUIREMENTS

Papers describing quantitative research should be no more than 5000 words (excluding the abstract, reference list, tables and figures). Papers describing qualitative research (including reviews with qualitative analyses) should be no more than 6000 words (including quotes, whether in the text or in tables, but excluding the abstract, tables, figures and references). Brief reports should not exceed 2000 words and should have no more than one table or figure. Any papers that are over this word limit will be returned to the authors. Appendices are included in the word limit; however online appendices are not included.

In exceptional cases the Editor retains discretion to publish papers beyond this length where the clear and concise expression of the scientific content requires greater length (e.g., explanation of a new theory or a substantially new method). Authors must contact the Editor prior to submission in such a case.

Refer to the separate guidelines for Registered Reports.

All systematic reviews/meta-analyses must be pre-registered and an anonymous link to the pre-registration must be provided in the main document, so that it is available to reviewers. Systematic reviews without pre-registration details will be returned to the authors at submission. It is also expected that the search for the systematic review/meta-analysis will have been conducted within 12 months of the submission date. Manuscripts with searches that are older than 12 months will be rejected.

BJCP publishes commentaries by invitation only; unsolicited commentaries cannot be considered.

4. PREPARING THE SUBMISSION

Free Format Submission

British Journal of Clinical Psychology now offers free format submission for a simplified and streamlined submission process.

Before you submit, you will need:

- Your manuscript: this can be a single file including text, figures, and tables, or separate files – whichever you prefer (If you do submit separate files, we encourage you to also include your figures within the main document to make it easier for editors and reviewers to read your manuscript, but this is not compulsory). All required sections should be contained in your manuscript, including abstract, introduction, methods, results, and conclusions. Figures and tables should have legends. References may be submitted in any style or format, as long as it is consistent throughout the manuscript. If the manuscript, figures or tables are difficult for you to read, they will also be difficult for the editors and reviewers. If your manuscript is difficult to read, the editorial office may send it back to you for revision.
- The title page of the manuscript, including a data availability statement and your co-author details with affiliations. *(Why is this important? We need to keep all co-authors informed of the outcome of the peer review process.)* You may like to use this template for your title page.

Important: the journal operates a double-anonymous peer review policy. Anonymise your manuscript and prepare a separate title page containing author details. *(Why is this important? We need to uphold rigorous ethical standards for the research we consider for publication.)*

- An ORCID ID, freely available at https://orcid.org. *(Why is this important? Your article, if accepted and published, will be attached to your ORCID profile. Institutions and funders are increasingly requiring authors to have ORCID IDs.)*

To submit, login at https://wiley.atyponrex.com/journal/BJC and create a new submission. Follow the submission steps as required and submit the manuscript.

If you are invited to revise your manuscript after peer review, the journal will also request the revised manuscript to be formatted according to journal requirements as described below.

Revised Manuscript Submission

Contributions must be typed in double spacing. All sheets must be numbered.

Cover letters are not mandatory; however, they may be supplied at the author's discretion.

Parts of the Manuscript

The manuscript should be submitted in separate files: title page; main text file; figures/tables; supporting information.

Title Page

You may like to use this template for your title page. The title page should contain**:**

i. A short informative title containing the major key words. The title should not contain abbreviations (see Wiley's best practice SEO tips);
ii. A short running title of less than 40 characters;
iii. The full names of the authors;
iv. The author's institutional affiliations where the work was conducted, with a footnote for the author's present address if different from where the work was conducted;
v. Abstract;
vi. Keywords
vii. Data availability statement (see Data Sharing and Data Accessibility Policy);
viii. Acknowledgments.

Author Contributions

For all articles, the journal mandates the CRediT (Contribution Roles Taxonomy)—more information is available on our Author Services site.

Abstract

Please provide a structured abstract under the headings: Objectives, Methods, Results, Conclusions. For Articles, the abstract should not exceed 250 words. For Brief Reports, abstracts should not exceed 120 words.

Articles which report original scientific research should also include a heading 'Design' before 'Methods'. The 'Methods' section for systematic reviews and theoretical papers should include, as a minimum, a description of the methods the author(s) used to access

the literature they drew upon. That is, the abstract should summarize the databases that were consulted and the search terms that were used.

Keywords

Provide appropriate keywords.

Acknowledgments

Contributions from anyone who does not meet the criteria for authorship should be listed, with permission from the contributor, in an Acknowledgments section. Financial and material support should also be mentioned. Thanks to anonymous reviewers are not appropriate.

Practitioner Points

All articles must include Practitioner Points – these are 2-4 bullet points, following the abstract, with the heading 'Practitioner Points'. These should briefly and clearly outline the relevance of your research to professional practice.

Main Text File

As papers are double-anonymous peer reviewed, the main text file should not include any information that might identify the authors. Links to repositories (e.g., OSF) should also be anonymized.

Manuscripts can be uploaded either as a single document (containing the main text, tables and figures), or with figures and tables provided as separate files. Should your manuscript reach revision stage, figures and tables must be provided as separate files. The main manuscript file can be submitted in Microsoft Word (.doc or .docx) or LaTex (.tex) format.

If submitting your manuscript file in LaTex format via Research Exchange, select the file designation "Main Document – LaTeX .tex File" on upload. When submitting a LaTex Main Document, you must also provide a PDF version of the manuscript for Peer Review. Please upload this file as "Main Document - LaTeX PDF." All supporting files that are referred to in the LaTex Main Document should be uploaded as a "LaTeX Supplementary File."

LaTex Guidelines for Post-Acceptance:

Please check that you have supplied the following files for typesetting post-acceptance:

- PDF of the finalized source manuscript files compiled without any errors.

- The LaTeX source code files (text, figure captions, and tables, preferably in a single file), BibTex files (if used), any associated packages/files along with all other files needed for compiling without any errors. This is particularly important if authors have used any LaTeX style or class files, bibliography files (.bbl, .bst. .blg) or packages apart from those used in the NJD LaTex Template class file.
- Electronic graphics files for the illustrations in Encapsulated PostScript (EPS), PDF or TIFF format. Authors are requested not to create figures using LaTeX codes.

Your main document file should include:

- A short informative title containing the major key words. The title should not contain abbreviations;
- Abstract structured (objectives/methods/results/conclusions);
- Up to seven keywords;
- Practitioner Points: Authors will need to provide no more than 2-4 bullet points, written with the practitioner in mind, that summarize the key messages of their paper to be published with their article;
- Main body: formatted as introduction, materials & methods, results, discussion, conclusion;
- References;
- Tables (each table complete with title and footnotes);
- Figure legends: Legends should be supplied as a complete list in the text. Figures should be uploaded as separate files (see below).

Supporting information should be supplied as separate files. Tables and figures can be included at the end of the main document or attached as separate files but they must be mentioned in the text.

- As papers are double-anonymous peer reviewed, the main text file should not include any information that might identify the authors. Do not mention the authors' names or affiliations and always refer to any previous work in the third person.
- The journal uses British/US spelling; however, authors may submit using either option, as spelling of accepted papers is converted during the production process.

References

This journal uses APA reference style; as the journal offers Free Format submission, however, this is for information only and you do not need to format the references in your article. This will instead be taken care of by the typesetter.

Tables

Tables should be self-contained and complement, not duplicate, information contained in the text. They should be supplied as editable files, not pasted as images. Legends should be concise but comprehensive – the table, legend, and footnotes must be understandable without reference to the text. All abbreviations must be defined in footnotes. Footnote symbols: †, ‡, §, ¶, should be used (in that order) and *, **, *** should be reserved for P-values. Statistical measures such as SD or SEM should be identified in the headings.

Figures

Although authors are encouraged to send the highest-quality figures possible, for peer-review purposes, a wide variety of formats, sizes, and resolutions are accepted.

Click here for the basic figure requirements for figures submitted with manuscripts for initial peer review, as well as the more detailed post-acceptance figure requirements.

Legends should be concise but comprehensive – the figure and its legend must be understandable without reference to the text. Include definitions of any symbols used and define/explain all abbreviations and units of measurement.

Supporting Information

Supporting information is information that is not essential to the article, but provides greater depth and background. It is hosted online and appears without editing or typesetting. It may include tables, figures, videos, datasets, etc.

Wiley's FAQs on supporting information.

Note: if data, scripts, or other artefacts used to generate the analyses presented in the paper are available via a publicly available data repository, authors should include a reference to the location of the material within their paper.

General Style Points

For guidelines on editorial style, please consult the APA Publication Manual published by the American Psychological Association. The following points provide general advice on formatting and style.

- **Language:** Authors must avoid the use of sexist or any other discriminatory language. The BPS's Inclusive Language Guidance provides a set of recommendations to support the key principles of inclusivity in writing.
- **Abbreviations:** In general, terms should not be abbreviated unless they are used repeatedly and the abbreviation is helpful to the reader. Initially, use the word in full, followed by the abbreviation in parentheses. Thereafter use the abbreviation only.
- **Units of measurement:** Measurements should be given in SI or SI-derived units. Visit the Bureau International des Poids et Mesures (BIPM) website for more information about SI units.
- **Effect size:** In normal circumstances, effect size should be incorporated.
- **Numbers:** numbers under 10 are spelt out, except for: measurements with a unit (8mmol/l); age (6 weeks old), or lists with other numbers (11 dogs, 9 cats, 4 gerbils).

Wiley Author Resources

Manuscript Preparation Tips: Wiley has a range of resources for authors preparing manuscripts for submission available here. In particular, we encourage authors to consult Wiley's best practice tips on Writing for Search Engine Optimization.

Article Preparation Support: Wiley Editing Services offers expert help with English Language Editing, as well as translation, manuscript formatting, figure illustration, figure formatting, and graphical abstract design – so you can submit your manuscript with confidence.

Also, check out our resources for Preparing Your Article for general guidance and the BPS Publish with Impact infographic for advice on optimizing your article for search engines.

ECR Best Paper Award

The BPS Early Career Researcher Best Paper Award is open to researchers and practitioners who completed their highest degree no more than five years ago. Please read full terms and criteria before applying. Those who wish to apply can opt-in to the question when submitting their manuscript for peer review.

5. EDITORIAL POLICIES AND ETHICAL CONSIDERATIONS

Peer Review and Acceptance

Except where otherwise stated, the journal operates a policy of anonymous (double-anonymous) peer review. Please ensure that any information which may reveal author identity is anonymized in your submission, such as institutional affiliations, geographical location or references to unpublished research. We also operate a triage process in which submissions that are out of scope or otherwise inappropriate will be rejected by the editors without external peer review. Before submitting, read the terms and conditions of submission and the declaration of competing interests.

We aim to provide authors with a first decision within 90 days of submission.

Further information about the process of peer review and production can be found in 'What happens to my paper?' Read Wiley's policy on the confidentiality of the review process.

Appeals Procedure

Authors may appeal an editorial decision if they feel that the decision to reject was based on either a significant misunderstanding of a core aspect of the manuscript, a failure to understand how the manuscript advances the literature or concerns regarding the manuscript-handling process. Differences in opinion regarding the novelty or significance of the reported findings are not considered as grounds for appeal.

