Exploring the Impact of Direct and Vicarious Trauma on Clinical Staff Working in High Intensity Environments

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Thesis Portfolio Abstract

Aims: This thesis portfolio aims to explore the impact of direct and vicarious trauma on clinical staff working in high intensity clinical environments.

Design: The thesis portfolio includes two main papers; a systematic review which reviews the use of psychological debriefing for clinical staff following direct and vicarious trauma in clinical settings, and an empirical paper exploring factors associated with secondary traumatic stress and burnout in neonatal intensive care staff. Three additional chapters providing supplementary information regarding methodology, additional results and an overall discussion and critical evaluation of the whole thesis portfolio is also included.

Results: The systematic review consists of 13 studies providing some evidence to suggest that psychological debriefing with clinical staff following exposure to direct and vicarious trauma in clinical settings can reduce distress symptomatology. Subjective evidence suggesting that clinical staff perceive psychological debriefing to be supportive and helpful was also found. The empirical paper revealed high levels of secondary traumatic stress and burnout amongst neonatal staff and indicated that levels of self-compassion and satisfaction with the working ward environment may influence prevalence and severity of secondary traumatic stress and burnout.

Conclusion: The thesis portfolio demonstrates that staff who are frequently exposed to direct and vicarious trauma within their working environment are at risk of emotional distress. To mitigate the impact of exposure to trauma, staff should be provided with appropriate support such as psychological debriefing or interventions designed to nurture self-compassion, provide support and enhance personal stress management skills.

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Introduction to Thesis Portfolio

The aim of the thesis portfolio is to explore the impact of direct and vicarious trauma on staff working in high intensity clinical environments. The systematic review will examine the use of psychological debriefing (PD) with clinical staff following exposure to trauma within their working environment. More specifically, it will assess the efficacy of PD for reducing distress symptomology and explore clinical staff's experience of PD with regards to its usefulness and value. The empirical paper will go on to focus on a specific high intensity clinical environment by exploring the prevalence of, and factors associated with secondary traumatic stress (STS) and burnout amongst staff working in neonatal care units.

Key Terms

Trauma and posttraumatic stress disorder (PTSD). Trauma is described as the human experience in response to any life threatening or difficult event which causes significant emotional, psychological or physical distress. The DSM-5 (American Psychiatric Association, 2013) defines PTSD as "exposure to actual or threatened death, serious injury, or sexual violence" either directly as the victim or witness, or vicariously through the experience of others. There are a number of key symptoms of PTSD outlined in the DSM-5 (American Psychiatric Association, 2013); (1) intrusive reliving experiences in the form of flashbacks, nightmares and/or dissociation, (2) hyperarousal and hypervigilance to threat, (3) negative alterations in cognitions and mood, and (4) persistent avoidance of reminders of the event; all of which have a significant impact on functioning.

Secondary traumatic stress (STS). Secondary traumatic stress is defined by Figley (1995) as "the natural consequent behaviours and emotions resulting from knowledge about a

traumatising event experienced by another and wanting to help that traumatised or suffering person". This kind of vicarious trauma is common amongst those working within the helping professions including healthcare professionals, emergency aid workers, police, firefighters and the military, all of whom are routinely exposed to the pain and suffering of others as part of their working environment.

Clinical and non-clinical staff. For the purpose of the thesis portfolio the term "clinical staff" is used to capture all individuals working in a clinical capacity including both those with medical qualifications (e.g. doctors, nurses, approved healthcare practitioners, ambulance workers) and those who deliver direct clinical care following training (e.g. support workers). "Non-clinical" staff are individuals who are not directly involved in the care of others but are potentially vulnerable to witnessing traumatic events within their working environment e.g. porters, cleaners, administration and reception staff.

Clinical environment. Within the thesis portfolio the term "clinical environment" is used to describe any environment within which staff are working in a professional capacity delivering care. This includes both physical health and mental health hospitals and community locations to which emergency responders are required to attend e.g. to the site of an accident.

Rationale for the Systematic Review

Since the introduction of PD in the 1980s, there has been much controversy regarding the use of PD following trauma. Early systematic reviews of the literature concluded that there was no evidence that PD reduced psychological sequelae following exposure to trauma (Rose & Bisson 1998; Rose, Bisson & Wessley, 2003) and in fact evidence from two studies revealed increased rates of PTSD post PD attendance, one year (Bisson, Jenkins, Alexander & Bannister,

1997) and three years (Hobbs, Mayou, Harrison & Worlock, 1996) post trauma. These findings led to the recommendation that psychologically-informed debriefing should not be used in the prevention or treatment of PTSD (National Institute of Clinical Excellence, 2005; 2018).

However, amongst emergency service personnel and healthcare professionals frequently exposed to primary and secondary trauma, "debriefing" continues to be used, not as a treatment for PTSD but as an early intervention. Debriefing within these settings provides an opportunity for the provision of psychosocial peer support, reflection and expression of emotion about the trauma experiences, in addition to education around stress management. A recent review funded by Public Health England looked at the use of early post-trauma interventions amongst organisations including emergency responders (Richins et al., 2019). It was concluded that when tailored to meet the needs of the population to whom it is delivered, early-interventions are perceived as beneficial and reduce stress related absence.

Through discussions with the primary academic supervisor and clinical collaborator, both clinicians working within specialist paediatric services, it was suggested that it would be beneficial to explore the use PD specifically with clinical staff following exposure to trauma within their clinical working environments. This is an area of the literature current under reviewed despite the prevalent use of debriefing amongst these populations.

Rationale for the Empirical Paper

The focus of the empirical paper was initially proposed by the primary academic supervisor and clinical collaborator who work clinically within a tertiary neonatal intensive care unit. A review of the current literature investigating STS and burnout amongst healthcare professionals revealed that nursing populations were the primary focus of previous research and

that neonatal care units were underrepresented in the samples studied. Therefore, following discussions, it was proposed that the prevalence of, and factors associated with STS and burnout would be explored amongst all staff working within neonatal care. It was anticipated that understanding more about the factors which influence levels of STS and burnout could go on to inform interventions to improve staff support.

Thesis Structure

The thesis portfolio starts with a systematic review examining the use of PD for clinical staff following exposure to trauma within their working environment. This is followed by a bridging chapter summarising the results of the systematic review linking this to the focus of the empirical paper. Next is the empirical paper which explores the prevalence of, and factors associated with STS and burnout amongst neonatal staff. The empirical paper is followed by an extended methodology and additional results chapter providing detail and findings unable to be included in the main paper. Finally, the thesis portfolio is concluded with an extended discussion and critical evaluation. This chapter provides an overall summary of the findings and clinical implications within the portfolio, discusses strengths and weaknesses, and provides suggestions for future research.

Chapter 1: Systematic Review

Prepared for submission to the British Journal of Psychiatry

(Author guidelines in appendix A)

For the purpose of the thesis portfolio, tables and figures have been included within the text.

Psychological debriefing for clinical staff following direct and vicarious trauma in clinical settings: a systematic review.

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Abstract

Background: Healthcare professionals are regularly exposed to trauma beyond the average person's experience. Repeated exposure to traumatic events without appropriate support can have a significant impact on both physical and mental health.

Aims: This systematic review set out to investigate the use of psychological debriefing for clinical staff following direct and vicarious trauma in clinical settings and address the following questions: (1) does the use of psychological debriefing following a traumatic event impact on distress symptomatology and (2) how do clinical staff experience psychological debriefing, and what factors influence this?

Method: A systematic search of five electronic databases was conducted. Articles were included if they described the use of psychological debriefing with clinical staff following a traumatic event within a clinical setting. Methodological quality of included studies were assessed and a narrative synthesis performed.

Results*:* Thirteen studies were included; five studies found some evidence for the benefits of psychological debriefing in reducing psychological sequelae to traumatic events. Seven studies commented on factors which clinical staff perceive to be important for psychological debriefing to be useful; the opportunity for reflection, gaining a shared experience and having the right peer facilitator were all important.

Conclusions*:* Some evidence was found to suggest that psychological debriefing with clinical staff working in clinical settings can reduce distress symptomatology. Subjective evidence was found to suggest that clinical staff perceive psychological debriefing to be useful. Due to the limited literature in this area, no firm conclusions can be drawn. Further methodologically sound evidence is required.

Keywords: psychological debriefing, trauma, clinical, systematic review

Introduction

Individuals working within the healthcare profession are regularly exposed to human suffering, life or death situations and traumatic events above and beyond the average person's experience. Mass casualties, the death of a child or long-term patient and workplace violence are just some of the experiences faced by staff.[1] These kinds of events are known as critical incidents (CI) and are defined as situations which can be experienced as traumatic, causing an emotional response and overwhelming an individual's usual coping mechanisms, leading to significant distress impacting on their ability to function in that moment or after the event.[2]

Repeated exposure to CI without appropriate support can significantly impact both physical and mental health and directly influence an individual's vulnerability to developing subsequent posttraumatic stress disorder (PTSD).[3,4] Intrusive thoughts, re-experiencing, emotional numbing, avoidant behavior and hypervigilance to threat are all common experiences following a traumatic event.[5] In addition to experiencing direct trauma related to their working environment, individuals working within the healthcare profession are exposed to the trauma of the patients they care for; defined as vicarious trauma or secondary traumatic stress (STS).[6] Secondary traumatic stress is "the consequential behavioural and emotional response from working with and wanting to help a traumatised or suffering other".[6] This kind of stress, over time, leaves healthcare professionals vulnerable to compassion fatigue, a unique form of burnout as a result of loss of compassion. Compassion fatigue and burnout increases the potential need for time away from work, thus impacting on the National Health Service (NHS) workforce in terms of sickness absence and the cost of covering this.[7]

Moderate to high levels of STS have been found across staffing populations including nursing[8,9] and other healthcare professionals.[10,11,12]

Alongside the emotional impact of traumatic experiences, this level of stress can have a significant impact on cognitive functioning including attention, memory and decision-making.[13,14,15] The consequences of these cognitive disruptions have the potential to significantly impact on clinical performance, leading to potentially detrimental effects, not only for the individual but for the patients they care for.[16,17,18]

Due to the recognition that exposure to traumatic events can lead individuals to develop PTSD and other mental health difficulties, interventions to reduce the impact of such events have long been called for. One of the earliest suggestions of support took the form of psychological debriefing (PD). Mitchell proposed one the first models of PD; critical incident stress debriefing (CISD) designed as an individual or group intervention for emergency personnel.[19] The purpose of CISD was to provide a safe space for individuals involved in the event to discuss their thoughts, feelings and reactions, with the aim to reduce immediate distress and prevent the development of consequential psychological disturbances such as PTSD.[19] This process is facilitated by encouraging emotional processing through retelling of the event, normalising trauma reactions and preparation for possible future experiences.[20] Critical incident stress debriefing also allows for the identification of any individuals who might require more formalised on-going support.[21]

Typically, CISD is facilitated as a single session semi-structured group meeting, led by a mental health practitioner and peer support representative. Sessions last approximately 1-3 hours and are held between 24-72 hours after the event. Michell[19] described CISD as moving through seven phases; the (1) introductory phase; explanation of the purpose of the debriefing and group rules, individual introductions and establishing roles at the scene, (2) fact phase; a rich description of the event, (3) thoughts phase; ideas and initial feelings towards the event, (4)

reactions phase; identification of the hardest parts of the event, (5) stressors phase; discussions of actual or potential trauma-related reactions at the time of the event and in the time afterwards, (6) stress education phase; education around typical trauma-related symptoms, normalisation and coping in the future and (7) summary phase; a chance for questions, clarification, summarising and feedback.

Since the development of CISD, Mitchell's original model has been revised and expanded by others including by Dyregrov[22] who first used the term "psychological debriefing". Dyregrov[22] spoke of the importance of providing individuals with an opportunity to make sense of what happened by going through the event in detail hearing the recollections and emotional experiences of others.[23] In addition, PD allows for peer support through the process of developing a shared understanding of the experience to enable more effective coping.[24]

Literature investigating the effectiveness of PD highlights its extensive use across a wide range of populations in response to a number of CI including for nurses and clinicians following the death of a child or failed resuscitation,[25] road traffic victims[26,27] and emergency service personnel including police officers, firefighters[28] and the military.[29] However, despite its widespread use, there has been much controversy regarding the appropriate use and efficacy of PD in the prevention of PTSD and other psychological consequences following trauma.[21]

Rose and Bisson[30] conducted the first systematic review investigating the efficacy of PD as a brief early psychological intervention following trauma. This review included six randomised control trails (RCT) which described the use of individual or couple PD within a range of populations from burns victims[31] to those involved in motor vehicle accidents.[27] The authors concluded that "no evidence was found for the effectiveness of one-off interventions in the prevention of psychological sequelae following traumatic events" and in fact two studies

included in the review reported negative outcomes for the use of PD. These trials were those with the longest follow-up at one year[31] and three years[27] both reporting significantly higher rates of PTSD amongst those who attended PD compared to those who received no intervention. When considering explanations of these findings it has been suggested that engagement in PD may lead to possible retraumatisation or might, in fact, pathologise normal distress responses.[21,32]

These findings went on to inform the first Cochrane review of PD published in 1998 which was then subsequently updated in 2002 in response to the publication of new RCTs.[33] Both reviews drew the same conclusions, that there was "no evidence that psychological debriefing reduces the risk of developing PTSD"[33] and that the use of compulsory debriefing in response to exposure to trauma should stop immediately pending further research. In light of the evidence of potentially harmful effects of PD, clinical guidance[34] released in 2005 and updated in 2018, warns against the use of psychologically-focused debriefing for the prevention or treatment of PTSD stating that it should not be used.

It is important to note that many of the studies included in these reviews involved individual rather than group PD and more often than not PD was delivered outside Mitchell's[19] recommended timeframe of 24-72 hours after the event. In addition, the methodological quality of studies varied greatly.[35] Many of the methodological weaknesses were accounted for by small sample sizes, experimental designs with a lack of control or comparison groups, a lack of randomisation to PD and no treatment groups, non-manualised intervention protocols, untrained facilitators, variations in the length of debriefing sessions (20-120 minutes) and application to inappropriate populations.[21]

Alongside measuring the efficacy of PD in the prevention of PTSD, outcomes including subjective satisfaction with PD and work-based outcomes such as team effectiveness and clinical performance have also been considered within the literature.

Interestingly, there appear to be discrepancies between subjective and objective measures regarding the efficacy of PD.[21] When asked about its "usefulness", subjective feedback is largely positive, even when simultaneous objective measures do not reflect these outcomes.[31,36,37] As an explanation for these findings, it has been suggested that there is a common perception held that "talking" can be helpful and that the offer of such support holds a powerful representation of care.[21]

Reviews investigating the influence of debriefing amongst healthcare professionals highlighted benefits for improving learning and team performance, recommending its use as an educational strategy in the acquisition of new knowledge and skills[38,39]. Research regarding the efficacy of group PD with healthcare professionals and emergency service personnel have also found PD to be helpful in alleviating the effects of vicarious psychological distress.[40,41]

Due to the findings described above, the use of psychologically-informed debriefing is not recommended for the prevention and treatment of PTSD[34]. However, the use of debriefing, not as a treatment for PTSD but as an early opportunity for peer support, reflection, expression of emotion and normalization of experiences after a traumatic event and education around stress management continues to be used amongst healthcare professionals in relation to work-related distress.

In the most recent review funded by Public Health England looking at early post-trauma interventions amongst organisations, the authors concluded that when tailored to meet the needs of the population to whom it is delivered, early-interventions are valued and perceived as

beneficial and supportive by emergency responders with studies highlighting positive effects on PTSD severity and reduced stress related absence[42]. However, to date there is little research which focuses on the efficacy of PD following CI within clinical working environments.[43]

The aim of this review was to systematically consider the research literature investigating the impact of PD used for clinical staff working within clinical settings following CI of direct or vicarious trauma.

More specifically, this review aims to address the following questions:

1. Does the use of psychological debriefing following a traumatic event impact on distress symptomatology in clinical staff?
2. How do clinical staff experience psychological debriefing, and what factors influence this?

Method

The following review has been registered on PROSPERO (ID: CRD42019139139), an international prospective register of systematic reviews.

Search Strategy

Electronic searches were conducted using the following five databases in August 2019; CINAHL Complete (1937 – 2019), PsycINFO (1887 – 2019), EMBASE (1974 – 2019), MEDLINE (1946 – 2019) and PubMed (1996 – 2019). Search terms included ("debrief*" OR "psycholog* support" OR "psycholog* intervention*" OR "incident* support" OR "reflective practice") AND ("trauma*" OR "PTSD" OR "stressful event*" OR "clinical event*" OR "critical incident*" OR "adverse incident* OR "adverse event"). Synonyms of "clinical staff/

clinical setting" were not included in the search strategy to reduce the risk of incorrectly excluding eligible studies. In addition to electronic searches, reference lists of included studies and other relevant debriefing literature identified by the searches were manually searched to elicit further appropriate studies.