To raise an appeal against an editorial decision, please contact the Editor who made the decision in the first instance using the journal inbox, quoting your manuscript ID number and explaining your rationale for the appeal. Appeals are handled according to the procedure recommended by COPE. If you are not satisfied with the Editor(s) response, you can appeal further by writing to the BPS Knowledge & Insight Team by email at Academic.Publications@bps.org.uk. Appeals must be received within two calendar months of the date of the letter from the Editor communicating the decision and will be

handled according to the BPS Journals appeals policy and procedure.The BPS Knowledge and Insight Team's decision following an appeal consideration is final.

If you believe further support outside the journal's management is necessary, please refer to Wiley's Best Practice Guidelines on Research Integrity and Publishing Ethics or contact Academic.Publications@bps.org.uk.

Clinical Trial Registration

The journal requires that clinical trials are prospectively registered in a publicly accessible database and clinical trial registration numbers should be included in all papers that report their results. Authors are asked to include the name of the trial register and the clinical trial registration number at the end of the abstract. If the trial is not registered, or was registered retrospectively, the reasons for this should be explained.

Research Reporting Guidelines

Accurate and complete reporting enables readers to fully appraise research, replicate it, and use it. Authors are encouraged to adhere to recognised research reporting standards.

We also encourage authors to refer to and follow guidelines from:

- Future of Research Communications and e-Scholarship (FORCE11)
- The Gold Standard Publication Checklist from Hooijmans and colleagues
- FAIRsharing website

Conflict of Interest

The journal requires that all authors disclose any potential sources of conflict of interest. Any interest or relationship, financial or otherwise that might be perceived as influencing an author's objectivity is considered a potential source of conflict of interest. These must be disclosed when directly relevant or directly related to the work that the authors describe in their manuscript. Potential sources of conflict of interest include, but are not limited to: patent or stock ownership, membership of a company board of directors, membership of an advisory board or committee for a company, and consultancy for or receipt of speaker's fees from a company. The existence of a conflict of interest does not preclude publication. If the authors have no conflict of interest to declare, they must also state this at submission. It is the responsibility of the corresponding author to review this policy with all authors and collectively to disclose with the submission ALL pertinent commercial and other relationships.

Funding

Authors should list all funding sources in the Acknowledgments section. Authors are responsible for the accuracy of their funder designation. If in doubt, please check the Open Funder Registry for the correct nomenclature: https://www.crossref.org/services/funder-registry/

Authorship

All listed authors should have contributed to the manuscript substantially and have agreed to the final submitted version. Authorship is defined by the criteria set out in the APA Publication Manual:

> *"Individuals should only take authorship credit for work they have actually performed or to which they have substantially contributed (APA Ethics Code Standard 8.12a, Publication Credit). Authorship encompasses, therefore, not only those who do the actual writing but also those who have made substantial scientific contributions to a study. Substantial professional contributions may include formulating the problem or hypothesis, structuring the experimental design, organizing and conducting the statistical analysis, interpreting the results, or writing a major portion of the paper. Those who so contribute are listed in the byline." (p.18)*

Data Sharing and Data Accessibility Policy

The *British Journal of Clinical Psychology* recognizes the many benefits of archiving data for scientific progress. Archived data provides an indispensable resource for the scientific community, making possible future replications and secondary analyses, in addition to the importance of verifying the dependability of published research findings.

The journal expects that where possible all data supporting the results in papers published are archived in an appropriate public archive offering open access and guaranteed preservation. The archived data must allow each result in the published paper to be recreated and the analyses reported in the paper to be replicated in full to support the conclusions made. Authors are welcome to archive more than this, but not less.

All papers need to be supported by a data archiving statement and the data set must be cited in the Methods section. The paper must include a link to the repository in order that the statement can be published.

It is not necessary to make data publicly available at the point of submission, but an active link must be included in the final accepted manuscript. For authors who have pre-registered studies, please use the Registered Report link in the Author Guidelines.

In some cases, despite the authors' best efforts, some or all data or materials cannot be shared for legal or ethical reasons, including issues of author consent, third party rights, institutional or national regulations or laws, or the nature of data gathered. In such cases, authors must inform the editors at the time of submission. It is understood that in some cases access will be provided under restrictions to protect confidential or proprietary information. Editors may grant exceptions to data access requirements provided authors explain the restrictions on the data set and how they preclude public access, and, if possible, describe the steps others should follow to gain access to the data.

If the authors cannot or do not intend to make the data publicly available, a statement to this effect, along with the reasons that the data is not shared, must be included in the manuscript.

Finally, if submitting authors have any questions about the data sharing policy, access the FAQs for additional detail.

Refer and Transfer Program

Wiley believes that no valuable research should go unshared. This journal participates in Wiley's Refer & Transfer program. If your manuscript is not accepted, you may receive a recommendation to transfer your manuscript to another suitable Wiley journal, either through a referral from the journal's editor or through our Transfer Desk Assistant.

Appeals and Complaints

Authors may appeal an editorial decision if they feel that the decision to reject was based on either a significant misunderstanding of a core aspect of the manuscript, a failure to understand how the manuscript advances the literature or concerns regarding the manuscript-handling process. Differences in opinion regarding the novelty or significance of the reported findings are not considered as grounds for appeal. To raise an appeal, please contact this journal by email, quoting your manuscript ID number and explaining your rationale for the appeal. The editor's decision following an appeal consideration is final.

To raise a complaint regarding editorial staff, policy or process please contact the journal in the first instance. If you believe further support outside the journal's management is necessary, please refer to Wiley's Best Practice Guidelines on Research Integrity and Publishing Ethics.

Open Research initiatives.

Recognizing the importance of research transparency and data sharing to cumulative research, *British Journal of Clinical Psychology* encourages the following Open Research practices.

Sharing of data, materials, research instruments and their accessibility. British Journal of Clinical Psychology encourages authors to share the data, materials, research instruments, and other artifacts supporting the results in their study by archiving them in an appropriate public repository. Qualifying public, open-access repositories are committed to preserving data, materials, and/or registered analysis plans and keeping them publicly accessible via the web into perpetuity. Examples include the Open Science Framework (OSF) and the various Dataverse networks. Hundreds of other qualifying data/materials repositories are listed at the Registry of Research Data Repositories (http://www.re3data.org). Personal websites and most departmental websites do not qualify as repositories.

Publication Ethics

Authors are reminded that the *British Journal of Clinical Psychology* adheres to the ethics of scientific publication as detailed in the *Ethical principles of psychologists and code of conduct* (American Psychological Association, 2010). The Journal generally conforms to the Uniform Requirements for Manuscripts of the International Committee of Medical Journal Editors (ICJME) and is also a member and subscribes to the principles of the Committee on Publication Ethics (COPE). Authors must ensure that all research meets these ethical guidelines and affirm that the research has received permission from a stated Research Ethics Committee (REC) or Institutional Review Board (IRB), including adherence to the legal requirements of the study county.

Note this journal uses iThenticate's CrossCheck software to detect instances of overlapping and similar text in submitted manuscripts. Read Wiley's Top 10 Publishing Ethics Tips for Authors. Read Wiley's Publication Ethics Guidelines can be found.

ORCID

As part of the journal's commitment to supporting authors at every step of the publishing process, the journal requires the submitting author (only) to provide an ORCID iD when submitting a manuscript. This takes around 2 minutes to complete. Find more information here.

6. AUTHOR LICENSING

WALS + standard CTA/ELA and/or Open Access for hybrid titles

You may choose to publish under the terms of the journal's standard copyright agreement, or Open Access under the terms of a Creative Commons License.
Standard re-use and licensing rights vary by journal. Note that certain funders mandate a particular type of CC license be used. This journal uses the CC-BY/CC-BY-NC/CC-BY-NC-ND Creative Commons License.
Self-Archiving Definitions and Policies: Note that the journal's standard copyright agreement allows for self-archiving of different versions of the article under specific conditions.

BPS members and open access: if the corresponding author of an accepted article is a Graduate or Chartered member of the BPS, the Society will cover will cover 100% of the APC allowing the article to be published as open access and freely available.

7. PUBLICATION PROCESS AFTER ACCEPTANCE

Accepted Article Received in Production

When an accepted article is received by Wiley's production team, the corresponding author will receive an email asking them to login or register with Wiley Author Services. The author will be asked to sign a publication license at this point.

Proofs

Once the paper is typeset, the author will receive an email notification with full instructions on how to provide proof corrections.

Please note that the author is responsible for all statements made in their work, including changes made during the editorial process – authors should check proofs carefully. Note that proofs should be returned within 48 hours from receipt of first proof.

Early View

The journal offers rapid publication via Wiley's Early View service. Early View (Online Version of Record) articles are published on Wiley Online Library before inclusion in an issue. Before we can publish an article, we require a signed license (authors should login or register with Wiley Author Services). Once the article is published on Early View, no further changes to the article are possible. The Early View article is fully citable and carries an online publication date and DOI for citations.

8. POST PUBLICATION

Access and Sharing

When the article is published online:

- The author receives an email alert (if requested).
- The link to the published article can be shared through social media.
- The author will have free access to the paper (after accepting the Terms & Conditions of use, they can view the article).
- For non-open access articles, the corresponding author and co-authors can nominate up to ten colleagues to receive a publication alert and free online access to the article.

Promoting the Article

To find out how to best promote an article, click here.

Wiley Editing Services offers professional video, design, and writing services to create shareable video abstracts, infographics, conference posters, lay summaries, and research news stories for your research – so you can help your research get the attention it deserves.

Measuring the Impact of an Article

Wiley also helps authors measure the impact of their research through specialist partnerships with Kudos and Altmetric.

9. EDITORIAL OFFICE CONTACT DETAILS

For help with submissions, please contact the Editorial Assistant at bjc@wiley.com.

Appendix B: PRISMA Guidelines

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	Pg. 14
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	Pg. 15
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	Pg. 16, 17
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	Pg. 17
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	Pg. 18, 19
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	Pg. 18
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Pg. 18
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	Pg. 19, 20
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	Pg. 19, 20
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	Pg. 19
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	Pg. 24- 31
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	Pg. 19, 20
Effect	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	Pg. 20

Section and Topic	Item #	Checklist item	Location where item is reported
measures			
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	Pg. 19
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	Pg. 18, 19
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	Pg. 18, 19
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	Pg. 20
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	Pg. 20, 21
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	Pg. 21
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	Pg. 19, 20
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	n/a
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	Pg. 22
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	Pg. 19
Study characteristics	17	Cite each included study and present its characteristics.	Pg. 24- 31
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Pg. 24- 31 Supplementary material
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	Supplementary material
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	Pg. 23, 32
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	Pg. 33

Section and Topic	Item #	Checklist item	Location where item is reported
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	Pg. 32, 33
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	Pg. 32
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	Pg. 33, 34 Supplementary material
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	n/a
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	Pg. 34, 35
	23b	Discuss any limitations of the evidence included in the review.	Pg. 37
	23c	Discuss any limitations of the review processes used.	Pg. 37
	23d	Discuss implications of the results for practice, policy, and future research.	Pg. 37
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	Pg. 18
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	n/a
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	n/a
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	n/a
Competing interests	26	Declare any competing interests of review authors.	n/a
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	n/a

Appendix C: JBI Operationalised Checklist

JBI Item	What It Means	Scoring
1. Was the sample frame appropriate to address the target population?	Does the sampling frame adequately represent the full population?	*Yes if (1):* Sample frame captures ICU staff (e.g. ICU nurses, physicians, allied staff) from clearly defined hospitals/units *No if (0):* Sample frame does not clearly represent ICU staff (e.g. mixed wards without stratified ICU data, or general HCW studies)
2. Were study participants sampled in an appropriate way?	Was the sampling method used representative and unbiased?	*Yes if (1):* ICU staff were randomly or consecutively recruited or if all eligible ICU staff were invited to participate in a defined period (census style approach) *No if (0):* Convenience or voluntary response sampling without justification or acknowledgement of potential bias
3. Was the sample size adequate?	Was the number of participants in the study large enough to provide precise estimates?	*Yes if (1):* Sample size calculation reported, or ≥100 participants. For smaller studies (N = 50-100), assess whether the 95% confidence interval around the trauma/ STS prevalence is narrow (±10%) or whether the sample size is adequately justified and aligned with the aims of the study. *No if (0):* No rationale for sample size and N<50 without justification or sample size is N = 50-100 and CI's are wide or not reported or sample size is not adequately justified and aligned with the aims of the study.
4. Were the study subjects and the setting described in detail?	Is there enough information for readers to judge if the findings apply to other contexts?	*Yes if (1):* Profession, ICU type (adult/paediatric/mixed), country, and setting described *No if (0):* Minimal description of participants or ICU context
5. Was data analysis conducted with sufficient coverage of the identified sample?	Does the analysed sample adequately reflect the eligible population originally identified?	*Yes if (1):* The authors report how many eligible participants were approached, how many participated, and if there were no large differences between responders/non-responders. *No if (0):* Response rates are unclear or low.
6. Were valid methods used for the identification of the condition?	Was trauma/ STS exposure assessed using a valid measure?	*Yes if (1):* PTSD/STS measured using validated instruments (e.g. PCL-5, IES-R,TSQ, ProQOL STS subscale, STSS) *No if (0):* Non-validated or ad-hoc measures

7. Was the condition measured in a standard, reliable way for all participants?	Was the same assessment tool used consistently and reliably?	*Yes if (1):* Same instrument and cut-off applied consistently across all participants *No if (0):* Measure varied across participants or settings, or administration procedures differed in the same study.
8. Was there appropriate statistical analysis?	Was the analysis suitable and clearly reported?	*Yes if (1):* Prevalence estimates presented as clear frequencies for the whole sample; subgroup analyses justified and clear. *No if (0):* Prevalence unclear, denominators missing, or inappropriate analysis.
9. Was the response rate adequate, and if not, was the low response rate managed appropriately?	Was participation sufficient, and were non-responders handled?	*Yes if (1):* No missing data or ≥70% response rate within sample with missing data acknowledged and addressed and authors compared responders vs. non-responders and found no major bias. *No if (0):* Response rate <70% with no discussion of bias or missing data handling.

Appendix D: JBI Quality Ratings

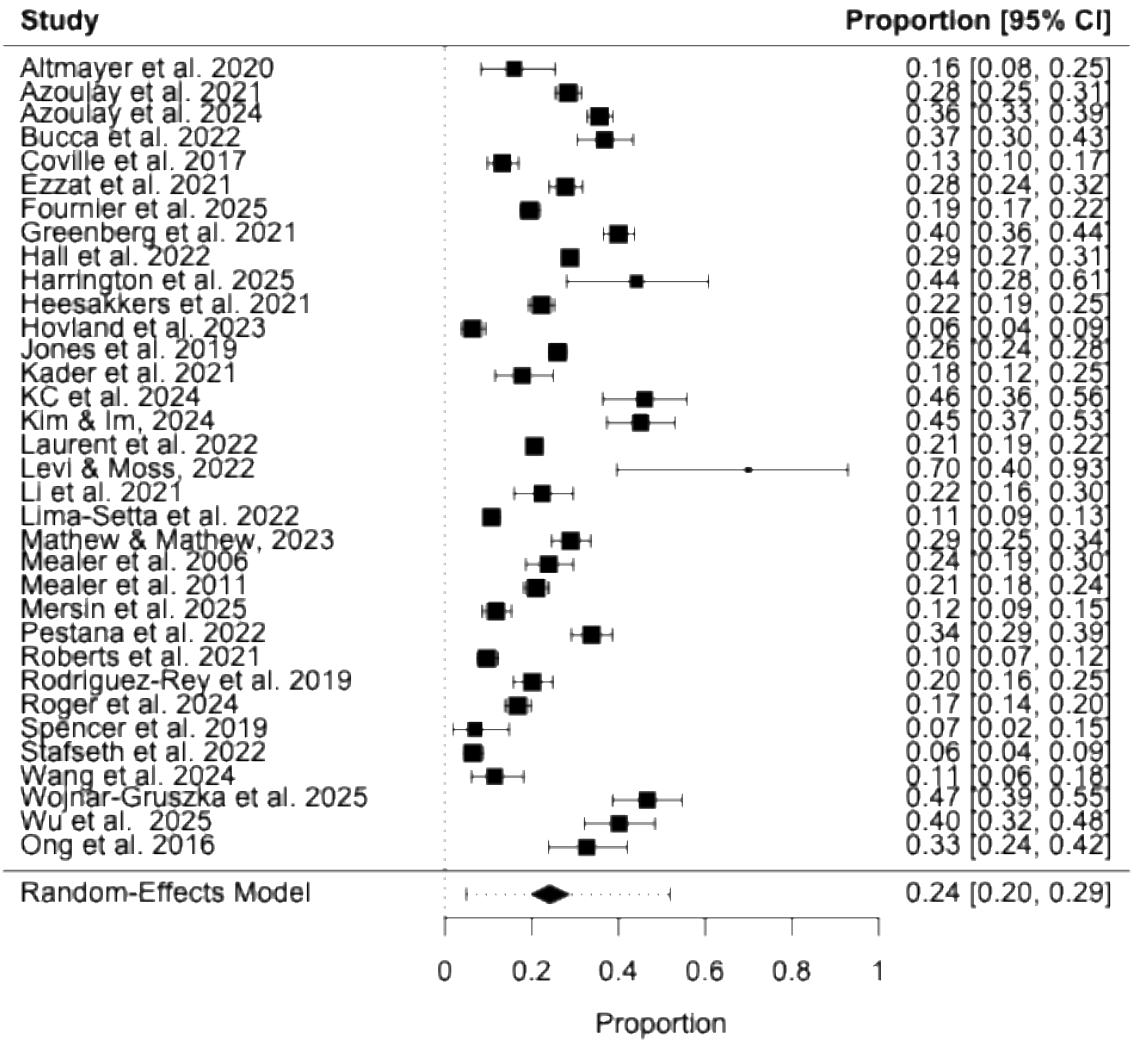
Study	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Total	Quality
Ariapooran et al. (2022)	1	1	0	1	1	1	1	1	0	7/9	78% (M)
Ageel & Shbeer (2022)	1	0	1	1	1	1	1	1	1	8/9	89% (H)
Alharbi et al. (2020)	1	0	1	1	0	1	1	1	0	6/9	67% (M)
Altmayer et al. (2020)	1	0	0	1	1	1	1	1	1	7/9	78% (M)
Azoulay et al. (2021)	1	1	1	1	1	1	1	1	1	9/9	100% (H)
Azoulay et al. (2024)	1	1	1	1	1	1	1	1	1	9/9	100% (H)
Barr (2017)	1	1	1	1	1	1	1	1	0	8/9	89% (H)
Beck et al. (2017)	1	0	1	1	0	1	1	1	0	6/9	67% (M)
Bucca et al. (2022)	1	1	1	1	0	1	1	1	0	7/9	78% (M)
Coville et al. (2017)	1	0	1	1	0	1	1	1	0	6/9	67% (M)
Ezzat et al. (2021)	1	0	1	1	0	1	1	1	0	6/9	67% (M)
Fournier et al. (2025)	1	0	1	1	0	1	1	1	0	6/9	67% (M)
Greenberg et al. (2021)	1	0	1	1	0	1	1	1	0	6/9	67% (M)
Hall et al. (2022)	1	0	1	1	1	1	1	1	0	7/9	78% (M)
Harrington et al. (2025)	1	0	0	1	0	1	1	1	0	5/9	56% (M)
Heesakkers et al. (2021)	1	0	1	1	1	1	1	1	1	8/9	89% (H)
Hovland et al. (2023)	1	0	1	1	0	1	1	1	0	6/9	67% (M)
Hu et al. (2024)	1	0	1	1	1	1	1	1	1	8/9	89% (H)
Jeong & Shin (2022)	1	0	1	1	0	1	1	1	0	6/9	67% (M)
Jones et al. (2019)	1	0	1	1	0	1	1	1	0	6/9	67% (M)
Kader et al. (2021)	1	1	1	1	1	1	1	1	1	9/9	100% (H)
Kartsonaki et al. (2022)	1	0	1	1	0	1	1	1	0	6/9	67% (M)
KC et al. (2024)	1	0	1	1	0	1	1	1	0	6/9	67% (M)
Kerai et al. (2022)	1	1	1	0	0	1	1	1	0	6/9	67% (M)
Kim & Im (2024)	1	0	1	1	0	1	1	1	0	6/9	67% (M)
Laurent et al. (2022)	1	0	1	1	1	1	1	1	1	8/9	89% (H)
Levi & Moss (2022)	1	0	0	1	0	1	1	1	0	5/9	56% (M)
Li et al. (2021)	1	0	1	1	1	1	1	1	1	8/9	89% (H)
Lima-Setta et al. (2022)	1	1	1	1	1	1	1	1	1	9/9	100% (H)
Mason et al. (2014)	1	0	0	1	0	1	1	1	0	5/9	56% (M)
Mathew & Mathew (2023)	1	0	1	1	0	1	1	1	0	6/9	67% (M)
Mealer et al. (2006)	1	0	1	1	0	1	1	1	0	6/9	67% (M)
Mealer et al. (2011)	1	1	1	1	0	1	1	1	0	7/9	78% (M)
Mersin et al. (2025)	1	1	1	1	0	1	1	1	0	7/9	78% (M)
Pestana et al. (2022)	1	1	1	1	1	1	1	1	1	9/9	100% (H)
Roberts et al. (2021)	1	0	1	1	1	1	1	0	0	6/9	67% (M)
Rodríguez-Rey et al. (2019)	1	0	1	1	0	1	1	1	0	6/9	67% (M)
Roger et al. (2024)	1	0	1	0	0	1	1	1	0	5/9	56% (M)

Study	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Total	Quality
Spencer et al. (2019)	1	0	0	1	0	1	1	1	0	5/9	56% (M)
Stafseth et al. (2022)	1	1	1	1	0	1	1	1	1	8/9	89% (H)
Wang et al. (2024)	1	0	1	1	0	1	1	1	0	6/9	67% (M)
Wojnar-Gruszka et al. (2025)	1	0	1	1	0	1	1	1	0	6/9	67% (M)
Wu et al. (2025)	1	1	1	1	1	1	1	1	1	9/9	100% (H)
Ong et al. (2016)	1	1	1	1	1	1	1	1	1	9/9	100% (H)