Eligibility Criteria

Publications were screened for inclusion according to the following criteria:

1. *Population:* Studies were included if participants were aged 18+ years and described as clinical staff (e.g. doctors, emergency nurses, medical technicians, ambulance workers). Studies were excluded if participants were non-clinical populations (e.g. military, police, patient victims). Due to the limited literature investigating the use of PD within clinical staff populations, studies describing mixed samples of both clinical and non-clinical staff were included if the study methodology was of good quality.
2. *Intervention:* Studies outlined the use of PD as the intervention following exposure to trauma. Interventions were described as including the key elements outlined by Mitchell[19] and Dyregrov;[22] (1) emotional processing of the incident through retelling and discussions of subsequent thoughts, feelings and reactions, (2) psychoeducation and normalisation of stress responses and (3) suggestions of future coping. To expand the findings of previous reviews, studies describing single and multiple session, individual or group interventions were included. Studies describing simulation interventions were excluded due to these involving virtual scenarios to prepare for CI, not involving support following a real-life event.

3. *Exposure to trauma:* Studies described participants being offered PD following exposure to trauma. These events included both discrete events (e.g. an air ambulance crash, mass shooting) and repeated exposure to trauma as part of the working environment (e.g. deaths of long-term patients, failed resuscitations).
4. *Setting:* Studies were included if they described the traumatic event as having occurred within a clinical setting (e.g. hospital wards, ambulance workers responding to emergency calls).
5. *Study design and quality:* Studies using both qualitative and quantitative methodologies were included. There were no restrictions on study design. Studies with "poor" methodological ratings were excluded to minimise risk of bias.
6. *Format and date:* Only English-language studies available in full-text and published in peer-review journals were included. There were no date restrictions on the searches, papers of all dates were included.

Study Selection and Data Extraction

Following searches of the electronic databases and removal of duplicates, titles and abstracts were screened for eligibility according to the inclusion criteria by the first author (ZS) and a 10% proportion was screened by a second researcher (KL). Disagreements were discussed in relation to the inclusion criteria or through consultation with a third reviewer if required. Full-text articles were assessed for eligibility by the first author (ZS) during which data was extracted using a pre-defined database. The following information was extracted for each study; study characteristics (author, year of publication, title, country of origin, study aims and design), sample characteristics (inclusion/ exclusion criteria, sample size, age (mean and range), gender,

occupation), intervention details (description of PD, facilitator details, delivery time after trauma, individual/group, single/multiple session), details of the traumatic event (discrete/prolonged, location), main outcomes and author conclusions.

Quality Assessment (Risk of Bias)

Quality assessment was conducted using the Quality Assessment Tool for Studies with Diverse Designs (QATSDD)[44]. Unlike other quality assessment tools which typically target particular research designs, the QATSDD was specifically designed to be applied to research of diverse methodologies. Due to the methodological diversity of the included studies (cross-sectional, longitudinal, descriptive, experimental, quantitative and qualitative), the use of quality assessment tools used in previous reviews of PD and within healthcare settings[45] were not possible. Therefore, the QATSDD was chosen for the present study given it's good inter-rater and test-retest reliability.[44]

The 16-items of the QATSDD are rated on a 4-point scale from "not at all" (0) to "complete" (3). All items are applicable to mixed method designs (total score = 48); 14 items apply to quantitative designs (total score = 42) and 14 items apply to qualitative designs (total score = 42). Final quality ratings are expressed as a percentage of the total number of applicable criteria. Papers scoring over 75% were considered "high" quality, those between 50% - 75% "good", 25%–50% "moderate", and below 25% "poor". The first author (ZS) initially completed quality assessment, six studies (46%) were assessed by a second researcher (KL) blind to the ratings of the first, and disagreements were resolved through discussion or through consultation with a third reviewer if required. Scoring guidance for the QATSDD can be found in appendix B.

Data Synthesis

Given the heterogeneity of studies, a formal meta-analysis was not possible, therefore a narrative synthesis was conducted following published guidance for undertaking reviews in healthcare.[46]

Findings were separated, to answer each of the review questions. Initially, primary study findings for each question were interpreted. Studies were then grouped depending on whether the intervention described used a standardised CISD protocol as outlined by Mitchell[19] or an adapted version of CISD. Similarities and differences between studies in both groups were discussed, taking into consideration study design, methodological quality, sample population and traumatic event described.

Results

Initial electronic and manual searches identified 5624 studies. Once duplicates were removed and papers screened for eligibility, initially by title and abstract and finally by full-text, a total of 14 studies were deemed relevant for inclusion within this review. Twenty-nine papers were excluded at the full-text screening phase; three studies used non-clinical samples including patient victims of trauma or emergency personnel including firefighters and police. One study investigated the regular use of monthly PD in medical students as opposed to PD following a specific CI, four were conference abstracts and the remainder of the studies discussed in detail the application of new PD protocols within clinical settings however no evaluation or feedback regarding the efficacy of these protocols were included. Following assessment of methodological quality, one study received a “poor” rating and was subsequently removed from the synthesis

leading to a final pool of 13 papers. Full details of the screening and selection process is presented in Figure 1 (PRISMA).[47]

Study Quality

Quality assessment was conducted by two independent reviewers; the first author (ZS) and a second researcher (KL) who rated 6 out of the 13 papers (46%). Discrepancies were resolved through discussion or consultation with a third reviewer if required. Cohen's Kappa was 0.57 indicating "moderate" interrater agreement.

As rated by the Quality Assessment Tool of Studies with Diverse Designs (QATSDD)[44] the quality of the majority of studies were rated as "moderate" to "good" (93%); one paper received a "poor" rating and was subsequently removed from the analysis to reduce the risk of bias.

Common weaknesses across studies were; a consistent absence of priori sample size considerations and service user involvement; minimal justification for the method of data collection and analysis and; limited critical appraisal. Further details of quality scores for each study included in the synthesis can be found in table 1.

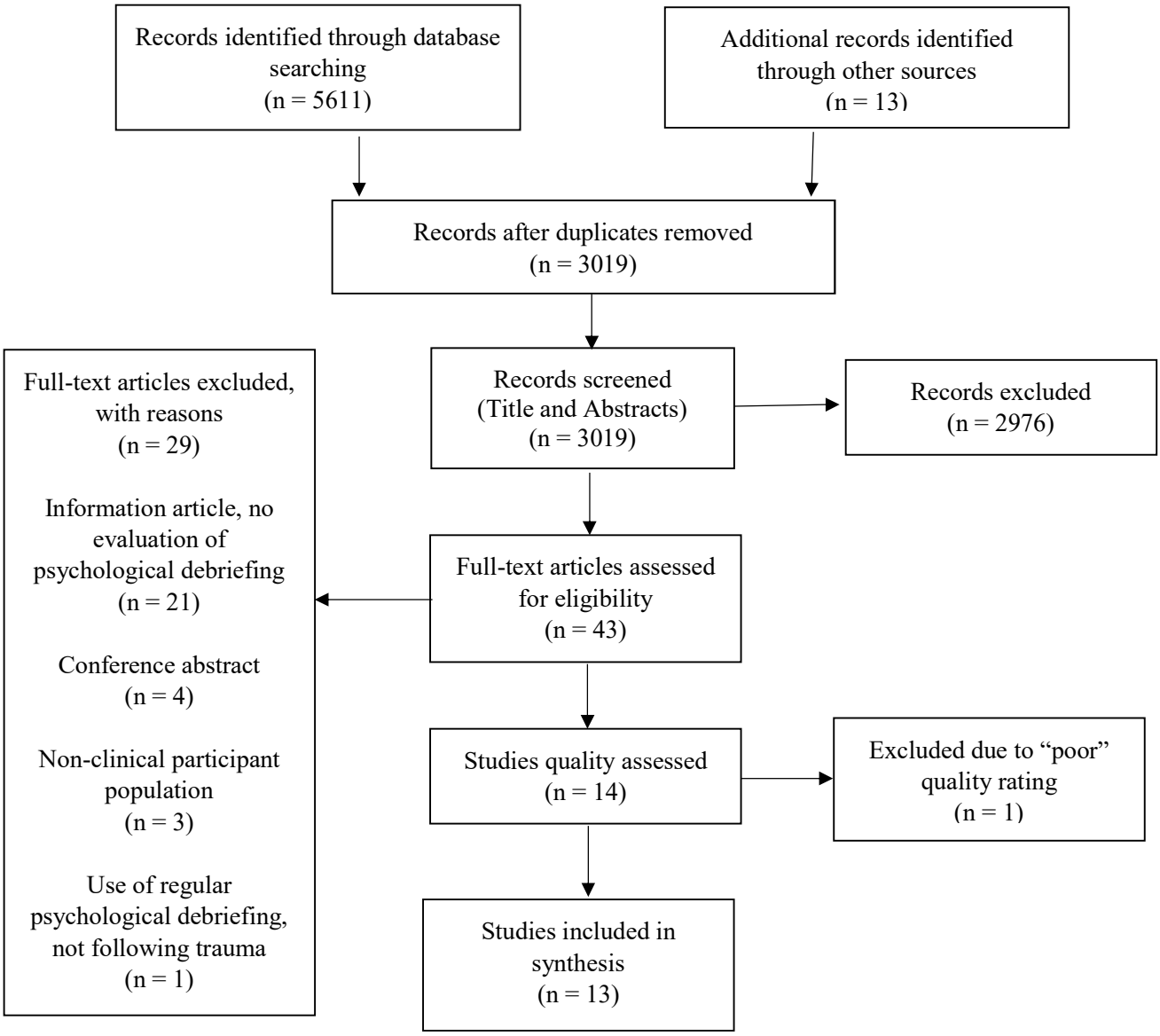

Figure 1. PRISMA diagram showing systematic search and selection of studies within the review.

Study Characteristics

Studies included in the review were conducted across a diverse range of countries; 38% in the United States of America,[1,16,48,49,50] 23% in the United Kingdom,[25,51,52] 23% in Australia[28,53,54] and 15% in Canada.[55,56]

Studies most commonly used mixed-method descriptive designs using surveys[25,28,50,52] or interviews[47] for data collection. In addition, there were two non-randomised quantitative trials,[51,54] one RCT,[56] a quantitative longitudinal cohort study,[53] two mixed-method longitudinal studies[48,58] and finally two qualitative designs.[1,16]

A variety of traumatic incidents were described; four included specific events including public suicide,[53] armed robbery or emergency medical situations,[51] a mass shooting with multiple fatalities[48] and an air ambulance crash.[55] The remaining nine studies (69%) described repeated exposure to traumatic events such as unexpected patient deaths, failed resuscitation and personal threat as part of the clinical working environment.

Twelve out of the 13 studies described single session, semi-structured group PD; the remaining study used individual PD for traumatic events rated as "moderate" severity and individual PD plus group defusing for "severe" events.[56] The majority of studies used a standardised CISD protocol based on Mitchell's[19] model; four studies described variations of CISD adapted to better suit the clinical environment within which they were facilitated. These adaptations included flexible delivery in terms of structure and timing[1,53] or a change in the focus of discussion.[50,52] Of the 13 studies included, five used standardised psychometrics to measure posttraumatic-stress symptoms[57,58] and other distress symptomatology.[59-61] The remaining eight used bespoke questionnaires and interview schedules specifically designed by the researchers for the purpose of the study. Further study characteristics are presented in table 2.

Sample Characteristics

Six studies involved samples of clinical staff of varied occupation including nurses, doctors and other healthcare professionals working in high-intensity environments.[16,25,50, 52, 53,55] Two samples consisted of a purely nursing population,[1,49], one study focused on a population of paramedics and emergency medical technicians[56] and one study looked at community care workers working in residential settings with people with developmental and psychiatric disabilities.[54] The final three samples consisted of a mixed clinical staff and non-clinical populations including firefighters, police officers and retail and financial workers.[48,28,51]

Participant numbers ranged from 9 to 682. In studies where age was reported, a number of measures of central tendencies were used. Mean ages ranged from 36 to 37.8 and ranges covered ages 18 to 50+. Where gender was reported, three studies reported a higher proportion of females, ranging from 62.5 – 94%. Two studies reported a higher proportion of males at 53% and 94%.

Table 1. Quality assessment ratings using the QATSDD.[44]

Study	Design	QATSDD Scoring																% Total
		1	2	3	4	5	6	7	8	9 Qn	10 Qn	11 Ql	12	13	14 Ql	15	16	
Archibald and O'Curry[55]	Mixed method Cross-sectional Descriptive	2	1	3	0	2	2	0	2	0	1	2	2	0	0	0	0	35.4
Blacklock[56]	Quantitative Longitudinal Cohort	2	2	3	1	1	3	0	3	0	2	N/A	1	1	N/A	0	1	47.6
Burns and Harm[53]	Mixed method Cross-sectional	2	3	2	0	2	2	0	2	0	2	2	1	0	1	0	0	39.6
Clark et al.[1]	Qualitative Cross-sectional	2	3	3	0	2	3	0	2	N/A	N/A	3	3	1	3	1	1	64.3
Humphries and Carr[42]	Quantitative Longitudinal Non-randomised trial	2	3	2	0	2	1	1	1	1	3	N/A	3	0	N/A	0	2	50.0
Ireland et al.[25]	Mixed method Cross-sectional Descriptive	2	1	3	0	2	2	0	1	0	2	2	2	0	1	1	0	39.5
Jenkins[34]	Mixed method Longitudinal	2	2	2	0	1	3	2	2	0	1	2	2	0	0	0	2	43.8
Keene et al.[54]	Mixed method Cross-sectional	2	2	1	0	1	2	2	2	1	2	2	2	0	0	0	1	47.7
Macnab et al.[58]	Mixed method Longitudinal	2	1	1	0	2	2	0	2	1	1	1	2	0	0	0	0	31.3
Macnab et al.[59]	Quantitative Longitudinal RCT	2	2	3	0	2	3	1	1	0	3	N/A	2	0	N/A	0	1	47.6
Matthews[57]	Non-randomised Quantitative Cross-sectional	2	3	2	0	2	2	2	2	0	2	2	2	0	N/A	0	1	52.4

Robinson and Mitchell[28]	Mixed method Cross-sectional Descriptive	2	1	3	0	2	1	0	2	0	2	2	2	0	0	1	1	36.6
Spitzer and Burke[16]	Qualitative Cross-sectional Descriptive	2	1	3	0	2	2	0	1	N/A	N/A	1	1	0	0	0	0	31.0

Notes: QATSDD criteria: 1. Explicit theoretical framework. 2. Statement of aims/objectives. 3. Research setting described. 4. Sample size considered for analysis. 5. Representative sample of reasonable size. 6. Data collection procedure described. 7. Rationale for data collection tool(s). 8. Detailed recruitment data. 9. Statistical assessment of reliability/validity of data collection tool(s). 10. Fit between research question(s) and data collection method. 11. Fit between research question(s) and format/content of data collection tool(s). 12. Fit between research question and analytic method. 13. Choice of analytic method justified. 14. Reliability of analytic process assessed. 15. User involvement in design. 16. Strengths/limitations discussed. Qn = criterion applies to quantitative designs; Ql = criterion applies to qualitative designs.

Table 2. Summary of included studies including type of trauma, intervention details and main findings.