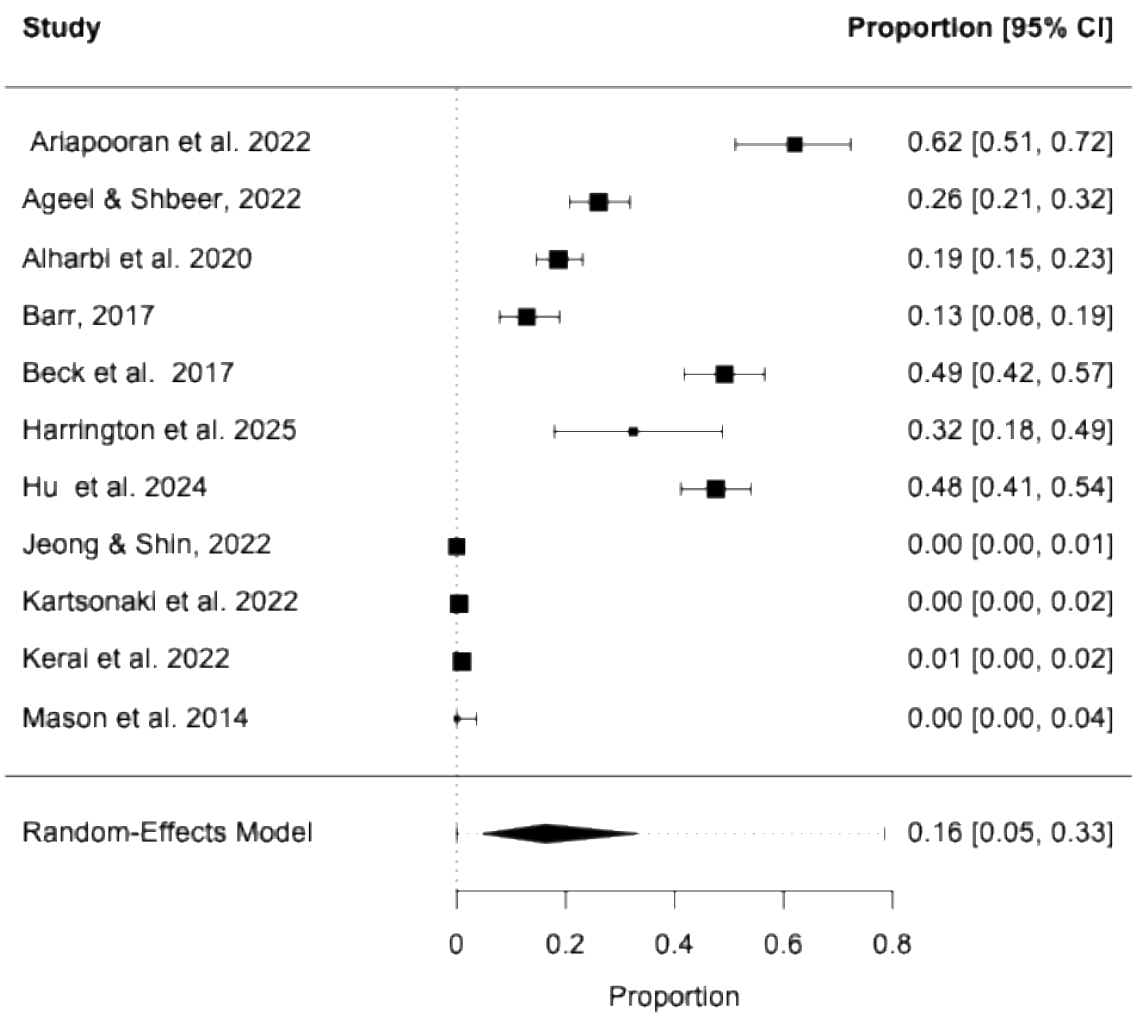
Note. Q1 = Sample frame appropriate to address the target population; Q2 = Study participants sampled in an appropriate way; Q3 = Sample size adequate; Q4 = Study subjects and setting described in detail; Q5 = Data analysis conducted with sufficient coverage of the identified sample; Q6 = Valid methods used for identification of the condition; Q7 = Condition measured in a standard, reliable way for all participants; Q8 = Appropriate statistical analysis; Q9 = Response rate adequate and managed appropriately.
Scores were coded as 1 = criterion met, 0 = criterion not met/ unclear. Total score reflects the sum of criteria met (maximum score = 9). Percentage score was calculated as (Total ÷ 9) × 100. Quality categories were defined as 80–100% = high quality (H), 50–80% = moderate quality (M), and 20–50% = low quality (L).

Appendix E: Forrest Plots

PTS Forrest Plot

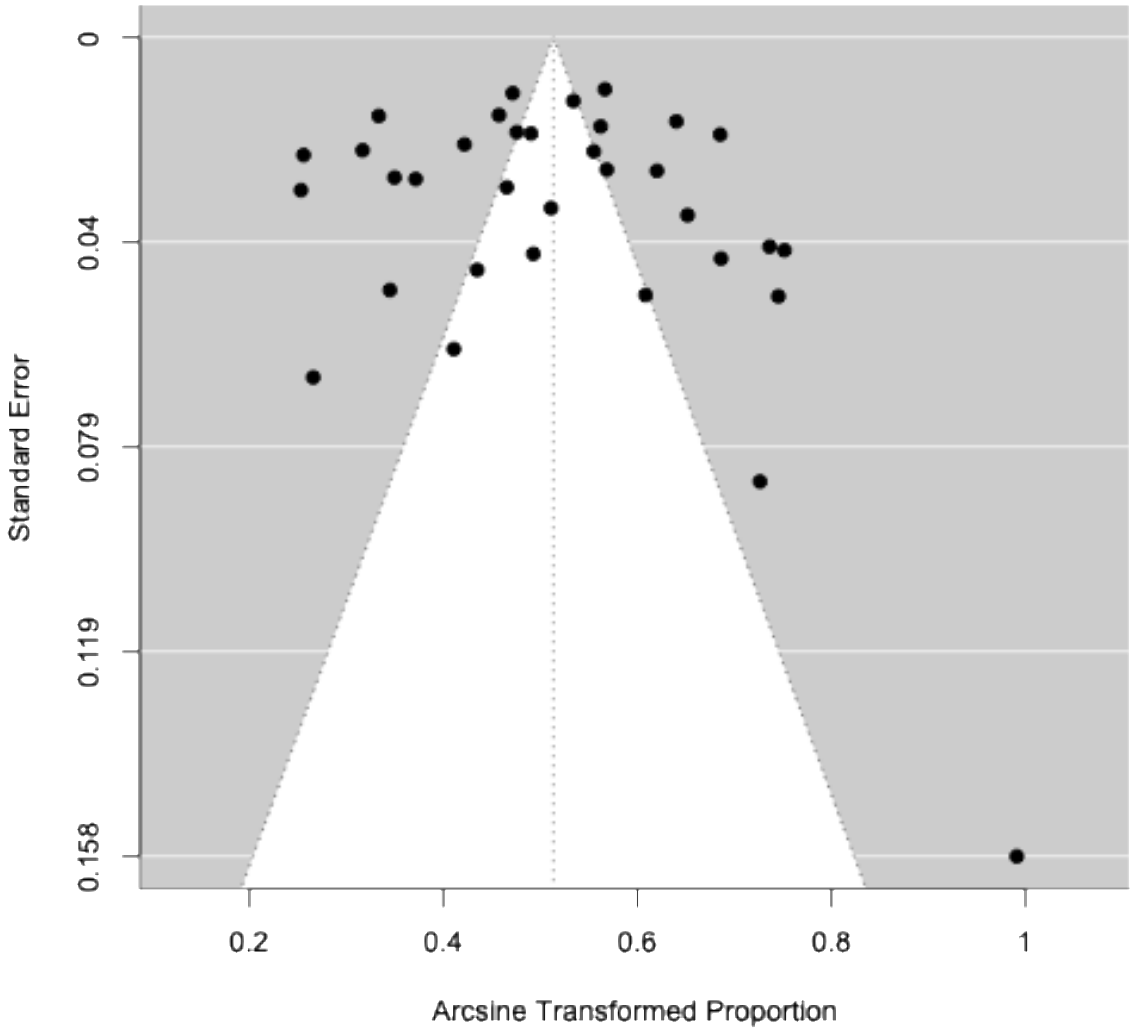


STS Forrest Plot

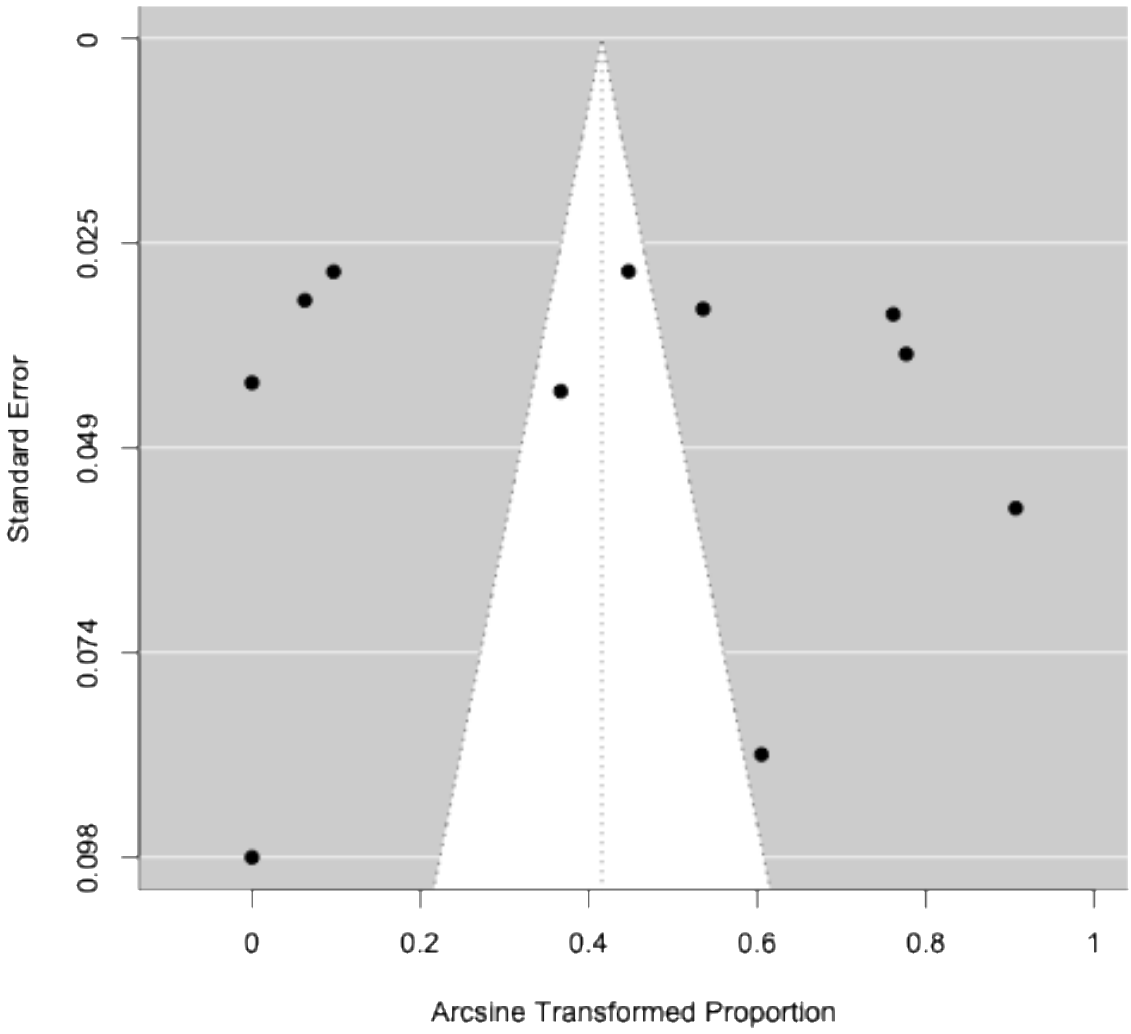


Appendix F: Funnel Plots

PTS Funnel Plot



STS Funnel Plot



Appendix G: Author Guidelines for *Qualitative Health Research*

Manuscript submission guidelines:

Qualitative Health Research (QHR) has specific guidelines! While Sage Publishing has general guidelines, all manuscripts submitted to *QHR* must follow our specific guidelines (found below). Once you have reviewed these guidelines, please visit *QHR*'s submission site to upload your manuscript. Please note that manuscripts not conforming to these guidelines will be returned and/or encounter delays in peer review. Remember you can log in to the submission site at any time to check on the progress of your manuscript throughout the peer review process.

1. Deciding whether to submit a manuscript to QHR

1.1 Aims & scope

1.2 Article types

2. Review criteria

2.1 Original research studies

2.2 Pearls, Piths, and Provocations

2.3 Common reasons for rejection

3. **Preparing your manuscript**

3.1 Title page

3.2 Abstract

3.3 Manuscript

3.4 Tables, Figures, Artwork, and other graphics

3.5 Supplemental material

4. Submitting your manuscript

5. Editorial Policies

5.1 Peer review policy

5.2 Authorship

5.3 Acknowledgments

5.4 Funding

5.5 Declaration of conflicting interests

5.6 Research ethics and participant consent

6. Publishing Policies

6.1 Publication ethics

6.2 Contribtor's publishing agreement

6.3 Open access and author archiving

7. Contact

1. Deciding whether to submit a manuscript to *QHR*

1.1 Aims & scope

QHR provides an international, interdisciplinary forum to enhance health and health care and further the development and understanding of qualitative health research. The journal is an invaluable resource for researchers and academics, administrators and others in the health and social service professions, and graduates, who seek examples of studies in which the authors used qualitative methodologies. Each issue of *QHR* provides readers with a wealth of information on conceptual, theoretical, methodological, and ethical issues pertaining to qualitative inquiry.

Rather than send query letters to the Editor regarding article fit, *QHR* asks authors to make their own decision regarding the suitability of their manuscript for *QHR* by asking: Does your proposed submission make a meaningful and strong contribution to qualitative health research literature? Is it useful to readers and/or practitioners?

1.2 Article types

The following manuscript types are considered for publication.

- Original Research Studies: These are fully developed qualitative research studies. This may include mixed method studies in which the major focus/portion of the study is qualitative research. Please read Maintaining the Integrity of Qualitatively Driven Mixed Methods: Avoiding the "*This Work is Part of a Larger Study*" Syndrome.
- Pearls, Piths, and Provocations: These manuscripts should foster discussion and debate about significant issues, enhance communication of methodological advances, promote and discuss issues related to the teaching of qualitative approaches in health contexts, and/or encourage the discussion of new and/or provocative ideas. They should also make clear what the manuscript adds to the existing body of knowledge in the area.
- Editorials: These are generally invited articles written by editors/editorial board members associated with *QHR.*

Please note, *QHR* does NOT publish pilot studies. We do not normally publish reviews unless they focus on qualitative research studies elaborating methodological issues and developments. Review articles should be submitted to the Pearls, Piths, and Provocations section. They are reviewed according to criteria in 2.2.

Back to top

2. Review criteria

2.1 Original research

Reviewers are asked to consider the following areas and questions when making recommendations about research manuscripts:

- **Importance of submission: Does the manuscript make a significant contribution to qualitative health research literature?** Is it original? Relevant? In depth? Insightful? Is it useful to the reader and/or practitioner?
- **Methodological considerations**: Is the overall study design clearly explained including why this design was an appropriate one? Are the methodology/methods/approaches used in keeping with that design? Are they appropriate given the research question and/or aims? Are they logically articulated? Clarity in design and presentation? Data adequacy and appropriateness? Evidence of rigor?
- **Ethical Concerns**: Are relevant ethical concerns discussed and acknowledged? Is enough detail given to enable the reader to understand

how ethical issues were navigated? Has formal IRB approval (when needed) and consent from participants been obtained?
- **Data analysis, findings, discussion**: Does the analysis of data reflect depth and coherence? In-depth descriptive but also interpretive dimensions? Creative and insightful analysis? Are results linked to existing literature and theory, as appropriate? Is the contribution of the research clear including its relevance to health disciplines and their practice?
- **Manuscript style and format**: Is the manuscript organized in a clear and concise manner? Has sufficient attention been paid to word choice, spelling, grammar, and so forth? Did the author adhere to APA guidelines? Do diagrams/illustrations comply with guidelines? Is the overall manuscript aligned with *QHR* guidelines in relation to formatting?
- **Scope:** Does the article fit with *QHR*'s publication mandate? Has the author cited the major work in the area, including those published in *QHR*?

2.2 Pearls, Piths, and Provocations

The purpose of papers in this section is to raise and discuss issues pertinent to the development and advancement of qualitative research in health-related arenas. As the name Pearls, Piths, and Provocations suggests, we are looking for manuscripts that make a significant contribution to areas of dialogue, development, experience sharing and debate relevant to the scope of *QHR* in this section of the journal. **Reviewers are asked to consider the following questions when making recommendations about** articles in the Pearls, Piths, and Provocations section.

- **Significance**: Does the paper highlight issues that have the potential to advance, develop, and/or challenge thinking in qualitative health related research?
- **Clarity**: Are the arguments clearly presented and well supported?
- **Rigor**: Is there the explicit use of/interaction with methodology and/or theory and/or empirical studies (depending on the focus of the paper) that grounds the work and is coherently carried throughout the arguments and/or analysis in the manuscript? Put another way, is there evidence of a rigorously constructed argument?
- **Engagement**: Does the paper have the potential to engage the reader to 'think differently' by raising questions, suggesting innovative directions for qualitative health research, and/or stimulating critical reflection? Are the implications of the paper for the practice of either qualitative research and/or health clear?
- **Quality of the writing**: Is the main argument of the paper clearly articulated and presented with few grammatical or typographical issues?

Are terms and concepts key to the scholarship communicated clearly and in sufficient detail?

2.3 Common reasons for rejection

QHR most commonly turns away manuscripts that fall outside the journal's scope, do not make a novel contribution to the literature, lack substantive and/or interpretative depth, require extensive revisions, and/or do not adequately address ethical issues that are fundamental to qualitative inquiry. Submissions of the supplementary component of mixed methods studies often are rejected as the findings are difficult to interpret without the findings of the primary study. For additional information on this policy, please read Maintaining the Integrity of Qualitatively Driven Mixed Methods: Avoiding the "*This Work is Part of a Larger Study*" Syndrome.

Back to top

3. Preparing your manuscript for submission

We strongly encourage all authors to review previously published articles in *QHR* for style prior to submission.

QHR journal practices include double anonymization. All identifying information MUST be removed completely from the Abstract, Manuscript, Acknowledgements, Tables, and Figure files prior to submission. ONLY the Title Page and Cover Letter may contain identifying information. See Sage's general submission guidelines for additional guidance on making an anonymous submission.

Preferred formats for the text and tables of your manuscript are Word DOC or PDF. The text must be double-spaced throughout with standard 1-inch margins (APA formatting). Text should be standard font (i.e., Times New Roman) 12-point.

3.1 Cover letter

* Authors must acknowledge in the Cover Letter any overlapping work whether published, in press, or submitted elsewhere. For studies utilizing empirical-based methods, this includes identifying complementary papers or those which draw on the same data set. Please note that copies of such overlapping work may be requested during peer review to assist in judgments regarding novelty and significance of the submission. Generally, such work should also be

referenced in the manuscript itself recognizing that conventions around blinding during peer review need to be followed. If there is no overlapping work, authors should explicitly state this in the Cover Letter.

3.2 Title page

- The title page should be uploaded as a separate document containing the following information: Author names; Affiliations; Author contact information; Contribution list; Acknowledgements; Ethical statement; Funding Statement; Conflict of Interest Statements; and, Grant Number. Please know that the Title Page is NOT included in the materials sent out for Peer Review.
- Ethical statement: An ethical statement must include the following: the full name of the ethical board that approved your study; the approval number given by the ethical board; and, confirmation that all your participants gave informed consent. Authors are also required to state in the methods section whether participants provided informed consent, whether the consent was written or verbal, and how it was obtained and by whom. For example: “Our study was approved by The Mercy Health Research Ethics Committee (approval no. XYZ123). All participants provided written informed consent prior to enrollment in the study.” If your study did not need ethical approval (often manuscripts in the Pearls, Piths, and Provocations may not), we still need a statement that states that your study did not need approval and an explanation as to why. For example: “Ethical Statement: Our study did not require an ethical board approval because it did not directly involve humans or animals.”

3.3 Abstract and Keywords

- The Abstract should be unstructured, written in narrative form. Maximum of 250 words. This should be on its own page, appearing as the first page of the Main Manuscript file.
- The keywords should be included beneath the abstract on the Main Manuscript file.

3.4 Manuscript

- Length: 8,000 words or less excluding the abstract, list of references, and acknowledgements. This applies to both Original Research and Pearls, Piths, and Provocations. Please note that text from Tables and Figures is included in the word count limits. On-line supplementary materials are not included in the word limit.