Study	Trauma	Intervention details	Main findings: impact of PD on distress symptomatology	Main findings: experience of PD
Archibald and O'Curry (in press)[52]	**Repeated exposure**; multiple infant deaths	**Adapted CISD;** providing an environment promoting a sense of safety, calm, a sense of self and community efficacy, connectedness and hope[65] to enable staff reflection		**Data collection:** Survey **Overall findings:** 22/23 satisfied with PD 88% felt able to talk openly and honestly **Beneficial factors:** No pressure to talk Value of shared experience Facilitators being non-medical (psychologists) helped feel comfortable to talk Meet straight after event and after processing time **Challenges/ negatives:** Scheduling PD Perceived hierarchy in the room; harder for junior staff to speak
Blacklock (2012)[53]	**Single event:** Public suicide	**Adapted CISD;** combined defusion and debriefing	**Measures:** Impact of events scale (IES) sent via email **Analysis:** No details provided **Timepoints:** 10 days and 6 weeks following the event 3 months follow up phone call **Findings:** IES; reduction in scores between 10 days and 6 weeks following the event 3 months after event no intrusive thoughts or avoidance behaviour reported	

Burns and Harm (1993)[49]	**Repeated exposure;** child death, multiple casualties, failed resuscitation	**Standardised CISD**		**Data Collection:** Questionnaire, structured telephone interview **Analysis:** Content analysis **Overall findings:** 88% helpful in reducing critical incident stress 82% improve coping with the event 47% reduced the intensity of stress response **Beneficial factors:** Shared experience "I'm not alone" Learnt coping from others and the facilitator Voluntary attendance Co-facilitated by peers **Challenges/ negatives:** Facilitators with no experience of clinical setting Discomfort to talk in front of some attendees Incorrect timing; too soon/long after event Required to take time out of personal life to attend
Clark et al. (2018)[1]	**Repeated exposure**	**Adapted CISD;** group meeting facilitated at the end of the shift or within 24 hours following the event.		**Data collection:** Focus groups **Analysis:** Content analysis **Findings:** Main theme "Clearing the Air and Finding Answers" 6 subthemes; (1) use of current debriefing strategies outside CISD, (2) importance of positive reinforcement, (3) importance of constructive critique; what could be improved and done differently next time (4) clinical focus, not emotional (5) voluntary attendance

				(6) CISD structure; charge nurse facilitator, everyone invited, facilitated within 12-24 hours after the event
Humphries and Carr (2001)[51]	**Single event;** armed robbery and **repeated exposure;** emergency environment - death or serious injury	**Three groups:** Intervention; standardised CISD Control 1: no treatment Control 2: psychoeducation stress lecture (SL)	**Measures:** Impact of events scale (IES) **Timepoints:** time 1; before CISD, time 2; 6 weeks after **Findings** IES; greatest reduction in mean score from time 1 and 2 occurred in the CISD or SL conditions. Significant greater reduction of PTSD symptoms in CISD when compared to no intervention control. No evidence that CISD was more or less effective at reducing distress in comparison to a simple psychoeducational intervention	
Ireland et al. (2008)[25]	**Repeated exposure;** death, failed paediatric resuscitation	**Standardised CISD**		**Data collection:** Questionnaire **Overall findings:** 35% offered comments in support of PD **Beneficial factors:** Facilitated early after the event Voluntary attendance Trained facilitator Informal, non-judgmental atmosphere **Challenges/ negatives** Organising PD to accommodate shift patterns
Jenkins (1996)[48]	**Single event;** mass shooting: 23 dead, multiple casualties	**Standardised CISD**	**Measures:** Psychological distress; symptoms checklist_90 revised - **c**ompleted retrospectively for the week before and after the event Psychosomatic distress; 5-point likert scale to measure 13 health problems - given 1 month	**Data collection:** Questionnaire and semi-structured interview (1 week following event) **Analysis:** Content Analysis **Overall findings:**

			after event and asked to rate for now and retrospectively for the month before the event **Findings 1:** 52% sample attended CISD No difference in pre-event distress between CISD attenders and non-attenders. Strongest recovery effects (correlations) appeared amongst those who attended CISD; better recovery from depression and anxiety symptoms	Participants who rated social support as less available were more likely to say that CISD helped them cope with the experience. Half CISD attenders spontaneously mentioned during interview that attendance helped them to cope with the traumatic event.
Keene et al. (2010)[50]	**Repeated exposure;** unexpected deaths or deaths of long-term paediatric patients	**Adapted CISD;** Bereavement debriefing: (1) focus on the emotional response in the wider context of a relationship with the patient (2) facilitate within a week of the patient's death, often after the funeral.		**Data collection:** Evaluation questionnaires, session notes **Analysis:** ANOVA **Overall findings:** 98.4% helpful 97.8% informative 97.8% meaningful Greater participation in session = greater perceived ability to manage grief and greater perceived ability to maintain professional integrity **Beneficial factors** Hearing the perspective of others
Macnab et al. (1999)[55]	**Single event:** air ambulance crash with 5 fatalities	**Standardised CISD** with additional drop-in sessions and defusion	**Measures:** Questionnaire and 24 month follow up; impact of event scale (IES) and general health questionnaire (GHQ) **Analysis:** T-tests, ANOVAs **Timepoints:** first 24 hours, 2-28 days, 1-6 months, 24 months follow up (n = 19)	**Data collection:** Questionnaire **Challenges/ negatives** Facilitators unfamiliar with working environment Offer of support felt impulsive and unusual

			Findings: No significant correlation between number of debriefing sessions attended and frequency or severity of PTSD symptoms expressed (r2 = 0.12 at day 1, 0.08 at 1 month, 0.01 at 6 months) At 24 months follow up: mean score on IES scale for transport paramedics was 10.4, 53% scored above 7 and 10% above 30. 16% scored above the cut-off on GHQ	
Macnab et al.(2004)[56]	**Single events:** three categories; "mild", "moderate" or severe"	**Three groups:** "Mild" – a listening ear "Moderate" – a listening ear, and referral for individual debriefing "Severe" - group defusing and individual debriefing	**Measures:** Stanford Acute Stress Reaction Questionnaire (SASQ), the Life Impact Score (LIS) and Schedule of Recent Events (SRE)– one week after event Impact of Events (IES), Coping Mechanisms, LIS, and SRE – 3 and 6 months following intervention **Findings:** no correlation between the severity of the incident and scores on SASQ, IES, LIS No consistent pattern in stress scores over time Due to small sample size there was insufficient power to make any distinction between different levels of intervention	
Matthews (1998)[54]	**Single event in a repeated exposure environment;** personal assaults, self-injurious behavior, resident-	**Three groups:** Group 1: attended standardised CISD Group 2: chose not to attend CISD	**Measures:** Questionnaire; included short version of Impact of Events Scale (IES) and measures from the Everstine Trauma Response Index. **Findings:** 98% participants reported symptoms of PTSD Higher levels of distress at time of the incident in CISD group in comparison to those who	**Data collection:** Questionnaire **Overall finding:** 57% of CISD found it helpful in reducing stress symptoms

	resident assault, medical emergencies	Group 3: CISD not available	chose not to attend (Mann Whitney U = 62.5, p = 0.01) and where it was not available (Mann Whitney U = 120, p = 0.01) All group levels of distress lessened between the time of the incident and the following week Lowest levels of symptoms were found in participants in area where CISD was available but they chose not to attend No significant difference in overall stress levels in the week after the incident was found between the workers who received CISD and those who did not.	
Robinson and Mitchell (1993)[28]	**Repeated exposure;** mass casualties, unexpected death	**Standardised CISD**	**Measures:** Questionnaire **Findings 1:** Both emergency service personnel and hospital and welfare workers reported significant lower impact scores from the time of the incident to after debriefing (p<.001, Wilcoxon signed rank test) Emergency service personnel, relative to hospital and welfare workers reported less initial impact of the event and greater impact reduction over time	**Data Collection:** Questionnaire **Overall findings:** 96% of emergency service personnel and 77% of the welfare and hospital staff attributed a reduction of their stress symptoms, at least in part, to the debriefing For emergency service staff the greater the impact on staff, the more they valued the debriefing (x^ = 5.9, p < 0.05). **Beneficial factors:** Shared experience Increase understanding of the effects of the event **Challenges/ negative:** Inexperienced facilitators with a lack of knowledge around the clinical area and debriefing Too short Should be sooner after the event

Spitzer and Burke (1993)[16]	**Repeated exposure**	**Standardised CISD**		**Method:** Feedback collected via phone **Beneficial factors:** Shared experience Increased awareness of the emotional and behavioral effects of stress on themselves and colleagues Peer support; being part of a team

Study Findings

Does the use of psychological debriefing (PD) following a traumatic event impact on distress symptomatology in clinical staff?

Seven studies investigated the impact of PD on distress symptomatology. Five of these showed some evidence for the benefits of PD in reducing psychological sequelae to traumatic events and all reported reductions of stress response over time following PD attendance.[48,51,53,54] However only one of these studies reported on significance.[28] Of the remaining two papers; one reported no significant correlation between PD attendance and frequency or severity of PTSD symptoms at 1 and 6 months following the event;[55] the other study was unable to assess the effectiveness of PD due to limited sample size.[56]

Standard CISD vs. Adapted CISD: One study investigated the effectiveness of an adapted version of CISD in response to a public suicide in a hospital.[53] Adaptations involved combining emotional diffusion (immediate emotional support to enable staff to continue with their shift) and formal debriefing (emotional processing of the event). Clinicians who attended showed a reduction of PTSD symptoms[57] at 6 weeks and at 3-months follow up subjectively reported no symptoms of intrusive thoughts or avoidant behavior.

Of the six studies which used standardised CISD[19] as the intervention, three investigated the effectiveness of CISD compared to controls.[51,54,56] A single session group CISD for hospital emergency department staff, following emergency incidents, and for retail and financial sector workers, following armed robbery, was reported to be more effective at reducing PTSD symptoms[57] than no intervention but not when compared to those who received a simple psychoeducation lecture about stress.[51]

In a sample of community care workers, a non-randomised trial compared three groups of staff; those who attended CISD following a CI at work, those who chose not to attend CISD and those who did not have CISD available to them.[54] Across all three groups, levels of distress lessened between the time of the event and one week later. Posttraumatic stress symptoms were higher in staff where CISD was unavailable and the lowest levels were found in those who chose not to attend CISD.

A RCT provided three levels of CI support, ranging from a "listening ear" to formal CISD for paramedics and emergency medical technicians following traumatic incidents at work.[56] Due to a limited sample size (n = 6) there was insufficient power to make any distinctions between the different levels of intervention.

Two longitudinal studies with "moderate" methodological quality investigated the effectiveness of CISD following specific emergency CI.[48,55] One study examined the stress reactions and recovery in emergency medical personnel following a mass shooting incident in a café and found that CISD attendance was correlated with a reduction of symptoms of depression and anxiety[48].

In a sample of emergency physicians, transport paramedics and nurses, there was no significant correlation between CISD attendance and frequency or severity of PTSD symptoms 1 and 6 months following an air ambulance crash.[55] At two-year follow-up transport paramedics presented with persistent negative effects of the crash.

A final descriptive study used a survey to determine the impact of CISD between two groups; hospital and welfare staff on the one hand and emergency service personnel on the other.[28] Both groups reported a significant reduction in impact score from the time of the incident to 2 weeks following CISD.

Between-group similarities and differences. Due to the heterogeneity in study design, method of data collection and psychometric measures used in the studies reviewed, in addition to considering the findings in relation to standardised versus adapted CISD as the described intervention, the similarities and differences were considered between studies reporting some evidence of the efficacy of PD in reducing distress symptomatology and those showing no evidence.

Sample population. Three of the five studies that found reduced distress symptomology following PD attendance used samples of mixed clinical staff and non-clinical (e.g. firefighters, police officers) populations.[28,48,51] It was not possible to separate out these populations and therefore it is unclear if, when non-clinical populations were removed, a positive impact of PD would persist. Both studies that found no significant evidence, used purely clinical staff populations.[55.56]

Traumatic event and clinical setting. Four of the five studies that found reduced distress symptomology following PD attendance described traumatic events which initially occurred in the community[28,48,51] or within community settings.[54] However all staff involved in these incidents were working within a clinical role. Three of these five studies described specific single incidents and two described exposure to repeated trauma within the working environment.

Of the studies that found no significant evidence that PD reduced distress symptomology, one described repeated exposure to traumatic events within the hospital environment[56] and the other described a specific emergency incident in the community.[55]

Study design and quality. There was no apparent difference in methodological quality between studies which found some evidence for the effectiveness of PD in reducing distress symptomology and those with no significant evidence; all were rated as “moderate” or “good”.

A mixture of study designs were found across both groups with no particular patterns observed. Interestingly, the one study which used the gold standard RCT design was insufficiently powered due to a small sample size to make distinctions between CISD and comparison groups.[56]

How do clinical staff experience psychological debriefing, and what factors influence this?

Clinical staff's perceptions of PD were reported in detail by seven studies in the review. Five studies created feedback questionnaires using open-ended questions and Likert rating scales to gather information about both the usefulness and potential challenges to PD.[25,28,59,50,52] The remainder of the studies used interviews[16] and focus groups.[1]

Standard CISD vs. Adapted CISD: Three studies investigated clinical staff's experience of PD protocols based on adaptations to CISD. One study explored the experiences of neonatal intensive care staff of a protocol aimed specifically at creating an environment promoting a sense of safety, calm, a sense of self and community efficacy, connectedness and hope[62] to enable staff to reflect on complex cases.[52] Ninety-six percent were satisfied with the protocol and 88% felt able to contribute to discussions. In particular, staff valued the shared experience and the opportunity to reflect together on what happened, what went well and what could be improved in the future. Reported challenges to PD included difficulties scheduling meetings to suit everyone involved in the incident and the impact of potential hierarchical ranking amongst staff attendees.

When considering the usefulness of PD within a paediatric emergency department, emergency nurses emphasized the importance of a facilitator with an understanding of the current clinical environment, clear boundaries around attendance and a clear timeframe for delivery (within 12-24 hours after the event, preferably before the end of the shift).[1] In addition,

positive feedback on the quality of their work and constructive criticism about how to improve were valued.

One study evaluated a bereavement debriefing model which differed from CISD in two key ways; (1) bereavement debriefing focused on the emotional response in the wider context of the relationship with the patient and their family (not simply the impact of the death itself) and (2) it was facilitated within a week of the event, usually after the patient's funeral.[50] Attendees reported the bereavement debriefing sessions to be helpful (98.4%), informative (97.8%) and meaningful (97.8%). In addition, staff valued the opportunity to hear the perspective of other disciplines, particularly in relation to end of life care and relationships with the family. With regards to grief management, attendees who reported greater participation during PD rated a greater score on perceived ability to manage grief and maintain professional integrity.

All of the four main studies that used standardised CISD[19] as the intervention reported subjective benefits of CISD attendance.[16,25,28,49] Emergency nurses rated CISD as helpful in reducing critical stress symptoms (88%), reducing the intensity of their stress response (47%) and benefitting coping in the future (82%).[49] In addition, 96% of emergency service personnel and 77% of welfare and hospital staff attributed the reduction of their stress symptoms at least in part to CISD.[28] For emergency staff, the greater the impact of the incident, the greater the perceived value of PD.

Six studies reported on factors that impacted on the perceived usefulness of PD.[1,16,25,28,49,52] Clinical staff across studies most commonly spoke of the value of having an opportunity for reflection and gaining a shared experience with colleagues. Psychological debriefing being facilitated jointly by trained mental health and peer representatives was also reported as highly important. Four studies reported on potential challenges and barriers to PD

with the most frequently cited detrimental factor being an inexperienced facilitator with a lack of knowledge about the current clinical environment.[1,28,49,52] See table 3 for full details of factors.

Between-group similarities and differences. Unlike the studies reviewed for question one, there was increased homogeneity between the seven studies focusing on clinical staff's perceptions of PD. Six studies described CI within the hospital environment; the final study described emergency service personnel being exposed to CI out in the community.[28] In terms of study design, all seven studies used cross-sectional descriptive designs. In addition, there was little variability of methodological quality; six studies were rated as "moderate" and one as "good".[1]

The main differences were regarding sample population.

Sample population. Three of the four studies that reported on staff perceptions of standardised CISD[19] used samples of varied clinical roles (e.g. nurses, consultants, healthcare workers); the final study used a sample of mixed clinical staff and non-clinical (e.g. firefighters, police officers) populations.[28]

Of the three studies using adapted CISD, all used samples of paediatric clinicians working in specific departments; paediatric intensive care unit,[1] palliative care,[50] and neonatal intensive care unit[52].

Table 3. Factors which impact the usefulness and value of psychological debriefing.

Positive	Negative
• Opportunities for reflection and joint understanding; what went well, learning and future improvement (1,2,3,5,6) • Shared experience; "I'm not alone" (1,2,5,6) • Facilitated by a trained mental health and peer representative (1,3,4) • Relaxed informal, non-judgmental atmosphere (4,5) • Increasing understanding of personal and colleague reactions to the event (5,6) • No pressure to talk (1) • Learning from others; stress management and coping (2) • Everyone invited (3)	• Inexperienced facilitators with no prior experience of clinical area (2,5) • Difficulties scheduling meetings (1) • Perceived hierarchy in the room; less contributions from junior staff (1) • Taking time out of personal life (2) • Too much focus on emotional response; needing to remain professional (3)
Contradictory Views	
• Voluntary attendance (2,3,4) vs. Mandatory attendance (5) • Helpful soon after the event (1,3,4) vs. Too soon after the event (2) • Allow time for processing (1) vs. Too long after the event (2,5)	

Notes: References: 1. Archibald & O'Curry (in press)[52], 2. Burns & Harm (1993)[49], 3. Clark et al., (2018)[1], 4. Ireland et al., (2008)[25], 5. Robinson & Mitchell (1993)[28], 6. Spitzer & Burke (1993)[16].