- Structure: While many authors will choose to use headings of Background, Methods, Results, and Discussion to organize their manuscript, it is up to authors to choose the most appropriate terms and structure for their submission. It is the expectation that manuscripts contain detailed reflections on methodological considerations.
- Ethics: In studies where data collection or other methods present ethical challenges, the authors should explicate how such issues were navigated including how consent was gained and by whom. An anonymized version of the ethical statement should be included in the manuscript (in addition to appearing on the title page).
- Participant identification: Generally, included demographic features or other participant information should be described in narrative form or otherwise reported in aggregate form as a group with limited specific and individual identifiers. Quotations may be linked to particular participants and/or demographic features provided measures are taken to ensure anonymity of participants (e.g., use of pseudonyms). Including such information should clearly connect to the purpose and analysis of the research. In other words, if individual details are included, this should be clearly related to the qualitative analysis
- Use of checklists: Authors should not include qualitative research checklists, such as COREQ (COnsolidated criteria for REporting Qualitative research). Generally, authors should use a narrative approach to describe the processes used to enhance the rigor of their study. For additional information on this policy, please read Why the *Qualitative Health Research* (QHR) Review Process Does Not Use Checklists
- References: APA format. While there is no limit to the number of references, authors are recommended to use pertinent references only, including literature previously published in *QHR*. References should be on a separate page. *QHR* adheres to the APA 7 reference style. View the APA guidelines to ensure your manuscript conforms to this reference style. Please ensure you check carefully that both your in-text references and list of references are in the correct format.
- Authors are required to disclose the use of generative Artificial Intelligence (such as ChatGPT) and other technologies (such as NVivo, ATLAS. Ti, Quirkos, etc.), whether used to conceive ideas, develop study design, generate data, assist in analysis, present study findings, or other activities formative of qualitative research. We suggest authors provide both a description of the technology, when it was accessed, and how it was used (see https://uk.sagepub.com/en-gb/eur/chatgpt-and-generative-ai).
- Manuscripts that receive favorable reviews will not be accepted until any formatting and copy-editing required has been done.

3.5 Tables, Figures, Artwork, and other graphics

- Tables should be used sparingly and mindfully to augment what is written in the manuscript. Do not use tables to simply list demographic information about participants as too many individual details may compromise the confidentiality of participants.
- In general, identifying features should not be contained within images. For example, in photographs faces should generally be concealed using mosaic patches – unless permission has been given by the individual to use their identity. This permission must be included at the time of submission.
    1. TIFF, JPED, or common picture formats accepted. The preferred format for graphs and line art is EPS.
    2. Resolution: Rasterized based files (i.e. with .tiff or .jpeg extension) require a resolution of at least 300 dpi (dots per inch). Line art should be supplied with a minimum resolution of 800 dpi.
    3. Dimension: Check that the artworks supplied match or exceed the dimensions of the journal. Images cannot be scaled up after origination.
- Figures supplied in color will appear in color online regardless of whether or not these illustrations are reproduced in color in the printed version. For specifically requested color reproduction in print, you will receive information regarding the costs from Sage after receipt of your accepted article.

3.6 Supplemental material

- **Core elements of the manuscript should not be included as supplementary material.**
- ***QHR*** is able to host additional materials online (e.g., datasets, podcasts, videos, images etc.) alongside the full-text of the article. For more information please refer to Sage's general guidelines on submitting supplemental files.

Back to top

4. Submitting your manuscript

QHR is hosted on Sage Track, a web based online submission and peer review system powered by ScholarOne™ Manuscripts.
Visit https://mc.manuscriptcentral.com/QHR to login and submit your article online.

IMPORTANT: Please check whether you already have an account in the system before trying to create a new one. If you have reviewed or authored for the Journal in the past year it is likely that you will have had an account created. For further guidance on submitting your manuscript online please visit ScholarOne Online Help.

Back to top

5. Editorial policies

5.1 Peer review policy

QHR adheres to a rigorous double-anonymized reviewing policy in which the identities of both the reviewer and author are always concealed from both parties.

Sage does not permit the use of author-suggested (recommended) reviewers at any stage of the submission process, be that through the web-based submission system or other communication. Reviewers should be experts in their fields and should be able to provide an objective assessment of the manuscript. Our policy is that reviewers should not be assigned to a manuscript if:

- The reviewer is based at the same institution as any of the co-authors
- The reviewer is based at the funding body of the manuscript
- The author has recommended the reviewer
- The reviewer has provided a personal (e.g. Gmail/Yahoo/Hotmail) email account and an institutional email account cannot be found after performing a basic Google search (name, department and institution).

Qualitative Health Research is committed to delivering high quality peer-review for your manuscript, and as such has partnered with Web of Science. Web of Science is a third-party service that seeks to track, verify and give credit for peer review. Reviewers for Qualitative Health Research can opt in to Web of Science in order to claim their reviews or have them automatically verified and added to their reviewer profile. Reviewers claiming credit for their review will be associated with the relevant journal, but the article name, reviewer's decision, and the content of their review is not published on the site. For more information visit the Web of Science website.

The Editor or members of the Editorial Team or Board may occasionally submit their own manuscripts for possible publication in the Journal. In these cases, the

peer review process will be managed by alternative members of the Editorial Team or Board and the submitting Editor Team/Board member will have no involvement in the decision-making process.

5.2 Authorship

Manuscripts should only be submitted for consideration once consent is given by all contributing authors. Those submitting manuscripts should carefully check that all those whose work contributed to the manuscript are acknowledged as contributing authors. The list of authors should include all those who can legitimately claim authorship. This is all those who meet all of the following criteria:

(i) Made a substantial contribution to the design of the work or acquisition, analysis, interpretation, or presentation of data,
(ii) Drafted the article or revised it critically for important intellectual content,
(iii) Approved the version to be published,
(iv) Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content.

Acquisition of funding, collection of data, or general supervision of the research group alone does not constitute authorship, although all contributors who do not meet the criteria for authorship should be listed in the Acknowledgments section. Please refer to the International Committee of Medical Journal Editors (ICMJE) authorship guidelines for more information on authorship.

Authors are required to disclose the use of generative Artificial Intelligence (such as ChatGPT) and other technologies (such as NVivo, ATLAS. Ti, Quirkos, etc.), whether used to conceive ideas, develop study design, generate data, assist in analysis, present study findings, or other activities formative of qualitative research. We suggest authors provide both a description of the technology, when it was accessed, and how it was used. This needs to be clearly identified within the text and acknowledged within your Acknowledgements section. Please note that AI bots such as ChatGPT should not be listed as an author. For more details on this policy, please visit ChatGPT and Generative AI.

5.3 Acknowledgements

All contributors who do not meet the criteria for authorship should be listed in an Acknowledgements section. Examples of those who might be acknowledged include a person who provided purely technical help, or a department chair who provided only general support.

Please supply any personal acknowledgements separately to the main text to facilitate anonymous peer review.

Per ICMJE recommendations, it is best practice to obtain consent from non-author contributors who you are acknowledging in your manuscript.

1.3.1 Writing assistance

Individuals who provided writing assistance, e.g., from a specialist communications company, do not qualify as authors and so should be included in the Acknowledgements section. Authors must disclose any writing assistance – including the individual's name, company and level of input – and identify the entity that paid for this assistance. It is not necessary to disclose use of language polishing services.

5.4 Funding

Qualitative Health Research requires all authors to acknowledge their funding in a consistent fashion under a separate heading. Please visit the Funding Acknowledgements page on the Sage Journal Author Gateway to confirm the format of the acknowledgment text in the event of funding, or state that: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

5.5 Declaration of conflicting interests

It is the policy of *Qualitative Health Research* to require a declaration of conflicting interests from all authors enabling a statement to be carried within the paginated pages of all published articles.

Please ensure that a 'Declaration of Conflicting Interests' statement is included at the end of your manuscript, after any acknowledgements and prior to the references. If no conflict exists, please state that 'The Author(s) declare(s) that there is no conflict of interest'. For guidance on conflict of interest statements, please see the ICMJE recommendations here.

5.6 Research ethics and participant consent

Research involving participants must be conducted according to the World Medical Association Declaration of Helsinki

Submitted manuscripts should conform to the ICMJE Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals:

All manuscripts **must state that the relevant Ethics Committee or Institutional Review Board provided (or waived) approval.** Please ensure that you blind the name and institution of the review committee until such time as your article has been accepted. The Editor will request authors to replace the name and add the approval number once the article review has been completed. Please note that in itself, simply stating that **Ethics Committee or Institutional Review was obtained is not sufficient. Authors are also required to state in the methods section whether participants provided informed consent, whether the consent was written or verbal, and how it was obtained and by whom.**

Please do not submit the participant's informed consent documents with your article, as this in itself breaches the participant's confidentiality. The Journal requests that you confirm to us, in writing, that you have obtained informed consent recognizing the documentation of consent itself should be held by the authors/investigators themselves (for example, in a participant's hospital record or an author's institution's archives).

Please also refer to the ICMJE Recommendations for the Protection of Research Participants.

Back to top

6. Publishing Policies

6.1 Publication ethics

Sage is committed to upholding the integrity of the academic record. We encourage authors to refer to the Committee on Publication Ethics' International Standards for Authors and view the Publication Ethics page on the Sage Author Gateway.

6.1.1 Plagiarism

Qualitative Health Research and Sage take issues of copyright infringement, plagiarism or other breaches of best practice in publication very seriously. The Committee on Publication Ethics (COPE) defines plagiarism as: "When somebody presents the work of others (data, words or theories) as if they were his/her own and without proper acknowledgment." We seek to protect the rights of our authors and we always investigate claims of plagiarism or misuse of published articles. Equally, we seek to protect the reputation of the journal against malpractice. Submitted articles may be checked with duplication-checking software. Where an article, for example,

is found to have plagiarised other work or included third-party copyright material without permission or with insufficient acknowledgement, or where the authorship of the article is contested, we reserve the right to take action including, but not limited to: publishing an erratum or corrigendum (correction); retracting the article; taking up the matter with the head of department or dean of the author's institution and/or relevant academic bodies or societies; or taking appropriate legal action.

6.1.2 Prior publication

If material has been previously published it is not generally acceptable for publication in a Sage journal. However, there are certain circumstances where previously published material can be considered for publication. Please refer to the guidance on the Sage Author Gateway or if in doubt, contact the Editor at the address given below.

6.2 Contributor's publishing agreement

Before publication, Sage requires the author as the rights holder to sign a Journal Contributor's Publishing Agreement. Sage's Journal Contributor's Publishing Agreement is an exclusive licence agreement which means that the author retains copyright of the work but grants Sage the sole and exclusive right and licence to publish for the full legal term of copyright. Exceptions may exist where an assignment of copyright is required or preferred by a proprietor other than Sage. In this case copyright in the work will be assigned from the author to the society. For more information please visit the Sage Author Gateway.

6.3 Open access and author archiving

Qualitative Health Research offers optional open access publishing via the Sage Choice programme and Open Access agreements, where authors can publish open access either discounted or free of charge depending on the agreement with Sage. Find out if your institution is participating by visiting Open Access Agreements at Sage. For more information on Open Access publishing options at Sage please visit Sage Open Access. For information on funding body compliance, and depositing your article in repositories, please visit Sage's Author Archiving and Re-Use Guidelines and Publishing Policies.

7. Contact

You can direct any questions to:

QHR Editorial Office
qhr@sagepub.com

Julianne Cheek, PhD, Editor
jceditorqhr@gmail.com

Appendix H: Topic Guide

Tell me a bit about yourself/ tell me a bit about your family/ tell me about why you chose to work in NICU (settle in question)

What was your experience of the early stages of pregnancy whilst working?

Possible prompts: What was good about your experience, what was difficult/ challenging about your experience, can you tell me more about that, how did you manage those difficulties?