Discussion

The present narrative synthesis explored the current literature in order to investigate the use of PD for clinical staff following direct and vicarious trauma in clinical settings. More specifically, it set out to address the following questions: (1) does the use of PD following a traumatic event impact on distress symptomatology in clinical staff and (2) how do clinical staff experience PD, and what factors influence this? Seven out of the 13 studies provided evidence for question one and seven were reviewed for question two.

With regards to the first question five out of seven studies showed some evidence of reduced distress symptomatology following PD. However, due to the limited number of studies reviewed for this question and the lack of longer-term longitudinal study designs, these findings should be interpreted with caution. Standardised CISD[19] was found to reduce PTSD symptoms from the time of the incident to 6 weeks later when compared to no treatment controls, however there was no evidence that CISD was any more or less effective than a standalone stress psychoeducation intervention.[51] An adapted CISD protocol was also found to reduce PTSD symptoms over the course of 3 months following a traumatic incident.[53] When comparing clinical staff who had access to CISD and those who did not, PTSD symptoms one week following the incident were found to be lowest in the sample where CISD was available but staff chose not to attend.[54] The author suggested that knowing that support such as CISD is available within a generally supportive working environment might in fact be enough for distress symptomatology to naturally reduce over time, regardless of whether CISD is used or not.

Two studies found no evidence that CISD attendance reduced PTSD symptoms over time.[55,56] Both studies were of "moderate" methodological quality and used robust objective measures to capture symptom change. One of these studies was a RCT which despite its gold standard research design had insufficient power due to limited sample size to analyse the effectiveness of CISD, in comparison to other lower level support interventions.[56] Findings within the second study revealed that, two years after an air ambulance crash, transport paramedics, who attended CISD, continued to experience negative effects when measured objectively,[57,61] despite the majority of paramedics involved subjectively rating themselves as "back to normal" at 6 months.[55] These discrepancies between objective and subjective measures of distress are consistent with the findings of other studies investigating the impact of PD.[31,36,37]

Perhaps objective measures are able to detect distress symptomatology that is subjectively unnoticeable or perhaps, within clinical staff populations, stress symptoms are expected as part of their day to day working life and, therefore, are subjectively perceived as "normal". Everly[63] proposed that individuals who work in environments involving frequent exposure to trauma might process these experiences differently to those not working in such environments due to their expectation of exposure to trauma as part of their job role and due to specialist training. In addition, it has been hypothesized that these kinds of job roles in fact attract emotionally hardy individuals. It is also worth noting in Macnab's[55] study that, within a 2-year timeframe, transport paramedics are highly likely to have been exposed to multiple additional traumatic incidents within their work and, therefore, symptomatology detected by objective measures at this time cannot be attributed to a single air ambulance crash alone.

Within this review, there is some evidence that PD, in the form of providing clinical teams a space for reflection and processing of critical incidents at work, can reduce distress symptoms in clinical staff populations following a traumatic event. However, an absence of longer-term follow-up measures within the included studies mean that no conclusions can be drawn regarding the possible harmful effects of PD as highlighted by previous reviews[21,30,32] leading to the recommendations that PD should not be used in the prevention or treatment in PTSD[34].

With regards to the second question, the primary aim of seven of the studies was to explore the experience of clinical staff attending PD and the factors that influence this. Four of these studies drew overall conclusions that participants were subjectively satisfied with their experience of both standardised and adapted CISD, finding it helpful in reducing stress symptoms. When considering factors that influence the supportiveness of PD, clinical

populations across studies most frequently spoke of the value of having an opportunity to discuss the traumatic event with colleagues, to express their feelings, hear the stories of others and together gain a shared understanding of the events as well as offer peer support and improve future coping. The reported value of the shared experience reflects findings within the literature regarding the benefits of peer support during the processing of trauma[24] and the importance of promoting a safe environment within which to do this.[62]

The importance of PD being facilitated by the "right" facilitators was also crucial. Having prior experience of the clinical environment (a peer representative) and training in PD were reported as a priority.

Most commonly, clinical staff felt that attendance to PD should be voluntary. These findings fit with previous literature, which highlights that not all individuals require PD. Instead, seeking support from other avenues including social support outside the working environment can be just as valuable.[48]

Of the studies which reported on potential challenges and barriers to PD, the pragmatic complexity of scheduling meetings was a recurrent theme; finding suitable times where all staff involved in the incident can be invited and attend without taking time away from personal life and covering rosters is problematic. This also impacts on how long after the event PD can be facilitated. There was mixed opinion about the most appropriate timeframe within which to debrief, with clinical staff feeling it was facilitated either too soon or too long after the event. Timings, alongside other practicalities, should be flexible and considered within the context of the working environment.

Critical Appraisal

Studies reviewed: A diverse range of clinical populations were analysed across the studies. Samples of specialty nurses, emergency clinicians and community healthcare professionals across four countries were represented. However, due to the limited evidence available, three studies included samples of both clinical staff and non-clinical populations such as firefighter, police and retail workers. As the findings from clinical staff could not be extrapolated, it is unclear how representative the findings of these studies are of clinical staff populations. In addition, sample sizes across studies were small, further limiting the generalisability of results.

A large proportion of the studies included in the review were cross-sectional descriptive designs using surveys and interviews for data collection. Though these methodologies are important for collating descriptive data and opinion, the subjectivity of using unvalidated measures and the reliance on self-reporting needs to be considered. When more robust methodologies were used, studies were less likely to draw firm conclusions.

Overall review: This review, to the authors' knowledge, is one of the first to focus specifically on the use of PD with clinical staff populations working within clinical environments. Therefore, it has made a unique contribution to the controversial evidence-base evaluating the use of PD following exposure to a traumatic event. In addition, this review not only addressed the efficacy of PD for reducing psychological sequalae as has been conducted by previous reviews, [21,30,32] it also examines staff perceptions of PD therefore providing a broader understanding of its usefulness. Interestingly, though four studies reported unhelpful aspects of PD including difficulties scheduling meetings and the detrimental effects of inexperienced facilitators, there was no evidence of retraumatisation, a criticism and concern of PD previous highlighted within the literature.[21,32] However, it is important to note that none of the studies in

this review included longer-term longitudinal designs and therefore no conclusions about possible harmful effects can be determined.

Despite this there are a number of limitations to consider. One limitation is the limited number of studies included in the review. Another is that three studies included involving samples of mixed clinical and non-clinical populations. During the literature search it was noticed by the author that recent articles regarding setting up and implementing new service specific PD protocols within clinical settings were starting to be published, however these studies included no evaluation and consequently were not included in the review.

Another limitation is the heterogeneity of the studies. This impacted on comparability of the findings across studies and therefore a formal meta-analysis was not possible.

Finally, many of the studies collected data within one clinical environment or specifically in response to unique CI, thus limiting the generalisability of the findings.

Clinical Implications and Future Research

Given the limited evidence available from studies evaluating the use of PD in clinical staff populations, and the heterogeneity across studies, the findings of this review are tentative and no firm conclusions can be drawn.

There was some evidence to suggest that clinical staff populations subjectively perceive PD to be helpful and supportive following exposure to a traumatic incident and that PD attendance can reduce distress symptomatology. The psychological impact of exposure to trauma is well documented. Without appropriate support, clinical staff repeatedly exposed to such events are at increased risk of developing psychological disturbances including PTSD,[3] secondary traumatic stress and compassion fatigue[6] which subsequently has the potential to influence

clinical decision making and impact on patient care.[16,17] Given this, it may be beneficial for clinical staff involved in such incidents to be offered, if required, the opportunity to reflect upon these experiences with their peers and colleagues. Though within clinical settings, this space for reflection and psychosocial support is often termed "debriefing", it is not the case that CISD is being facilitated as a treatment for PTSD, due to recommendations against its use.[34] However, the implications of the use of terminology such as "debriefing" within clinical practice should be considered with a possible shift towards framing such support as "reflective practice" or a "reflective space" as an alternative. Reviews of service-specific debriefing protocols suggest that PD frameworks tailored to the service within which it is facilitated, taking into account the practicalities of delivery (timing, attendees and facilitators) and the specific needs of the clinical team may be most beneficial.

To improve the comparability across studies, increased use of homogenous longitudinal quantitative study designs would be valuable for future research. Within this review, only one RCT was identified. However, due to limited sample size, there was insufficient power to make any distinctions between intervention and control groups. Despite RCT being considered the gold standard of methodological design, it is important to consider the suitability of a true RCT within this context and the possible ethical implications of denying support to individuals within an appropriate time frame following a traumatic event. The use of longitudinal non-randomised experimental trials, where "no treatment" controls involve samples of individuals who choose not to attend PD or comparisons with alternative, lower-level interventions, may be more appropriate.

In addition, the increased use of objective measures with strong psychometric properties to assess distress would improve the quality of research. Finally, the majority of studies involved

in this review collected data within a specific clinical service or following a unique CI at one location. Broadening data collection locations to include multiple services would improve both sample size, population representation and the generalisability of the findings.

Conclusions

Overall, the current review has found some tentative evidence that PD with clinical staff working in clinical settings can reduce distress symptomatology. However, due to the limited number of studies providing sound evidence, no firm conclusions can be drawn.

In addition, subjective evidence was found indicating that clinical staff perceive PD to be useful following exposure to a traumatic incident. Service specific PD protocols tailored to the needs of clinical environment may result in the most beneficial outcomes.

Finally, this review also highlights the current gap in the literature around the use of PD specifically with clinical staff. A number of studies discussing the proposed implementation of new PD protocols within clinical environments were noticed by the author; once evaluation results of these protocols are published, a repeat of this review would be recommended.

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Chapter 2: Bridging Chapter

Findings from the Systematic Review

The findings from the systematic review revealed some tentative evidence that the use of psychological debriefing (PD) with clinical staff working in clinical settings can reduce distress symptomatology following exposure to direct or vicarious trauma. The review found PD based on Mitchell's (1983) model of critical incident stress debriefing (CISD) to be effective in reducing psychological distress (Jenkins, 1996; Robinson & Mitchell, 1993) including PTSD symptoms (Humphries & Carr, 2001; Matthews, 1998). Psychological debriefing based on adapted CISD protocols to reflect the needs of the working environment and staff population were also found to be effective (Blacklock, 2012). However, it is important to note that few of the studies used long-term (1 year plus) longitudinal designs and therefore no conclusions can be made regarding potential longer term harmful effects of PD as highlighted in previous reviews (Rose & Bisson, 1998; Rose, Bisson & Wessely, 2003), leading to the recommendations that psychologically-informed debriefing should not be used for the prevention or treatment of PTSD (NICE, 2005;2018).

In addition, the review revealed that PD was subjectively perceived by clinical staff to be helpful and supportive following exposure to trauma. A number of factors were reported to affect the usefulness of PD; facilitators with prior knowledge of the clinical environment (Archibald & O'Curry, in press; Clark, Polivka, Zwart & Sanders, 2018; Ireland, Gilchrist & Maconochie, 2008) and a relaxed non-judgmental atmosphere were important (Ireland et al., 2008; Robinson & Mitchell, 1993). Psychological debriefing was particularly valued for providing a space for team reflection to enable opportunities to develop a shared understanding of the event (Archibald & O'Curry, in press; Burns & Harm, 1993; Clark et al., 2018; Robinson & Mitchell, 1993;

Spitzer & Burke, 1993). Inexperienced facilitators and practicalities of arranging a suitable time for PD were highlighted as the main challenges (Archibald & O'Curry, in press; Burns & Harm, 1993). These findings are in line with a recent review investigating group early interventions amongst emergency personnel suggesting potential benefits particularly when tailored to the needs of the population (Richins et al., 2019).

Due to the recognition that exposure to traumatic events has a significant impact on psychological wellbeing, and the knowledge that clinical staff working in high intensity clinical environments are frequently exposed to such events, research into the implementation of service specific PD protocols within these environments is expanding. This systematic review added to the current literature regarding the efficacy of PD by being one of the first to specifically focus on the use of PD with clinical staff working within clinical environments. In addition, the review examined staff perceptions of PD in addition to efficacy therefore providing a broader understanding of its usefulness.

Secondary Traumatic Stress and Burnout amongst Clinical Staff

It is well documented across the literature that repeated exposure to traumatic events without appropriate support has a significant impact on both physical and mental health, increasing the risk of developing posttraumatic stress disorder (PTSD) (Everly, Flannery & Mitchell, 2000; Le Fevre & Kolt, 2006) and amongst healthcare professionals increasing vulnerability to secondary traumatic stress (STS). Secondary traumatic stress is described as "the behavioural and emotional response to working with traumatised individuals" (Figley, 1995). Moderate to high levels of STS have been consistently reported across nursing populations working within emergency departments (Dominquez-Gomez & Rutledge, 2009; Duffy, Avalos,

& Dowling, 2014), oncology (Quinal, Harford & Rutledge, 2009), labour and delivery (Beck & Gable, 2012) and pediatrics (Berger, Polovka, Smoot & Owens, 2015).

Over time, persistent high levels of stress can result in burnout; "a state of mental, physical and emotion exhaustion" (Pines & Aronson, 1988). A meta-analysis investigating the associations between STS and burnout amongst healthcare professionals found strong associations between the two (Cieslak et al., 2014).

Neonatal Intensive Care Environment

Recent advances in technology and innovation has led to significant improvements within neonatal care enabling the survival of extremely premature babies from as young as 23 weeks. Neonatal intensive care units (NICU) provide care for the sickest babies with extreme low birth weight and for those with health conditions such as breathing difficulties, heart defects or infections requiring specialist care. Due to these rapid changes in infant care, hospital admissions have become longer and expectations from parents regarding their infants care greater. Parental presence has also increased with many families being offered onsite hospital accommodation to enable them to remain by their baby's side. This increased presence facilitates a deeper emotional relationship between parents and NICU staff, enabling support to be offered to the family as a whole, but also posing the additional challenge for staff in terms of shielding themselves from a family's distress and grief.

Beck and colleagues (2017) explored NICU nurses experiences of traumatic incidents at work. One of the key themes which emerged from the narratives was the breath of trauma within the NICU. Nurses spoke of the heartbreak following infant death after spending weeks forming an attachment to parents and their babies, and the cruelty of watching couples mourning their

child after years of infertility treatment or attempting to remain strong for their surviving infant while mourning the loss of another during multiple infant births. In addition, experiences of "baby torture" and moral distress were expressed. Nurses reported feeling compelled to perform painful procedures in attempts to keep a baby alive, despite knowing clinically that all hope was lost and it would be a kindness to allow the child to slip away in peace.

Despite this chronic exposure to potentially traumatic experiences, there is limited evidence regarding the efficacy of interventions implemented to manage occupational distress within this environment. A recent review (Bresesti, Folgori & De Bartolo, 2020) explored the types of stress management interventions currently available within NICUs. Only six studies were found suggesting that interventions including mindfulness-based techniques, education around communication and stress coping skills and those promoting positive emotion empowerment were found to reduce work related distress. From an organisational perspective, offering routine meetings, discussion groups and motivational activities were also found to reduce stress.

Influential Factors of Secondary Traumatic Stress and Burnout

One factor found to impact on levels of STS and burnout amongst healthcare professionals and which could be used to inform interventions to reduce occupational stress is levels of self-compassion. Self-compassion is described as "caring for oneself in the face of adversity" (Neff, 2003). Within research, self-compassion has consistently been found to be associated with reduced psychopathology including reduced levels of stress, anxiety and depression amongst healthcare professionals (MacBeth & Gumley, 2012) and found to be a protective factor against compassion fatigue and burnout (Duarte, Pinto-Gouveia & Cruz, 2016;

Richardson et al., 2016). In addition, studies investigating the efficacy of compassion focused interventions revealed benefits of increased levels of self-compassion in reducing perceived stress (Shapiro et al., 2005) and improving mindfulness, work satisfaction and reducing interpersonal conflicts amongst teams (Scarlet et al., 2017).

Many studies have investigated the impact of empathy, described as concern for others (Davis, 1983) on STS and burnout. However, findings within the literature are mixed with some concluding empathy to be a risk factor for the negative consequences of providing care (Abendroth & Flannery, 2006; Leinweber & Rowe, 2008) and others suggesting it to be a protective factor (Richardson et al., 2016; Wagaman, Geiger, Shockley & Segal, 2015). Previous research has also highlighted the importance of the working environment on levels of stress and burnout in particular the benefits of access to support (Beck & Gable, 2012; Beck, Cusson & Gable, 2017; Perry, Toffner, Merrick & Dalton, 2011; Von Rueden et al., 2010). As can be seen from the previous literature, the prevalence and severity of STS and burnout amongst clinical staff can be impacted by a number of factors.

In addition to the impact on psychological well-being, repeated exposure to traumatic events and experiences of STS and burnout have a significant impact on staff sickness and staff retention in the NHS (NHS Digital, 2019). Unsurprisingly, previous studies have shown that clinicians reporting higher levels of STS and burnout were more likely to have considered a change in career or a desire to leave their profession (Arimon-Pagès, Torres-Puig-Gros, Fernández-Ortega & Canela-Soler, 2019; Duffy et al., 2014). Therefore, investigating the prevalence and severity of STS and burnout and factors which influence this within clinical staff is not only important for informing supportive interventions to improve staff well-being, but also has potential economic benefits for the NHS.

Empirical Paper

To date, previous literature investigating the prevalence and severity of STS and burnout has primarily focused on nursing populations with only one study found to focus on NICU revealing 49% of nurses reported moderate to high levels of STS (Beck et al., 2017).

Given this and the unique characteristics of the NICU environment, the empirical paper in the following chapter aims to address this gap in the literature by investigating the prevalence and severity of STS and burnout in all neonatal staff and to explore factors which may influence these levels including self-compassion, empathy and satisfaction with environmental ward climate factors. It is the authors' hope that understanding more about factors which impact levels of STS and burnout within this population could be used to design interventions to minimise their impact on staff well-being. In turn, improvements in staff well-being could have an impact on the economic costs to the NHS in terms of sickness absence and loss of staff from the profession.

Chapter 3: Empirical Paper

Prepared for submission to the International Journal of Nursing Studies

(Author guidelines in appendix C)

For the purpose of the thesis portfolio, tables have been included within the text and appendices have been added.

Factors associated with secondary traumatic stress and burnout in neonatal care staff: A cross-sectional survey study.

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Abstract

Background: There is a widely accepted consensus that healthcare professionals caring for traumatised patients are vulnerable to secondary traumatic stress and burnout, with high prevalence rates found across multiple nursing populations. Among these studies, few have focused on neonatal units and, to the authors' knowledge, none have expanded findings beyond the nursing experience to include all staff. Identifying factors that influence levels of secondary traumatic stress and burnout could be used to inform the development of suitable support interventions, aimed at mitigating the negative consequences of secondary traumatic stress and burnout and improving well-being amongst neonatal staff.

Objective: To explore; (1) the prevalence and severity of secondary traumatic stress and burnout in neonatal staff, (2) associations between secondary traumatic stress, burnout, self-compassion, empathetic concern, personal distress and satisfaction with ward climate factors, and (3) what factors predict levels of secondary traumatic stress and burnout.

Methods: A quantitative, cross-sectional survey design was conducted; 246 neonatal staff working for the National Health Service (NHS) across the East of England completed an online survey including the Secondary Traumatic Stress Scale, Burnout Measure, Self-compassion Short Form and the Empathetic Concern and Personal Distress subscales of the Interpersonal Reactivity Index.

Results*:* Neonatal staff reported high prevalence of moderate to severe secondary traumatic stress (40%) and burnout (55%). Secondary traumatic stress and burnout were positively associated with empathetic concern and personal distress and negatively associated with self-compassion and satisfaction with ward climate. Secondary traumatic stress, self-compassion and satisfaction with ward climate were significant predictors of burnout. Variance in secondary

traumatic stress was accounted for by burnout, self-compassion and satisfaction with ward climate.

Conclusion: Support interventions that increase individuals' understanding of secondary traumatic stress and burnout, nurture self-compassion, provide support and enhance personal stress management skills may help to mitigate the impact of secondary traumatic stress and burnout amongst neonatal staff.

Keywords: Burnout, healthcare professionals, neonatal, secondary traumatic stress

Contribution Statements

What is already known about the topic?

- Secondary traumatic stress and burnout are common amongst healthcare professionals.
- High prevalence rates of secondary traumatic stress and burnout have been found across nursing populations.
- Self-compassion is a protective factor against the negative consequences of providing care, including burnout.

What this paper adds

- Neonatal staff reported high levels of secondary traumatic stress and burnout.
- Self-compassion, burnout and satisfaction with ward climate explained the variance in secondary traumatic stress.
- Self-compassion, secondary traumatic stress and satisfaction with ward climate explained the variance in burnout.

- Highlights the importance of interventions that increase individuals' understanding of secondary traumatic stress and burnout, nurture self-compassion, provide support and enhance personal stress management skills.

1. Introduction

Recent innovation, advances in technology and improvements in neonatal care has led to the possible survival of the sickest premature babies from as young as 23 weeks. As a result, longer admissions to neonatal intensive care units (NICU) with increased parental presence has become the norm allowing for deeper emotional relationships between neonatal staff, babies, and their families. However, this poses additional challenges for neonatal staff in their attempts to protect themselves from the distress and grief of families alongside working clinically within an environment where they are routinely exposed to trauma and suffering in the form of failed resuscitation, painful procedures and moral distress (Beck, Cusson & Gable, 2017).

1.1 Secondary traumatic stress

Over time, working in high stress environments with frequent exposure to trauma and suffering can lead to secondary traumatic stress (STS), a phenomenon described as "the consequent behaviours and emotions resulting from the knowledge of a traumatising event and wanting to help those involved" (Figley, 1995). Secondary traumatic stress produces symptoms similar to those of posttraumatic stress disorder (PTSD) including anxiety, fear, loss of confidence, disturbed sleep, and intrusive thoughts (Waterman et al., 2007) and can have a significant effect on emotional and physical well-being.

Within the literature, moderate to high levels of STS have been found amongst multiple nursing populations within hospices (Abendroth & Flannery, 2006), emergency departments (Dominquez-Gomez & Rutledge, 2009; Duffy et al., 2014), oncology (Quinal et al., 2009), labour and delivery (Beck & Gable, 2012), midwifery (Beck et al., 2015) and paediatrics (Berger et al., 2015). Previous literature investigating the prevalence and severity of STS has primarily

focused on nursing populations with only one study focusing on neonatal intensive care units (NICU) revealing that 49% of nurses reported moderate to high levels of STS (Beck et al., 2017). However, STS is not an experience unique to nurses, with high levels found amongst paediatric healthcare workers (Robins et al., 2009), social workers (Choi, 2011) and therapists (Steed & Bicknell, 2001).

In addition to the impact on emotional and physical well-being, STS has detrimental implications for quality of care and staff retention, leading to significant economic consequences for the NHS. Emergency nurses (Duffy et al., 2014) and oncology nurses (Arimon-Pagès et al., 2019) reporting high levels of STS and burnout were found to be more likely to have considered a change in career or a desire to leave the profession.

1.2 Burnout

Another occupational hazard for those in the helping professions is burnout; "a state of mental, physical and emotion exhaustion", thought to develop gradually over time, as a result of working within highly emotive environments (Pines & Aronson, 1988).

High prevalence rates of burnout have been found across healthcare professionals, including emergency nurses (Hooper et al., 2010), healthcare workers (Shoji et al., 2015) and medical students (Richardson et al., 2016). A meta-analysis found strong associations between burnout and STS across 41 studies of healthcare professionals (Cieslak et al., 2014) and within NICU nurses, burnout increased feelings of anger, guilt and shame, and increased frequency of sick leave and staff turnover (Braithwaite, 2008; Eriksson et al., 2008).

1.3 Self-compassion

Self-compassion is “caring for oneself in the face of suffering without avoidance or judgement but with kindness, understanding and acceptance of our pain and inadequacies, as part of the larger human experience” (Neff, 2003). Within the literature, self-compassion has consistently been found to be associated with reduced psychopathology, including reduced levels of stress, anxiety and depression (MacBeth & Gumley, 2012) and greater emotional resilience and ability to cope with difficult and emotional experiences (Barnard & Curry, 2011).

Studies across healthcare populations have found self-compassion to be a protective factor against the negative consequences of providing care, including burnout amongst medical students (Richardson et al., 2016) and nurses (Duarte et al., 2016) and reducing anxiety and emotional exhaustion (Birnie et al., 2010). Furthermore, interventions designed to nurture self-compassion have shown benefits in reducing perceived stress (Shapiro et al., 2005) and improving mindfulness, work satisfaction and reducing interpersonal conflicts amongst teams (Scarlet et al., 2017).

1.4 Empathy

Empathy is broadly described as “concern for others” and is thought to be an integral element of healthcare associated with benefits for both patient care (Epstein et al., 2007; Rakel et al., 2011) and healthcare professionals (Shanafelt et al., 2005; Thomas et al., 2007). However, being highly attuned to the pain and suffering of others can lead to burnout and compassion fatigue (Figley, 2012; Hodges & Biswas-Diener, 2007).

Previous studies demonstrate mixed findings regarding the impact of empathy, with some suggesting that heightened empathy towards patients is a risk factor for STS amongst midwives (Leinweber & Rowe, 2008) and a risk for compassion fatigue in hospice nurses (Abendroth &

Flannery, 2006), while for social workers (Wagaman et al., 2015) and medical students (Richardson et al., 2016) empathy was found to be a protective factor against burnout.

One explanation consistently offered to explain these mixed findings, is that despite empathy being an important element of providing care, being highly attuned to the pain and suffering of others (high empathetic concern), can lead to burnout and compassion fatigue (Hodges & Biswas-Diener, 2007; Figley, 2012) if not appropriately balanced with self-oriented care and strategies to reduce personal distress (Batson et al., 1987).

When considering the two primary categories of affective empathy; personal distress and empathetic concern, a study investigating empathy in paediatric intensive care (PICU) nurses found that personal distress significantly correlated with increased STS and burnout (Latimer et al., 2017) and, amongst Portuguese nurses, higher levels of affective empathy were associated with compassion fatigue, lower self-compassion and predicted variations in burnout (Duarte et al., 2016).

1.5 Environmental ward climate factors

Another influencer of stress and burnout amongst healthcare professionals is the environment within which they work, including factors such as team dynamics, access to support and opportunities for personal and professional development.

Sources of support have been found to be particularly important; trauma nurses who did not access regular support reported greater levels of STS compared to those who did (Von Rueden et al., 2010) and a lack of peer support amongst oncology nurses was a risk factor for compassion fatigue (Perry et al., 2011).

Two qualitative studies explored labour and delivery nurses (Beck & Gable, 2012) and NICU nurses (Beck et al., 2017) experience of support following a traumatic event and found that staff emphasised the importance of having supportive colleagues and opportunities for debriefing, alongside alternative support forums including the use of prayer, access to a chaplain and quiet spaces for reflection. Conversely, poor communication, limited time and resources, unsupportive colleagues and a lack of leadership within the team were perceived to lead to increased distress (Beck et al., 2017). Within the NICU environment, role ambiguity, work overload, social support and reassurance of worth was found to predict burnout (Barr, 2017) and within a positive team environment, a strong nurse-infant relationship was found to be associated with increased self-compassion and decreased STS and burnout (Sano et al., 2018).

1.6 Study aims

Within the literature there is consensus that healthcare professionals caring for traumatised patients are vulnerable to STS and burnout. However, few studies have focused on neonatal units and, to the authors' knowledge, none have expanded findings beyond the nursing experience to include all neonatal staff. Understanding more about factors that impact on the levels of STS and burnout within this population could be used to design interventions to minimise their impact on well-being.

The purpose of this study was to address the following questions:

1. What is the prevalence and severity of STS and burnout in neonatal staff?
2. Are there associations between STS, burnout, self-compassion, empathetic concern, personal distress and satisfaction with ward climate factors?
3. Does access to supervision and support influence levels of STS and burnout?

4. Do self-compassion, empathetic concern, personal distress and satisfaction with ward climate predict levels of STS and burnout?

2. Method

2.1 Study design and participants

The current study used a quantitative, cross-sectional survey design to collate data from a large target population. Participants were a purposive sample of neonatal staff working for the NHS across the East of England. Supernumerary staff and those who had worked less than 12 weeks within the current neonatal unit were excluded.

2.2 Procedure

Ethical approval was obtained from the University of East Anglia and the research and development (R&D) departments of each participating neonatal service. Initially, the regional neonatal lead and then service leads from the 17 neonatal units across the East of England were contacted via email and invited to take part in the research. Participants were recruited from 13 units who opted in and provided consent. Service leads were sent an advertising poster to display within their unit and an email outlining the purpose of the research with an electronic link to the survey, to circulate via NHS email accounts to their teams. Participants were neonatal staff who voluntarily chose to take part by clicking on the link and completing the survey. Reminder emails were sent one month after the initial invite and again, two weeks prior to the survey closing. Service leads were given permission to send reminders more frequently if they deemed this to be appropriate within their team. All data was collected and analysed anonymously.

2.3 Survey

The survey was created using Bristol Online Survey and designed to take approximately 20 minutes to complete. The following data was collected; (1) demographic information (2) details of neonatal work (3) a measure of secondary traumatic stress (STSS; Bride et al., 2004) (4) a measure of burnout (BM; Pines & Aronson, 1988) (5) a measure of self-compassion (SCS-SF; Raes et al., 2011), (6) a measure of empathy (IRI; Davis, 1983) and (7) details of current working environment and satisfaction with ward climate factors (appendix D).

2.3.1 Secondary Traumatic Stress Scale (STSS)

The STSS is a 17-item self-report measure of secondary traumatic stress (STS) (Bride et al., 2004) consisting of three subscales; intrusion, avoidance and arousal. Participants are asked to rate how frequently they have experienced each symptom over the past 7 days, using a five-point Likert scale where 1 represents "never" and 5 represents "very often" (appendix E). Total scores of less than 28 indicate little or no STS, 28-37 mild, 38-43 moderate, 44-48 high and above 49 severe (Bride, 2007). The STSS can also be used to determine whether an individual meets DSM-IV criteria for PTSD (American Psychiatric Association, 1994). To meet criteria, individuals must score a 3 or above on at least 1 item on the intrusion subscale, at least 2 items on the arousal subscale and at least 3 items on the avoidance subscale (Bride, 2007).

The STSS has been found to have strong internal consistency (Cronbach's α =0.93), and good construct validity (goodness of fit =0.90, comparative fit =0.94) (Bride et al., 2004).

2.3.2 Burnout Measure (BM)

The BM is a 21-item self-report measure of burnout measuring levels of physical, emotional and mental exhaustion (Pines & Aronson, 1988). Participants are asked how frequently they have experienced symptoms over the last month on a seven-point Likert scale

where 1 represents “never” and 7 represents “always” (appendix E). An average score of four on any of the subscales indicates burnout. The BM has been found to have strong internal consistency (Cronbach’s α =0.90) and adequate test-retest reliability ($r \geq 0.66$) (Schaufeli & Enzmann, 1998).

2.3.3 Self-Compassion Scale, Short Form (SCS-SF)

The SCS-SF (Raes et al., 2011) is a 12-item self-report measure of self-compassion. Participants are given a list of statements describing possible emotional and behavioural reactions to difficult events and asked to rate how often they respond this way on a five-point Likert scale on which 1 represents “almost never” and 5 represents “almost always” (appendix E).

The SCS-SF has been found to be a valid shortened version of Neff’s (2003) original self-compassion scale, demonstrating adequate internal consistency (Cronbach’s $\alpha \geq 0.87$) (Raes et al., 2011).

2.3.4 Interpersonal Reactivity Index (IRI); empathetic concern and personal distress

Two subscales from the IRI (Davis, 1983) were used to measure affective empathy; empathetic concern; sympathy and concern for the misfortune of others and personal distress; personal anxiety and distress from intense interpersonal settings. Participants were asked to rate how much each of the 14 statements describes them, responding on a five-point Likert scale on which 0 represents “does not describe me well” and 4 represents “describes me very well” (appendix E). The IRI has been found to have adequate internal consistency (Cronbach’s $\alpha \geq 0.70$) and satisfactory test-retest reliability ($r \geq 0.61$) across scales (Davis, 1983).

2.3.5 Ward climate

The final section of the survey asked participants about the availability of supervision and support and asked them to rate their satisfaction with a range of factors within their working environment including leadership, communication and manageability of work load on a five-point Likert scale with 1 representing “very unsatisfied” and 5 representing “very satisfied” (appendix D).

2.4 Data analysis

Data analysis was conducted using SPSS version 25. Assumption testing relevant to each statistical analysis was conducted. Where assumptions were not met, non-parametric analyses were conducted.

Initially, descriptive statistics were used to analyse sample characteristics and the prevalence and severity of STS and burnout.