What was your experience of the later stages of pregnancy whilst working?

Possible prompts: What was good about your experience, what was difficult/ challenging about your experience, what was different to the earlier stages of pregnancy, can you tell me more about that, how did you manage those difficulties?

How were you supported whilst pregnant?

Prompts: Was there any specific support available whilst pregnant, what was this like? What was helpful? What was unhelpful?

Tell me about your experience of staff management whilst pregnant?

How did you experience the dual role of being both a health worker and an expectant mother during this time?

How did your prior knowledge and expertise impact you during your pregnancy?

How did your prior knowledge and expertise impact your decision to become pregnant or impact any decisions made whilst pregnant?

How would you describe your wellbeing during your pregnancy?

How did you find working with parents of unwell babies whilst you were pregnant?

Appendix I: UEA Ethics Approval

University of East Anglia
Norwich Research Park
Norwich. NR4 7TJ

Email: ethicsmonitor@uea.ac.uk
Web: www.uea.ac.uk

Study title: Health professionals' experiences of working on a neonatal intensive care unit during pregnancy: a qualitative exploration

Application ID: ETH2425-0487

Dear Katie,

Your application was considered on 16th January 2025 by the FMH S-REC (Faculty of Medicine and Health Sciences Research Ethics Subcommittee).

The decision is: **approved**.

You are therefore able to start your project subject to any other necessary approvals being given.

If your study involves NHS staff and facilities, you will require Health Research Authority (HRA) governance approval before you can start this project (even though you did not require NHS-REC ethics approval). Please consult the HRA webpage about the application required, which is submitted through the IRAS system.

This approval will expire on **1st March 2027**.

Please note that your project is granted ethics approval only for the length of time identified above. Any extension to a project must obtain ethics approval by the FMH S-REC (Faculty of Medicine and Health Sciences Research Ethics Subcommittee) before continuing.

It is a requirement of this ethics approval that you should report any adverse events which occur during your project to the FMH S-REC (Faculty of Medicine and Health Sciences Research Ethics Subcommittee) as soon as possible. An adverse event is one which was not anticipated in the research design, and which could potentially cause risk or harm to the participants or the researcher, or which reveals potential risks in the treatment under evaluation. For research involving animals, it may be the unintended death of an animal after trapping or carrying out a procedure.

Any amendments to your submitted project in terms of design, sample, data collection, focus etc. should be notified to the FMH S-REC (Faculty of Medicine and Health Sciences Research Ethics Subcommittee) in advance to ensure ethical compliance. If the amendments are substantial a new application may be required.

Approval by the FMH S-REC (Faculty of Medicine and Health Sciences Research Ethics Subcommittee) should not be taken as evidence that your study is compliant with the UK General Data Protection Regulation (UK GDPR) and the Data Protection Act 2018. If you need guidance on how to make your study UK GDPR compliant, please contact the UEA Data Protection Officer (dataprotection@uea.ac.uk).

Please can you send your report once your project is completed to the FMH S-REC (fmh.ethics@uea.ac.uk).

I would like to wish you every success with your project.

On behalf of the FMH S-REC (Faculty of Medicine and Health Sciences Research Ethics Subcommittee)

Yours sincerely,

Dr Paul Linsley

Appendix J: Social Media Recruitment Poster

HAVE YOU WORKED ON A NEONATAL INTENSIVE CARE UNIT WHILST PREGNANT?

Working on a NICU can be highly stressful, however, **there is limited research looking at NICU staff, and their own pregnancy**.

Your experience matters - take part in research exploring Health Care Professionals (HCP's) experience of working on NICU whilst pregnant

YOU CAN TAKE PART IF YOU ARE:

- Female
- Over 18 years old
- Have experienced a pregnancy in the past 3 years
- Worked in a UK NICU during this time
- Fluent in English

You will recieve a £10 Amazon voucher as gratitude for your time

TAKING PART INVOLVES:

Having a 60 minute conversation about your experience on Microsoft Teams with the researcher.

CONTACT THE LEAD RESEARCHER FOR MORE INFORMATION:

Katie McHugh Trainee Clinical Psychologist
K.Mchugh@uea.ac.uk



*Please do not distribute this poster on any official NHS platforms. You can contact me via your NHS email if you would like to take part.

Appendix K- Participant Information Sheet

Participant Information Sheet

Faculty of Medicine & Health Sciences
Norwich Medical School
University of East Anglia
Norwich Research Park
Norwich, NR4 7TJ
United Kingdom

Electronic Participant Information Sheet

You are being invited to take part in a study exploring Health Care Professional's (HCP) experience of working on a Neonatal Intensive Care Unit (NICU) whilst pregnant. Before you make a decision about taking part in the study, it's important for you to understand why we are conducting this research and what participating will involve. Please carefully read the following information and discuss it with others if you wish. If anything is unclear or you have any questions, please contact a member of the team via email. (Katie McHugh: K.Mchugh@uea.ac.uk or Dr Elisabeth Norton: Elisabeth.Norton@uea.ac.uk).

(1) What is the purpose of this study?

There is growing national movement on the importance of perinatal care and services provided, as well as psychological support within NICU. Anecdotally, it has been noted that HCP's working in NICU whilst pregnant may experience difficulties due to their dual role and the stress that working in the NICU can have. Despite this, there is currently no UK published research that has investigated the experiences of health care professionals working in the NICU. The aim of this study is to explore HCP's experiences of pregnancy whilst working on a NICU, with particular interest in exploring their wellbeing, understanding the impact of the dual role and if support was provided. This study aims to give women an opportunity to share their experiences which can be used to inform NICU managers, and perinatal services of the impact this may have on mental health in order to improve support and services.

(2) Why have I been invited?

You have been invited to take part in this study because you have worked as a HCP on NICU whilst pregnant, and we would like to hear about your experiences. However, taking part is entirely voluntary and you have the freedom to refuse or to withdraw at any time without consequences.

(3) What will taking part involve for me?

If you do choose to participate, you will be asked to complete an interview via Microsoft Teams with our researcher. This interview will discuss your experiences of being pregnant whilst working on the NICU and will last approximately 1 hour. The interview will be recorded, and recordings will not be used or made available for any purposes other than the research project. You have the option to withdraw up until two weeks following the interview. Your data will not be recorded or included in the study if you withdraw within this time.

(4) Are there any risks and/or disadvantages in taking part?

It may be that discussing these experiences bring up memories and emotions of a potentially difficult time. If at any point you do feel uncomfortable and would like to take a break or withdraw your participation, please make your interviewer aware and they will provide support for you. Time to debrief and information regarding further support services and resources will be made available at the end should you feel that you require any additional support. We would like to emphasise that you are under no obligation to take part.
If you have any questions regarding this, please contact me by email via K.Mchugh@uea.ac.uk to discuss any concerns.

(5) What are the benefits of taking part in this study?

This study aims to shed light on your experiences of pregnancy whilst working in the NICU. This helps to enhance our understanding of how working in this area my impact people during the perinatal period and help to inform future support and intervention to improve experiences. Participating in this study provides you with an opportunity to contribute to a

field that has not received sufficient attention. Additionally, a £10 Amazon voucher will be given to participants on completion.

(6) What will happen to the data gathered in this research project?

All data will be kept confidential without any identifiable information. The data will be presented in research conferences and submitted in journals. Any quoted transcripts will be anonymous and devoid of any identifiable information. After the data analysis process is completed, all personal data will be permanently deleted, and basic information (such as age and gender), as well as anonymised transcripts will be retained. The research supervisor will have access to this, and it will be stored securely for 10 years according to the General Data Protection Regulation Act (2018) and the University of East Anglia Research Data Management Policy (2019).

(7) Will I be told the results of the study?

The findings of this study will be included in a doctoral thesis and submitted to the University of East Anglia in 2026. The results will be presented at research conferences and submitted to relevant journals for publication.

(8) Who is running the study?

This research is being conducted by Katie McHugh, Postgraduate Researcher in the Doctorate in Clinical Psychology Programme (ClinPsyD) at Norwich Medical School, UEA. The research is carried out under the supervision of Dr Elisabeth Norton. The research is funded by the University of East Anglia (UEA) and has been reviewed by the UEA Faculty of Medicine and Health Sciences Research Ethics Committee.

(9) How do I seek more information, address concerns, or make a complaint about the study?

Please do not hesitate to contact myself, Katie McHugh (K.Mchugh@uea.ac.uk) for further information or any queries you may have.

If you are unhappy about any aspect of the study, please contact Dr Elisabeth Norton (Elisabeth.Norton@uea.ac.uk) .

If you have any concerns regarding the conduct of this study or would like to make a complaint to someone not involved in this study, please contact the university administration team via email (med.reception@uea.ac.uk). They will ensure your concerns are forwarded to a senior faculty member.

Appendix L: Consent Form

Consent Form

Faculty of Medicine &
Health Sciences
Norwich Medical School
University of East Anglia
Norwich Research Park
Norwich, NR4 7TJ
United Kingdom

ELECTRONIC CONSENT FORM

Title of Project: A Qualitative Exploration of Female Health Care Professionals Experience of working on a Neonatal Intensive Care Unit whilst pregnant
Name of Researcher: Katie McHugh

Please select the box next to each statement to indicate your consent.

1.	I confirm that I have read and understand the Participant Information Sheet (version 2) and have had the opportunity to ask any questions that I have about the study.	☐
2.	I understand that my participation is voluntary and that I am free to withdraw up until two weeks post interview without giving any reason.	☐
3.	I understand that I can withdraw permission to use data from my interview within two weeks after the interview, in which case the material will be deleted.	☐
4.	I understand the purpose, procedure and any risks involved.	☐
5.	I agree to my participation being audio recorded.	☐
6.	I understand that non-identifiable extracts from my interview may be quoted in presentations of this study.	☐
7.	I understand that data gathered in this study will be stored anonymously and securely.	☐
8.	I understand that the University of East Anglia may audit this research and give permission for the access of my anonymous data.	☐
9.	I agree to take part in the above study.	☐

Name of Participant	Date	Signature
Name of Researcher	Date	Signature

Appendix M: PPI Recruitment Poster

RESEARCH
RECRUITING NHS NICU STAFF

Are you a health care professional who has experience of working on a NHS NICU and would like to be involved in informing research?

My name is Katie and I am a Trainee Clinical Psychologist at the University of East Anglia (UEA). For my thesis I am exploring **health care professionals experience of working on a NICU whilst pregnant**



You Can Help!

Before conducting my research **I am looking for professionals to consult on research materials**, including information sheets and interview questions and offer feedback.

This will take approximately an hour of your time on a video call (MS teams),

You will receive £25 as a thank you for your time

Contact Info

If you are able to support me with this research, please contact me at:

k.mchugh@uea.ac.uk

Appendix N: Debrief Sheet

Debrief Sheet

Faculty of Medicine & Health Sciences
Norwich Medical School
University of East Anglia
Norwich Research Park
Norwich, NR4 7TJ
United Kingdom

Electronic Debrief Form

Dear participant,
Thank you for agreeing to take part in this study.