To analyse the associations between STS, burnout, self-compassion, empathetic concern, personal distress and satisfaction with ward climate factors, a series of Pearson (r) and Spearman (r_s) correlations were conducted.

Independent sample t-tests were used to investigate differences in levels of STS and burnout between neonatal staff who did and did not access supervision for support.

Finally, two linear multiple regression analyses were used to investigate the impact of key variables on predicting levels of STS and burnout.

3. Results

3.1 Sample characteristics

A total of 246 neonatal staff across 13 units in the East of England completed the online survey; 42% worked on level 3 tertiary NICUs (babies < 27 weeks). Socio-demographic analyses revealed a significant gender bias towards female participants (92%). The modal age range was 31-40 years and the majority of participants were White British (74%). Seventy-six percent of the sample were nurses, 62% worked full-time and nearly 58% of participants had been qualified for over 10 years. Six non-clinical staff were included in the sample; all six were female, five were White British and 50% worked full-time. Full details of sample characteristics can be found in table 4.

The mean number of contracted hours per month was 88.97 (SD = 54.78) with a range from 15 to 192 hours. One hundred ninety-seven participants reported having taken sick days over the past 12 months; the mean number of total sick days was 10.84 (SD = 25.08) with 20% reporting at least one of those days being related to mental wellbeing and stress (M = 2.69, SD = 10.35).

Table 4

Demographic and Employment Characteristics of Neonatal Staff (N=246).

Variables	N (%)	Mean (SD)
Gender		
Female	226 (91.9)	
Male	20 (8.1)	
Age		
18-25	17 (6.9)	
26-30	28 (11.4)	
31-35	40 (16.3)	
36-40	41 (16.7)	
41-45	29 (11.8)	

46-50	37 (15.0)	
51-55	22 (8.9)	
56-60	28 (11.4)	
61-66	4 (1.6)	
Ethnicity		
White British	183 (74.4)	
Other	63 (25.6)	
Neonatal level		
Level 1 (babies > 30 weeks) and level 2 (babies > 27 weeks)	142 (57.7)	
Level 3 (babies < 27 weeks)	104 (42.3)	
Job role		
Consultant	20 (8.1)	
Doctor (ST 1-7)	8 (3.2)	
Advanced neonatal practitioner	10 (4.1)	
Nurse (band 7)	37 (15.0)	
Nurse (band 6)	69 (28.0)	
Nurse (band 5)	57 (23.2)	
Nursery nurse (band 4)	25 (10.2)	
Applied health professional	2 (0.8)	
Healthcare assistant	1 (0.4)	
NICU assistant	1 (0.4)	
Administration	5 (2.0)	
Other	6 (2.4)	
Not specified	5 (2.0)	
Years post qualification		
10 + years	142 (57.7)	
5-10 years	54 (22.1)	
1-4 years	36 (14.6)	
< 12 months	7 (2.8)	
N/A (non-clinical staff)	7 (2.8)	
Employment Status		
Full-time	153 (62.2)	
Part-time	91 (37.0)	
Agency	2 (0.8)	
Hours contracted per month		88.97 (54.78)
Sick days in past 12 months		10.84 (25.08)
Sick days related to mental wellbeing or stress		2.69 (10.35)

3.2 Main results

3.2.1 Prevalence and severity of secondary traumatic stress (STS) and burnout

The mean total score on the secondary traumatic stress scale was 34.97 (SD = 13.23); ranging from 17 to 72. Overall, 40% of neonatal staff report moderate to severe STS (≥ 38), 25% mild and 35% little or no STS. Using Bride's (2007) guidance 75 (30%) staff screened positive for PTSD (DSM-IV; American Psychiatric Association, 1994).

The average total score on the burnout measure was 73.72 (SD = 22.55; range 22-124); 135 neonatal staff (55%) scored above the cut-off suggesting burnout.

For the six non-clinical staff the average score on the secondary traumatic stress scale was 29.17 (mild STS) ranging from 19 to 44. One staff member met criterion for burnout.

3.2.2 Bivariate analyses

3.2.2.1 Associations between secondary traumatic stress (STS), burnout, self-compassion, empathetic concern and personal distress

Correlational analysis (Table 5) revealed a strong positive correlation between STS and burnout, suggesting that higher levels of STS were associated with higher levels of burnout. Higher levels of STS and burnout were also found to be associated with lower self-compassion and higher empathetic concern and higher personal distress.

When considering the relationship between self-compassion and affective empathy, only one significant negative correlation was found, revealing that higher levels of self-compassion were associated with lower levels of personal distress.

Table 5

Correlations between Secondary Traumatic Stress (STS), Burnout (BO), Self-Compassion (SC), Empathetic Concern (EC) and Personal Distress (PD).

	STS	BO	SC	EC	PD
STS	-	.73**	-.53**	.17**	.19**
BO		-	-.59**	.11*	.24**
SC			-	-.03	-.39**
EC				-	-.04
PD					-

*Note. *p<0.05, **p<.001*

3.2.2.2 Satisfaction with ward climate factors and associations with secondary traumatic stress (STS) and burnout

Overall, satisfaction rates across ward climate factors; workload, communication, support from seniors, support from colleagues, leadership, clarity of job role, team working, access to shared space, training and development opportunities, career progression and team project opportunities were high. Ratings of "very satisfied" or "satisfied" ranged from 50-83%; when adding the neutral response of "neither unsatisfied nor satisfied" this increased to 78-98%. Participants rated most satisfaction with support from colleagues, clarity of job role and shared space to take breaks; career progression and workload were most poorly rated with 22% and 21% of participants expressing dissatisfaction respectively.

Correlational analysis (Table 6) showed that greater levels of STS were associated with lower levels of satisfaction with workload, communication, support from seniors and colleagues, clarity of job role and team working.

Table 6

Correlations between Secondary Traumatic Stress and Satisfaction with Ward Climate Factors.

	Test Statistic	Significance (p-value)	Effect size	Effect size description
Workload	r_s = -.270	<.001*	r = 0.27	Weak
Communication	r_s = -.136	.017**	r = 0.14	Weak
Support from seniors	r_s = -.130	.021**	r = 0.13	Weak
Support from colleagues	r_s = -.114	.037**	r = 0.11	Weak
Leadership	r_s = -.087	.087	r = 0.09	Weak
Clarity of job role	r_s = -.154	.008*	r = 0.15	Weak
Team working	r_s = -.159	.006*	r = 0.16	Weak
Access to shared space	r_s = -.024	.355	r = 0.02	Weak
Training and development opportunities	r_s = -.079	.107	r = 0.08	Weak
Career progression	r_s = -.040	.266	r = 0.04	Weak
Team project opportunities	r_s = -.086	.090	r = 0.09	Weak

Note. *Correlation significant at 0.01, ** correlation significant at 0.05

The relationship between burnout and satisfaction with ward climate factors were also investigated (Table 7), revealing all correlations to be significant and suggesting that higher levels of burnout were associated with lower satisfaction with the current working environment.

Table 7

Correlations between Burnout and Satisfaction with Ward Climate Factors.

	Test Statistic	Significance (p-value)	Effect size	Effect size description
Workload	r_s = -.415	<.001*	r = 0.42	Moderate
Communication	r_s = -.321	<.001*	r = 0.32	Moderate
Support from seniors	r_s = -.337	<.001*	r = 0.34	Moderate
Support from colleagues	r_s = -.240	<.001*	r = 0.23	Weak
Leadership	r_s = -.280	<.001*	r = 0.28	Weak
Clarity of job role	r_s = -.319	<.001*	r = 0.32	Moderate
Team working	r_s = -.345	<.001*	r = 0.35	Moderate
Access to shared space	r_s = -.143	.012**	r = 0.14	Weak
Training and development opportunities	r_s = -.230	<.001*	r = 0.23	Weak
Career progression	r_s = -.228	<.001*	r = 0.23	Weak
Team project opportunities	r_s = -.304	<.001*	r = 0.30	Moderate

Note. *Correlation significant at 0.01, ** correlation significant at 0.05

3.2.3 Access to formal support and differences in secondary traumatic stress (STS) and burnout dependent on use of supervision

A variety of formal support was recorded. Debriefings were most commonly cited (81%) with approximately half of participants reporting the availability of peer group support (51%), access to psychological or counselling support (50%), support from a chaplain (47%), MDT staff meetings (46%) and opportunities for reflective practice (44%). The availability of pre-briefings around complex cases (27%) and ad-hoc drop-in support forums (11%) were least frequently recorded. Three percent of the sample reported that none of the listed support forums were available.

When comparing staff who use formal supervision to those who did not, a modest significant difference in levels of STS was found ($t(167) = 2.55$, $p = .012$, Cohen $d = .39$) suggesting that those who access supervision revealed higher levels of STS. No significant difference in levels of burnout were found between the two groups.

When investigating the relationship between average hours of supervision and STS and burnout, Spearman (r_s) correlation revealed weak positive correlations suggesting that as the number of hours of supervision increases, levels of STS ($r_s = .28$, $p = .005$) and burnout ($r_s = .23$, $p = .018$) also increase.

3.2.4 Regression analysis

3.2.4.1 Do levels of burnout, self-compassion, empathetic concern, personal distress and overall satisfaction with ward climate predict secondary traumatic stress (STS)?

A multiple linear regression analysis was conducted: The overall model was found to be significant, however inspection of individual predictors revealed non-significant contributions of empathetic concern and personal distress, therefore these variables were removed. The final model ($F(3,242) = 110.73$, $p<.001$) explained 58% of the variance in STS ($r^2 = .58$). Examination of the independent variables found that burnout, satisfaction with ward climate and self-compassion uniquely accounted for 29%, 3% and 1% of the variation in levels of STS respectively (Table 8).

3.2.4.2 Do levels of secondary traumatic stress (STS), self-compassion, empathetic concern, personal distress and overall satisfaction with ward climate predict burnout?

A second multiple regression analysis was conducted: The regression model was found to be significant, however inspection of individual predictors again revealed non-significant

contributions of empathetic concern and personal distress, therefore these variables were removed. The final model ($F(3,242) = 170.06$, $p<.001$) explained 68% of the variance in burnout ($r^2 = .68$) with STS, satisfaction with ward climate and self-compassion uniquely accounting for 41%, 20% and 11% of the variation in levels of burnout respectively (Table 8).

Table 8

Multiple Regression Analyses; Contributions of Individual Predictors.

	Secondary Traumatic Stress			Burnout		
Predictors	Beta	Sig	$Part^2$	Beta	Sig	$Part^2$
Secondary Traumatic Stress				.561	<.001**	.412
Burnout	.735	<.001**	.294			
Self-compassion	-.129	.014*	.012	-.239	<.001**	.112
Ward climate satisfaction	-.179	<.001**	.026	-.293	<.001**	.203

Note. *p<.05, **p<.001

4. Discussion

4.1 Key results and interpretations

Within the literature, there is consensus that healthcare professionals caring for traumatised patients are vulnerable to STS and burnout. The current study aimed to extend prior research and investigate the prevalence and factors that impact upon levels of STS and burnout amongst neonatal staff. Overall, the study found that a high proportion of participants experienced moderate to severe STS (40%) and burnout (55%). The influence of self-compassion, empathetic concern, personal distress and environmental ward climate factors on STS and burnout were explored. The findings will be examined in detail below in the context of

previous research, followed by discussion of clinical implication, study limitations and directions for future research.

The findings revealed that 40% of neonatal staff reported moderate to severe STS and 30% met criteria for PTSD as measured using the secondary traumatic stress scale (STSS; Bride et al., 2004; Bride, 2007). These prevalence rates are consistent with previous studies investigating STS amongst nursing populations (Berger et al., 2015; Duffy et al., 2014; Dominquez-Gomez & Rutledge, 2009; Quinal et al., 2009) and comparable to three studies that used the STSS and found that 35% of neonatal nurses (Beck et al., 2017), 36% of nurse-midwives (Beck et al., 2015) and 26% of labour and delivery nurses (Beck & Gable, 2012) screened positive for PTSD. In addition to STS, 55% of staff reported burnout. These findings are supported by previous research that suggests high levels of burnout across healthcare professionals (Hooper et al., 2010; Richardson et al., 2016; Shoji et al., 2015).

The results showed that higher levels of STS were strongly associated with higher burnout amongst neonatal staff. These findings are consistent with the findings of previous studies investigating STS and burnout in healthcare professionals (Cieslak et al., 2014). Self-compassion was found to be negatively associated with STS and burnout. These findings are in line with previous suggestions that self-compassion is associated with reduced psychopathology (MacBeth & Gumley, 2012) and is a protective factor against compassion fatigue and burnout (Duarte et al., 2016; Richardson et al., 2016).

Both components of affective empathy; empathetic concern (concern for the well-being of others) and personal distress (personal feelings of distress and anxiety in response to another's misfortune) were found to be positively associated with STS and burnout. These findings are in line with some previous studies that revealed that increased personal distress was associated with

increased STS and burnout amongst PICU nurses (Latimer et al., 2017) and increased empathetic concern was positively associated with compassion fatigue amongst Portuguese nurses (Duarte et al., 2016).

This study's findings revealed a significant negative association between self-compassion and personal distress and a non-significant but negative association between self-compassion and empathetic concern. These findings are supported by previous studies showing that lower personal distress was associated with increased self-kindness, mindfulness and common humanity and high personal distress was associated with increased self-judgement and isolation, as measured using the self-compassion scale (Duarte et al., 2016).

This study also set out to examine the influence of environmental ward climate factors such as access to supervision and support, training and team dynamics, on STS and burnout. Results revealed that satisfaction with ward climate factors decreased as levels of STS and burnout increased. These findings support previous studies that highlight the importance of access to support following a traumatic event at work (Beck & Gable, 2012; Beck et al., 2017) and reveal that poor relationships with colleagues, longer working hours and less perceived support was related to increased STS and burnout (Hinderer et al., 2014).

This study also found that neonatal staff who regularly accessed supervision were found to experience significantly higher levels of STS compared to those who did not, and increased frequency of supervision was associated with greater STS and burnout. These findings are contrary to previous studies which found regular access to support was associated with lower STS (Von Rueden et al., 2010). One explanation for these findings might be that, within this study, the neonatal staff most regularly accessing supervision were band 5 nurses. Previous research has shown that less experienced clinicians are more likely to report burnout than their

more experienced counterparts (Dev et al., 2019). This in part may be due to more experienced staff having developed ways to manage and mitigate the effects of STS and burnout over time (Singh et al., 2018). An alternative hypothesis is perhaps staff only access support once they are already burnt out and struggling. This may be particularly prevalent in services where supervision is not routinely offered and therefore only accessed in respond to staff actively seeking support.

Finally, the study set out to investigate whether self-compassion, empathetic concern, personal distress and satisfaction with ward climate influenced levels of STS and burnout. The findings revealed two significant models; burnout, self-compassion and satisfaction with ward climate explained 58% of the variance in STS, and STS, self-compassion and satisfaction with ward climate explained 68% of the variance in burnout. These findings are in keeping with previous studies that found that higher burnout predicted STS in trauma nurses (Hinderer et al., 2014), self-compassion explained variance in burnout in Portuguese nurses (Duarte et al., 2016) and ward climate factors, including role ambiguity, work overload, lack of social support and less reassurance of worth were found to predict burnout within NICU nurses (Barr, 2017).

Affective empathy; empathetic concern and personal distress, were not found to significantly contribute to the models assessing overall levels of STS and burnout. This finding is in contrast with previous studies which found that empathetic concern and personal distress significantly predicted variance in burnout (Duarte et al., 2016).

4.2 Clinical implications and future research

The current study highlights the high prevalence and severity of STS and burnout amongst neonatal staff and provides preliminary evidence for factors that might influence these

levels. A particular strength of this study is that it collates data from 13 neonatal units across the East of England and extends previous research which focused on purely nursing populations to include all neonatal staff; clinical and non-clinical. It is the hope of the author that such information can be used to inform support interventions to mitigate the effects of STS and burnout amongst neonatal staff.

Given the high prevalence of STS and burnout and the insidious way in which symptoms can develop over time, it would be beneficial to educate neonatal staff about the effects of STS and burnout to increase their understanding to enable early detection of symptoms both within themselves and amongst colleagues. Previous research has found that increasing staff awareness of the symptoms of compassion fatigue lead them to seek support sooner and reduced levels of STS and burnout (Perry et al., 2011). The importance of healthcare professionals developing strategies to mitigate the impact of STS and burnout was also highlighted, acknowledging that to achieve this, seeking support from others is paramount (Wicks, 2007).

Findings from this study indicated that self-compassion was a significant predictor and potential protective factor against STS and burnout. Interventions designed to nurture and enhance self-compassion in neonatal staff might, therefore, be beneficial. Prior research into compassion-focused training found that an 8-week program increased self-compassion and significantly improved job satisfaction and reduced interpersonal conflicts amongst healthcare workers (Scarlet et al., 2017). Programs teaching self-compassion and self-care skills were also considered an important feature in interventions aimed at reducing burnout and compassion fatigue amongst nurses (Duarte et al., 2016).

Though affective empathy; empathetic concern and personal distress, were not found to significantly predict levels of STS and burnout, a positive relationship between the factors was

found. The importance of developing strategies to reduce personal distress in response to empathetic concern has been raised (Batson et al., 1987), with increasing self-compassion suggested to be one such strategy to achieve this (Duarte et al., 2016).

The results also suggest that the neonatal ward environment and interpersonal climate within the team can influence levels of STS and burnout. Of particular importance is access to appropriate support. A team culture that promotes support-seeking and provides regular opportunities to access support would be advantageous. In addition, factors including workload, team dynamics and opportunities for career progression were found to be important, with increased satisfaction in these areas being associated with lower STS and burnout. Assessment of ward climate factors and considerations for improvements should be considered on an individual service basis.

Overall, the results suggest that neonatal staff may benefit from support interventions aimed at (1) increasing awareness of the symptoms and impact of STS and burnout, and (2) teaching skills to enhance self-compassion and self-care to mitigate the impact of STS and burnout. A working environment which promotes support-seeking would also be valuable.

However, no previous research has examined the efficacy of such support interventions amongst neonatal staff. Future research in this area is needed. In particular, longitudinal interventions and control studies to investigate the impact of STS and burnout over time and potential benefits of such intervention would be of great value.

In addition, the current study considered all neonatal staff; both clinical and non-clinical. Though no firm conclusions can be drawn for non-clinical staff due to limited participant numbers it was found that they experienced mild STS and were at risk of burnout. Therefore, future studies would benefit from including non-clinical staff, such as administration staff,

receptionists and porters, within their research population to consider the needs of services and teams as a whole.

4.3 Limitations

There are a number of limitations in the current study to consider. Firstly, a purposive sample completing self-report measures was used. Staff who chose to participate may differ from those who did not and demographic analyses revealed a significant gender bias towards females. The self-report survey also contained single-item scales to measure elements of ward climate such as satisfaction with current workload. Though this enabled data to be collected regarding particular areas of interest, the reliability of single-item scales to measure psychological constructs is flawed and therefore not recommended.

Additionally, a cross-sectional, correlational design was used. Collecting data during one time point impacts on its representation of the wider neonatal care environment and prevents causal conclusions being drawn about the prevalence of STS and burnout and the impact of influential factors over-time. The impact of other possible extraneous variables not measured during data collection are also not accounted for within correlational designs.

Finally, despite a large sample size of participants being recruited across 13 neonatal units, all units were NHS services located in the East of England and over 70% of the participants were White British. Therefore, the findings cannot necessarily be generalised to other regions across the United Kingdom with different demographics or to other countries where differences in socio-economic status and population needs may generate alternative results. In addition, the sample largely consisted of nurses and doctors. Though this is

representative of a typical neonatal staffing team, few alternative clinical staff and few non-clinical staff participated, questioning the findings generalisability to all neonatal staff.

4.4 Conclusion

Overall, this study highlights the high prevalence of STS and burnout amongst neonatal staff and provides preliminary evidence that factors including self-compassion, affective empathy and environmental ward climate might influence their levels of prevalence and severity. These findings extend previous research that focused on purely nursing populations and indicate that developing support interventions to increase awareness about the effects of STS and burnout, enhance and promote self-care and nurture self-compassion within a supportive working environment might help to mitigate the impact of STS and burnout amongst neonatal staff. Further research evaluating the efficacy of such interventions is needed.

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Chapter 4: Extended Methodology

Additional Research Questions

In addition to the four primary research questions outlined in the main empirical paper, additional exploratory analyses were conducted to further explore the data collected in the survey. The following additional questions were investigated:

1. Is there a relationship between average monthly contracted hours and levels of secondary traumatic stress (STS) and burnout?
2. Is there a relationship between number of stress related sick days in the past 12 months and levels of STS and burnout?
3. Is there a difference in levels of STS and burnout dependent on job role, years post qualification, level of current neonatal working environment, access to training on resilience, communication or self-care, and opportunities for team socialising?

Recruitment and Procedure

Participants were recruited from NHS neonatal units across the East of England, representing one Neonatal Operational Delivery Network. All staff working on the neonatal units were invited to take part including ancillary and administration staff. This decision was made to address a gap in the current literature which primarily focuses on STS and burnout within nursing populations. It was thought that gaining a better understanding of the experience of all who work within neonatal teams would help inform how and to whom support should be offered. Participants were excluded if they were supernumerary or had worked on the current neonatal unit for less than 12 weeks. This decision was made as it was felt that within this settling in

period to a new role levels of STS and burnout cannot reliably be attributed to the current working environment.

During recruitment, the East of England neonatal lead was contacted to seek permission to approach the 17 service leads across the region to invite them to take part in the research. Through this process the author was invited to present the study at the quarterly operational delivery network (ODN) meeting to raise awareness of the project and to allow service leads to ask questions.

Following the meeting, each service lead was emailed asking whether they would like to opt-in to the research and consent to contact staff on the unit was requested. A lay summary of the project to help inform their decision was provided (appendix F).

Once consent from a unit was obtained the research and development (R&D) department of the respective NHS trusts were contacted to register the research project and provide documents of ethical approval from the University of East Anglia.

Following registration with the trust, service leads were sent an invitation email containing details of the study and an electronic link to the survey. Full details of the survey structure can be found below. Service leads were requested to circulate this email to all staff currently working on the unit via NHS email accounts. To encourage participation an advertising poster about the project was also emailed and requested to be displayed in communal areas and staff rooms.

One month after sending the initial email invite, service leads were requested to send a reminder email. A final reminder was also requested to be sent within the last two weeks prior to the survey closing however service leads were given permission to send more frequent reminders if they felt this was appropriate for their team.

Survey Design

The online survey was created using Bristol Online Survey and designed in such a way that all key questions were compulsory to prevent missing data which would lead to responses unsuitable for analysis. Advice on suitable questions and appropriate length of time for completion was sought from a consultant clinical psychologist and lead nurse working on one of the tertiary neonatal intensive care units involved in the study. Overall the survey took approximately 20 minutes to complete.

The survey commenced with an information page explaining the purpose of the research including what would be involved in completing the survey, benefits and possible disadvantages (distress) of taking part and information regarding confidentiality and data storage. After reading the information, if participants gave consent to take part, they were instructed to press the CONTINUE button to commence the survey.

The survey was formatted in the following way: (1) demographic information; gender, age, ethnicity (2) details of current neonatal work; name of unit, job role, years post qualification, employment status, hours contracted per month, sick days over the past 12 months, (3) a measure of secondary traumatic stress (STSS; Bride, Robinson, Yegidis & Figley, 2004) (4) a measure of burnout (BM; Pines & Aronson, 1988) (5) a measure of self-compassion (SCS-SF; Raes, Pommier, Neff & Van Gucht, 2011), (6) a measure of empathy (IRI; Davis, 1983) and (7) questions regarding ward climate; availability of formal support, access to supervision, opportunities for training, team socialisation and satisfaction with ward climate factors e.g. manageable workload, support from colleagues.

The final page of the survey provided participants with advice on where to seek support if they experienced any distress during or after participation (see appendix D for full survey details).

Ethical Considerations

Ethical approvals: FMH ethical approval was obtained from the University of East Anglia. IRAS registration was then completed and the R&D department of each participating neonatal service was informed of the project.

Informed consent: consent to contact neonatal teams across the East of England was initially obtained from the regional neonatal lead. Consent to approach neonatal staff was sought from each unit's service leads. Consent to participate was obtained from participants when they voluntarily followed the electronic link to the survey, read the information page outlining the purpose of the research and clicked the "CONTINUE" button directing them to the start of the survey.

Right to withdraw and coercion: participants were informed on the information page that they were free to discontinue the survey at any point with no detrimental effects by simply exiting the survey program. There was no use of deception or coercion; the study aims and details of what the survey involved were clearly explained on the information page (appendix G).

Confidentiality: participants were not asked to provide any identifiable personal information at any point within the survey. Therefore, in terms of confidentiality the data for analysis was provided anonymously with each participant being allocated a unique identification number. Electronic data from the Bristol Online Survey program was downloaded into a password protected excel spreadsheet and stored on an encrypted memory stick.

Distress: to account for any potential distress experienced either during or after participation the survey ended with a disclosure page providing advice on where to seek support (appendix H). Participants were advised to seek support from their GP and provided with helpful links to neonatal staff support forums including the NANN and links where they are able to obtain helpful resources on self-compassion.

Sample Size Calculations

The aim of the current study was to recruit as many participants as possible. However, to establish the minimum sample size required for each anticipated statistical analyses a series of priori power calculations were conducted using G-Power 3 (Faul, Erdfelder, Lang & Buchner, 2007; appendix I). To detect at least a moderate effect with 95% statistical power and 5% alpha level it was calculated that a minimum sample size of 138 was required for bivariate analyses (correlations; two-tailed), 178 for independent sample t-tests (two-tailed), 207-280 for one-way ANOVA with 3 to 4 groups and 119-138 for multiple regression with 3 to 5 predictors.

In addition to the use of priori power calculations, statistician's recommendations regarding calculations for suitable sample size in multiple regression were consulted. Green (1991) suggests that the minimum acceptable sample size to test the overall fit of a regression model is 50 plus eight times the number of predictors, which for the current study is 3 to 5 suggesting a recommended sample of 74 – 90. To assess the contribution of individual predictors sufficiently a sample size of 104 plus the number of predictors was suggested, generating a recommended sample for the current study of 107 – 109.

Assumption Testing

Parametric normality assumption testing

To check the data was normally distributed a number of statistical tests were adopted. Initially, graphical representations of the data were produced; histograms and Q-Q plots were visually inspected to determine the fit of data in accordance to the line of best fit and boxplots were used to detect outliers.

Descriptive statistics were also generated for each variable and skewness and kurtosis assessed. For large sample sizes it has been suggested that skewness and kurtosis less than 1 implies no concerns regarding the normality assumption. Kolmogorov-Smirnov tests or Shapiro-Wilk tests were not conducted as a significant result of small deviations from normality are easily detected in large sample sizes above 200 (Field, 2009). If the data was viewed as being non-normally distributed non-parametric statistical tests were conducted.

Bivariate analyses and assumption testing

Pearsons (r) correlations and Spearman (r_s) correlations were used to assess the relationships between key variables. Parametric assumptions for bivariate analysis are that the data is normally distributed and there are two independent variables with a monotonic relationship. Following assessment of normality as described above, scatterplots were used to check for a linear relationship between variables.

Group differences and assumption testing

Independent sample t-tests and one-way ANOVAs were used to determine group differences in levels of secondary traumatic stress (STS) and burnout. Tests of normality were conducted as outlined above and homogeneity of variance was assessed using Levene's test for

equality of variance. In addition to the Levene's test, the F-max ratio was also generated for one-way ANOVAs. The F-max ratio is calculated by dividing the largest variance by the smallest; a value less than 3 suggests no violations of homogeneity.

Multiple regression and assumption testing

Multiple regression analysis was conducted to assess whether key variables predict levels of STS and burnout. The normality assumption of residuals was assessed using histograms and Q-Q plots of standardised residuals and analysis of outliers above 2. Leverage values were assessed to check no cases had values greater than 3 time the average leverage value (0.016) to ensure no case exerted undue influence over the whole model. Influence was assessed by examining Cook's distance values to ensure all values were below 1 (Field, 2009).

The linearity assumption was assessed through visual inspection of scatterplots for standardised residuals against standardised predicted values and standardised residuals against studentised residuals. Finally, the independent errors assumption was checked using Durbin-Watson test (between 1-3) and multicollinearity was checked against tolerance (below 1 but greater than 0.2) and VIF values (below 10) (Field, 2009).

Additional Exploratory Analysis

Bivariate analyses

A series of bivariate analyses were conducted to further explore the associations between the variables measured within the survey. The relationship between average monthly hours contracted and STS and burnout, and the relationship between average sick days over the past 12 months and STS and burnout were examined. It was anticipated that Pearsons (r) correlations

would be used to assess the relationship between continuous and interval data and Spearman (r_s) correlations would be used to assess the relationship between ordinal variables or for those variables which following assumption testing were found to violate assumptions of normality and linearity.

Group differences in secondary traumatic stress (STS) and burnout

In addition to collecting demographic information and measures of the key variables the survey asked participants details about their current working environment and sources of support. Not all of these factors were able to be fully analysed in the main paper, therefore a series of group differences in levels of STS and burnout were conducted.

Independent sample t-tests were used for variables consisting of two independent groups; current neonatal working environment (level I and II or level III and IV) and years post qualification (less than 10 years or more than 10 years). One-way ANOVAs were planned for variables with more than two independent groups; job role, access to training on resilience, communication or self-care, and opportunities for social events amongst teams.

Chapter 5: Additional Results

Assumption Testing

Normality of key variables

The normality assumption of all continuous interval variables was investigated. These variables included secondary traumatic stress (STS), burnout, self-compassion, empathetic concern, person distress, monthly contracted hours, sick days and stress related sick days over the past 12 months and average hours supervision in the past 12 months.

Inspection of graphical analysis revealed a symmetrical distribution with minimal outliers for STS, burnout, self-compassion, empathetic concern, personal distress and monthly contracted hours. In addition, as can be seen in table 9, small insignificant measures of skewness and kurtosis (all < 1) were detected for these variables suggesting no violation of the normality assumption.

Normality assumptions were not met for sick days and stress related sick days over the past 12 months and average hours supervision. Boxplots revealed a highly skewed distribution with a number of outliers. Table 10 reveals high skewness and kurtosis indicating significant deviations from the norm.

Table 9

Descriptive Statistics for Normally Distributed Variables.

	Mean	SD	Skewness	Kurtosis
STS	34.97	13.23	0.67	-0.14
BO	73.72	22.55	0.09	-0.71
SC	36.15	8.56	0.23	-0.10
EC	20.70	4.28	-0.61	0.12
PD	9.08	4.95	0.35	0.14
Monthly contracted hours	88.97	54.78	0.06	1.73

Table 10

Descriptive Statistics for Non-normally Distributed Variables.

	Mean	SD	Skewness	Kurtosis
Sick days	10.84	25.08	3.81	16.46
Stress related sick days	2.69	10.35	5.28	30.02
Hours supervision	20.46	62.41	5.14	29.73

Bivariate analyses and assumption testing

To analyse the relationships between STS, burnout, self-compassion, empathetic concern, personal distress, monthly contracted hours, average sick days and stress related sick days over the past 12 months and average number of hours supervision over the last 12 months bivariate analyses were conducted. Scatterplots between variables revealed monotonic relationships suggesting no violations to the assumption of linearity. However, as highlighted above some variables revealed non-normal distributions, therefore for these variables Spearman (r_s) correlations were carried out instead of Pearson (r) correlations. Spearman (r_s) correlations where also used to investigate the relationship between STS, burnout and ordinal data including satisfaction with ward climate factors.

Group differences and assumption testing

To analysis group differences in levels of STS and burnout a series of independent sample t-tests and one-way ANOVAs were conducted. Non-significant Levene's tests were found for each of the four independent sample t-tests used to assess STS and burnout dependent on years post qualification (less than 10 years or more than 10 years) and use of supervision (yes or no) suggesting no violation to the assumption of homogeneity of variance. A non-significant Levene's test was also found between levels of burnout dependent on current neonatal working

environment (level I and II or level III and IV). However, a significant Levene's test was found for levels of STS dependent on current neonatal working environment, therefore the t-score not assuming equal variance was reported.

One-way ANOVAs were conducted to determine group differences in levels of STS and burnout dependent on job role, access to training on resilience, communication or self-care, and opportunities for social events amongst teams. All Levene's tests were non-significant and all F-max ratios were less than 3, suggesting assumption of homogeneity of variances was met.

Multiple regression and assumption testing

Two multiple linear regressions were conducted to assess whether key variables predict levels of STS and burnout. Inspection of the histograms and Q-Q plots for both models suggested the normality assumption of residuals were met. Assessment of residuals greater than +/- 3 standard deviations revealed two outliers for the regression model predicting STS and three outliers for the regression model predicting burnout. However, all Cook's distance values were below one and all Leverage values were below the recommended cut-off of 3 time the average Leverage value (Field, 2009) suggesting that despite these outliers none were found to exerted undue influence over the whole model.