Aim of the study

Working on a NICU whilst pregnant is an under researched area, and with advances in perinatal care there could be important, specific mental health support and advice that could benefit pregnant women working in this often stressful environment. The aim of this study was to explore female HCP's experiences of pregnancy whilst working on NICU, with particular interest in their wellbeing and understanding the impact of the dual role during this time.

Why this study is important

Research has shown that working on a NICU can be incredibly stressful and has been linked to burnout, stress and vicarious trauma. There has been growing attention on improving perinatal mental health care in the UK, as set out in the NHS Long Term Plan. Despite the known impacts of working on a NICU, there is little research on how this may impact women who are pregnant whilst they are working.

This study sought to address a significant gap in the existing literature. By conducting this research, we aimed to contribute to the understanding of women's experiences and the development of evidence-based guidelines and interventions to support women in the perinatal period whilst working on NICU.

We acknowledge that this study required you to discuss personal and sensitive information. This may have caused discomfort and distress. If you have felt emotionally impacted by the topics discussed, we encourage you to make a member of the team aware for support.

Below are some resources which you may find helpful.

Thank you again for taking part in this study.

Resources

NHS 111
The NHS non-emergency helpline can offer medical advice and guidance.
Phone: 111

Samaritans
Samaritans provide support to anyone experiencing emotional distress, finding I difficult to cope, or facing thoughts of suicide.
Phone: 116 123
Website: www.samaritans.org

Mind
Mind provide information, resources and emotional support for individuals experiencing mental health difficulties.
Phone: 0300 123 3393
Website: www.mind.org.uk

Appendix O: Coded Transcript Extract

Key:

- Highlighted text = coded
- (Highlighted text in brackets) = initial codes

P121:36
Well, during scans, we're always waiting for them to say, oh, there's a CoA or gastroschisis or we find out there's something wrong with the limbs or there's something wrong, you were always waiting at the scan for them to say, 'Oh there's something we've picked up that we didn't see before' (anticipating the worst, professional knowledge causing stress, heightened anxiety due to knowledge), that's probably some of the things.

I22:01
Yeah. OK. So you're kind of always, how did you feel about going for scans? How, how did that feel at the time?

P122:07
So anxious.

I22:09
Mm hmm.

P122:10
And even after the scan, if it was a doctor that I didn't know, I would be like, well, how can I trust, cause a lot of my scans, I was consultant led, em, but then there was some scans that weren't consultant, the consultant just couldn't be at because he was at emergencies (lack of trust in unfamiliar clinicians), so especially with my, my youngest at the end stage just, think I was like, just before she was born I had my last scan and the scan previous she had been over, like they thought she was going to be quite big and then the next scan they said no, she had dropped, that she was below-

I22:51
Mm hmm.

P122:54
-And I was like, well, the consultant told me it was going to be big, I've had bigger babies in the past, what's happened like? Is there something wrong with the placenta? Is there something wrong with her cord? (anticipating the worst, impact of seeing the worst case scenario daily) Like why it's and everyone's like, listen, you're just over, you're over thinking, yeah but I cared for this baby that had this happen (heightened anxiety due to exposure, impact of professional knowledge) and like it's on the graph, she's up here and now she's down there like there has to be a reason, so then, everybody did because I didn't know the doctor, then I was like and she hadn't done the scan before, I just didn't trust it wasn't the doctor's fault, It was just the way I am with my anxiety. And then it ended up she had reduced foetal movements and had ended up in an emergency section and I was like, well, was that what the graph was trying to tell us?

I23:41

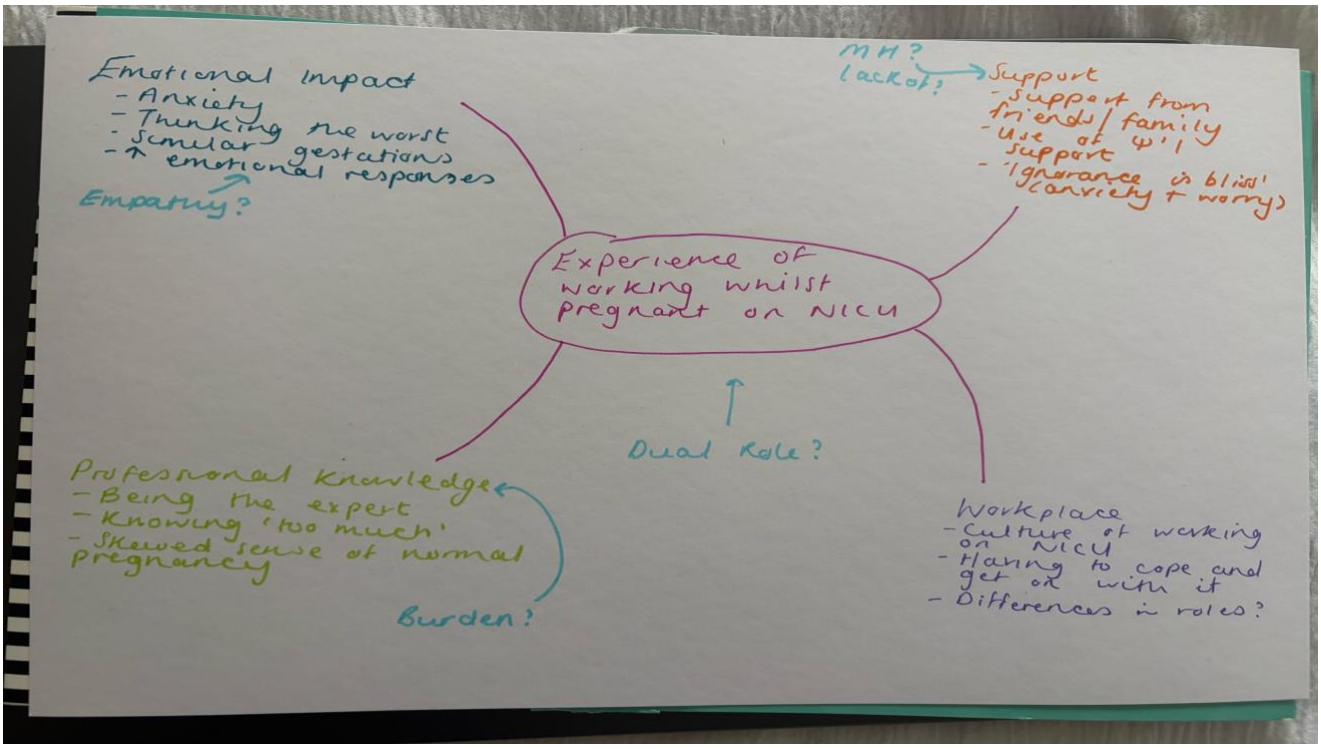
Mm hmm.

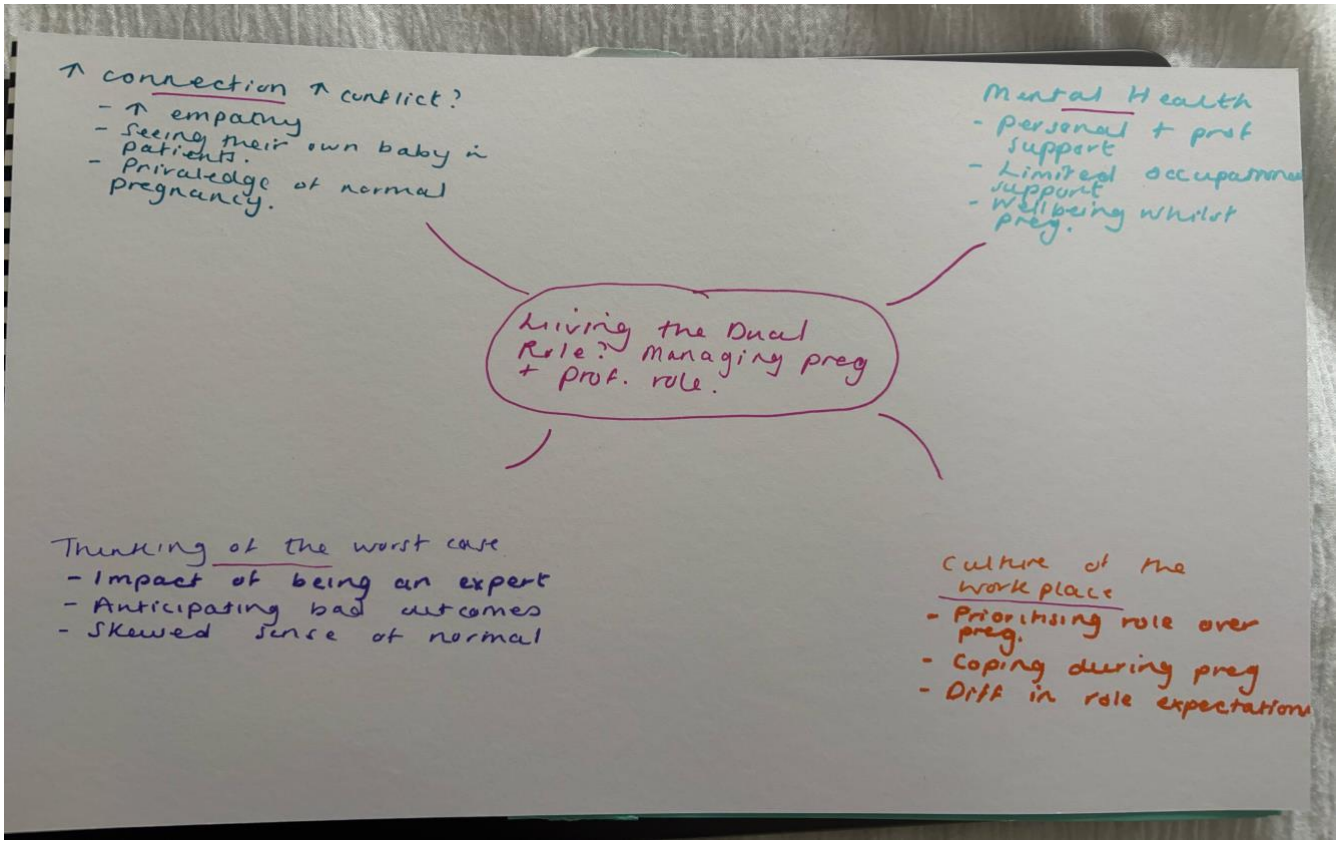
P123:49
But no one can say yes or no, obviously, but it was just, a worry.

I23:57
Yeah.

P123:57
I had an insight of what potentially could happen or what it could mean.(The impact of knowledge and expertise)

Appendix P: Initial Theme Map Ideas





Appendix Q: Additional Consent Form

Consent Form

Faculty of Medicine &
Health Sciences
Norwich Medical School
University of East Anglia
Norwich Research Park
Norwich, NR4 7TJ
United Kingdom

ELECTRONIC CONSENT FORM

Title of Project: A Qualitative Exploration of Female Health Care Professionals Experience of working on a Neonatal Intensive Care Unit whilst pregnant
Name of Researcher: Katie McHugh

Please select the box next to the statement to indicate your consent.

1. I agree to be contacted following the interview to review emerging codes and themes. ☐

Name of Participant	Date	Signature
Name of Researcher	Date	Signature