Scatterplots revealed no violations to the linearity assumptions between standardised residuals and standardised predicted values and standardised residuals and studentised residuals, and Durbin-Watson tests ranged from 1.94 – 1.96 suggesting independence of residuals.

Finally, inspection of the numerical solution revealed no problems with multicollinearity for either model; all VIF < 10, lowest tolerance = .55.

Additional Exploratory Analysis

Bivariate analyses

To analyse the relationship between STS and average hours contracted per month and average sick over the past 12 months a series of Pearson's (r) correlations and Spearman (r_s) correlations (for non-normally distributed variables) were conducted.

Positive correlations were found between STS and average number of sick days and STS and sick days attributed to stress and mental well-being (Table 11). There was no significant correlation between average monthly contracted hours and STS.

Table 11

Correlations between Secondary Traumatic Stress, Contracted Hours and Sick Days.

	Test Statistic	Significance (p-value)	Effect size	Effect size description
Contracted hours	r = .026	.718	r = 0.03	Weak
Sick days	r_s = .153	.008*	r = 0.15	Weak
Stress sick days	r_s =.336	<.001*	r = 0.34	Moderate

Note. *Correlation significant at 0.01

The relationship between burnout and average hours contracted per month and average sick days over the past 12 months were also investigated.

Again, positive correlations were found between burnout and average number of sick days and burnout and sick days attributed to stress and mental well-being (Table 12), a non-significant correlation between average monthly contracted hours and burnout was found.

Table 12

Correlations between Burnout, Contracted Hours and Sick Days.

	Test Statistic	Significance (p-value)	Effect size	Effect size description
Contracted hours	r = -.025	.735	r = 0.03	Weak
Sick days	r_s = .248	<.001*	r = 0.25	Weak
Stress sick days	r_s = .241	<.001*	r = 0.24	Weak

Note. *Correlation significant at 0.01

Group differences in levels of secondary traumatic stress (STS) and burnout

To investigate group differences in levels of STS and burnout dependent on current neonatal working environment and years post qualification two independent sample t-tests were conducted. A significant mean difference in levels of STS (t(242) = 3.92, p<.001) was found between participants who worked within level I or II neonatal units (M = 31.35, SD = 11.03) compared to those who worked in level III or IV units (M = 37.63, SD = 14.09). This mean difference (6.28) was found to be modest (Cohen d = .50) and suggested that individuals working in neonatal intensive care units (NICU) experience higher levels of STS. A modest significant difference in levels of burnout (t(244) = 3.66, p<.001, Cohen d = .47) was also found suggesting that participants working in NICUs (M = 78.11, SD = 21.13) experience higher levels of burnout than those working in level I or II units (M = 67.72, SD = 23.15).

A small significant mean difference in levels of STS (t(244) = 2.26, p = .025, Cohen d = .29) was found between staff who had been qualified for less than 10 years (M = 37.18, SD = 13.57) and those who had been qualified for more than 10 years (M = 33.35, SD = 12.78) suggesting lower levels of STS amongst the more qualified. There was no significant difference in levels of burnout found between the two groups.

A series of one-way ANOVAs were conducted to analyse the differences in levels of STS and burnout dependent on job role, access to training on resilience, communication or self-care, and opportunities for social events amongst teams. No significant differences were found in levels of STS ($F(5,240) = 0.45$, $p = .81$) or burnout ($F(5,240) = 0.25$, $p = .94$) dependent on job role.

A significant effect of access to training on levels of STS, ($F(2,243) = 5.32$, $p = .005$, $\eta^2 = .042$) was found suggesting that access to training accounted for 4% of the variability in STS. Post-hoc analysis revealed one significant difference between groups suggesting that participants who had opportunities to access training showed lower levels of STS comparing to those who were unsure of the availability of such courses ($p = .004$, cohen $d = .48$). Significant differences in level of burnout across the groups were also found ($F(2,243) = 8.46$, $p<.001$, $\eta^2 = .065$), suggesting 7% of the variability in burnout is accounted for by access to training. Post-hoc analyses revealed significant differences between participants who had the opportunity to access training and those who did not or those who were unsure of the of training opportunities ($p<.001$) suggesting that participants who worked in services where training was available revealed lower levels of burnout.

There was no significant difference in levels of STS dependent on opportunities for team socialising ($F(2,243) = 2.11$, $p = .12$). A significant effect of opportunities for team socialising on levels of burnout was found ($F(2,243) = 3.05$, $p = .049$, $\eta^2 = .024$) suggesting that opportunities to socialise accounted for 2% of the variability in burnout. Post-hoc analysis revealed one significant difference suggesting that participants who had opportunities to socialise showed lower levels of burnout comparing to those who did not ($p = .028$, cohen $d = .44$).

Chapter 6: Discussion and Critical Evaluation

The current thesis portfolio aimed to explore the impact of direct and vicarious trauma on staff working in high intensity environments. Initially, a narrative systematic review was conducted examining the use of psychological debriefing (PD) for clinical staff following exposure to traumatic events within clinical settings. The empirical paper subsequently focused on one high intensity environment exploring factors associated with secondary traumatic stress (STS) and burnout in neonatal staff. This chapter will offer an extended discussion of the results of the systematic review, empirical paper and additional results and synthesize these findings in relation to previous research. Theoretical and clinical implications will be considered followed by a critical evaluation of the thesis portfolio and suggestions for future research.

Systematic Review Findings

A systematic review was conducted to examine the use of PD with clinical staff following direct and vicarious trauma in clinical settings to explore whether (1) PD following a traumatic event impacts on distress symptomatology and (2) how clinical staff experience PD, and what factors influence this.

Healthcare professionals working in clinical settings are frequently exposed to potentially traumatising events. Repeated exposure to such events without appropriate support can lead to acute emotional distress predisposing individuals to posttraumatic stress disorder (PTSD), having a significant impact on physical and mental health (Everly, Flannery & Mitchell, 2000; Le Fevre & Kolt, 2006). Within the studies reviewed, there was some evidence that PD can reduce distress symptomology in clinical staff populations following a traumatic event. These studies revealed PD to be more effective in reducing PTSD symptoms when compared to no treatment, however

no evidence was found to suggest PD was any more effective than an intervention involving psychoeducation about stress (Humphries & Carr, 2001). A generally supportive working environment, where PD is available, was also highlighted as important for the natural reduction of distress symptomology over time regardless of whether PD is attended following exposure to trauma or not (Matthews, 1998).

Earlier reviews of the efficacy of PD concluded that "no evidence was found for the effectiveness of debriefing in the prevention of psychological sequelae following traumatic events" and highlighted potential harmful long-term effects of PD attendance (Rose & Bisson, 1998; Rose, Bisson & Wessely, 2003). These findings went on to inform clinical practice, stating that psychologically-informed debriefing should not be used for the treatment or prevention of PTSD (NICE, 2005;2018). When considering the findings of this systematic review with previous reviews it is important to note that few of the included studies used longer-term longitudinal designs and therefore no conclusions can be drawn regarding any long-term detrimental effects of PD.

In line with the systematic review included in this thesis portfolio, group PD has previously been found to alleviate the effects of vicarious psychological distress (Everly & Mitchell, 1999; Mitchell, 1997) and improve team effectiveness (Couper, Salman, Soar, Finn & Perkins, 2013; Tannenbaum & Cerasoli, 2013) amongst healthcare professionals. In the most recent review commissioned by Public Health England, it was concluded that the use of early post-trauma interventions in organizations "can support emergency responders to manage post-incident trauma when the interventions are tailored to the needs of the clinical environment, supported by the host organisation and harness existing social cohesion and peer processes within a team or unit" (Richins et al., 2019).

The systematic review also revealed that clinical staff were subjectively satisfied with their experience of PD, finding it helpful in reducing stress symptoms. Influential factors regarding its usefulness included the perceived value of having the opportunity to come together with colleagues to create a shared understanding of events, offer peer support and improve future coping. This is in line with previous research reporting the importance of making sense of what happened by going over the traumatic event as a team, alongside education and normalising of emotional responses to enable more effective coping in the future (Harvey, 1992; Huggard, 2013).

Within clinical practice there is much debate and concern about whether PD has the potential to cause retraumatisation (Raphael & Meldrum, 1995; Rose et al., 2003). More specifically, it has been debated whether the educational element of PD designed to normalise acute distress reactions may increase distress symptoms and "professionalise" trauma reactions alongside interrupting individuals usual coping mechanisms such as access to social support (Wessley & Deahl, 2003). Four studies within the systematic review reported on challenges and barriers to PD and acknowledged the pragmatic complexity of scheduling meetings within clinical settings highlighting the importance of flexibility with regards to timings and other practicalities considering the context of the working environment.

Empirical Paper Findings

Main results

The results from the empirical paper revealed high prevalence of moderate to severe secondary traumatic stress (STS) and burnout amongst neonatal staff, consistent with the findings from previous studies investigating STS and burnout amongst nursing populations

(Beck & Gable, 2012; Beck, LoGiudice & Gable, 2015; Beck, Cusson & Gable, 2017; Berger, Polovka, Smoot & Owens, 2015; Duffy, Avalos & Dowling, 2014; Dominquez-Gomez & Rutledge, 2009; Quinal, Harford & Rutledge, 2009). Levels of STS and burnout were strongly positively correlated as was found in previous research across healthcare professionals (Cieslak et al., 2014). Levels of self-compassion declined as STS and burnout increased; these results are consistent with studies which concluded that self-compassion is a protective factor against the potentially negative consequences of providing care (Duarte, Pinto-Gouveia & Cruz, 2016; MacBeth & Gumley, 2012; Richardson et al., 2016). There are mixed findings regarding the effect of empathy on healthcare professionals (Abendroth & Flannery, 2006; Leinweber & Rowe, 2008; Richardson et al., 2016; Wagaman, Geiger, Shockley & Segal, 2015). Within the empirical paper, results revealed that empathetic concern and personal distress increased as STS and burnout increased. One suggested explanation for these findings is that being highly responsive and empathetic to the suffering of others at the detriment of developing personal distress management strategies can lead to burnout amongst those in the caring profession (Batson, Fultz & Schoenrade, 1987).

The study found that as satisfaction with environmental ward climate factors increased levels of STS and burnout decreased highlighting the influence of a supportive working environment in mitigating the impact of STS and burnout as found in previous studies (Beck & Gable, 2012; Beck et al., 2017; Hinderer et al., 2014). Neonatal care staff who used regular supervision were found to experience greater STS compared to those who did not and increased regularity of supervision was associated with increased levels of STS and burnout. These results oppose the findings of previous studies which found that regular use of support lowered levels of STS (Von Rueden et al., 2010). There are many possible hypotheses to explain these findings;

perhaps when supervision is not routinely offered staff only seek support once they are already burnt out and struggling to manage the demands of the clinical environment. Alternatively, those seeking support may be doing so in the absence of alternative distress management and self-care skills (Dev, Fernando, Kirby & Consedine, 2019; Singh et al., 2018).

Regression analyses revealed that burnout, self-compassion and satisfaction with ward climate could in part explain the variance in STS. Variance in burnout was found to be explained by STS, self-compassion and satisfaction with ward climate. These findings are in line with previous studies (Barr, 2017; Duarte et al., 2016; Hinderer et al., 2014). Interestingly, empathetic concern and personal distress were not found to be significant predictors in either model. Due to the mixed evidence with regards to the impact of empathy on STS and burnout, further research exploring this amongst neonatal staff is required.

Additional analyses

Additional analyses were conducted to investigate the associations between contracted hours per month and sick leave over the past 12 months with STS and burnout. There were no significant correlations found between contracted hours and STS or burnout. Levels of STS and burnout were found to increase as the number of days sick leave increased. These results are to be expected given the findings that increased burnout amongst healthcare professionals increases the potential need for time away from work having a significant impact on the NHS workforce (NHS Digital, 2019).

Differences in levels of STS and burnout dependent on current neonatal working environment, years post qualification, job role, access to training and opportunities for socialising amongst teams were investigated. Findings revealed that staff working within high

intensity neonatal care units (levels III and IV) experienced higher levels of STS and burnout compared to those working in lower level units (levels I and II). One explanation for these findings is that those working in high intensity environments may be more frequently exposed to traumatic incidents due to the complex needs of neonates requiring tertiary care. More senior staff were found to have lower levels of STS compared to their junior counterparts. These findings are in keeping with previous research suggesting that more experiences clinicians may develop increased coping mechanisms over time used to buffer the impact of STS and burnout (Dev et al., 2019; Singh et al., 2018) and that junior staff are more likely to consider leaving their profession as a result of burnout (Arimon-Pagès, Torres-Puig-Gros, Fernández-Ortega, & Canela-Soler, 2019; Duffy et al., 2014).

There was no difference in levels of STS and burnout dependent on job role. Given that higher levels of STS and burnout were not only found in nursing staff but across all staff, both clinical and non-clinical, these findings support the rationale that support should be offered to all staff working within the neonatal team. Neonatal staff who had access to training on resilience, communication or self-care were found to reveal lower levels of STS and burnout compared to staff who did not. These findings are in line with suggestions regarding the importance of clinicians establishing coping strategies to maintain their wellbeing and gain relief from the intensity of their work (Wicks, 2007). Staff working in teams who socialised together revealed lower levels of burnout compared to those who did not, reiterating the value of peer and colleague support for mitigating the impact of STS and burnout amongst healthcare professionals.

Synthesis of Findings

Findings from both the systematic review and empirical paper reveal that staff working in high intensity clinical environments are vulnerable to experiencing psychological distress in response to repeated exposure to the pain and suffering of the patients they care for. These findings are not unexpected given the frequency at which healthcare professionals are faced with events such as mass casualties, death and workplace violence as part of their day to day working life (Clark, Polivka, Zwart & Sanders, 2018). These findings are consistent with conclusions drawn across healthcare research which suggest that repeated exposure to traumatic events without opportunities to access appropriate support has a significant impact on physical and mental health predisposing individuals to PTSD (Everly et al., 2000; Le Fevre & Kolt, 2006), STS (Beck & Gable, 2012; Beck et al., 2015; Beck et al., 2017; Berger et al., 2015; Duffy et al., 2014; Dominquez-Gomez & Rutledge, 2009; Quinal et al., 2009) and burnout (Cieslak et al., 2014) over time. In addition, relative to the general population, healthcare professionals working in emergency departments have been found to be at increased risk of developing clinical depression, experience interpersonal difficulties and turn to maladaptive coping strategies including consumption of alcohol and substances (Mitchell, 1983; Mitchell & Bray, 1990).

Both the systematic review and empirical paper explored factors which impact on psychological distress as a result of exposure to traumatic events. The systematic review found some tentative evidence that group PD following a traumatic event can reduce distress symptomology. Psychological debriefing protocols offering space for reflection and tailored to the needs of the clinical environment and staff population for whom it is facilitated were particularly valued. The value of peer support and gaining a shared experience to process the event and learn future coping from each other was also highlighted. The empirical paper found several factors influencing psychological distress and suggested that developing support

interventions to increase awareness about the effects of STS and burnout, enhance and promote self-care, and nurture self-compassion may help to mitigate the impact of STS and burnout amongst neonatal staff. The overall thesis portfolio suggests that providing both proactive support interventions and reactive support in response to traumatic events would be helpful to mitigate the negative impact of providing care amongst staff. Support forums tailored to the needs of the clinical population within which they are facilitated is likely to result in the most beneficial outcomes.

Theoretical Implications

The impact of repeated exposure to traumatic events on healthcare professionals can be explained by models of PTSD and STS. Posttraumatic stress symptoms including re-experiencing through intrusive memories, flashbacks or nightmares, hyperarousal, hypervigilance to threat and fear related avoidance are common in the aftermath following trauma. While many will recover from these symptoms in subsequent weeks, for others, symptoms persistent leading to PTSD (American Psychiatric Association, 2013). Ehler and Clark (2000) cognitive model of PTSD suggests that posttraumatic symptoms develop and persist due to the nature of an individuals' trauma memories and as a result of negative appraisals about the trauma and/ or the sequence of events. Change to trauma memories and negative appraisals are prevented by the adoption of maladaptive behavioural and cognitive strategies to control and avoid symptoms (Ehler & Clark, 2000). Ehler and Clark (2000) proposed that supporting individuals to make sense of trauma memories through the process of reliving is one way to challenge negative appraisals and make sense of traumatic events in an attempt to alleviate distress.

More specific to individuals working within the healthcare profession is STS described as "the natural consequent behaviours and emotions resulting from knowledge about a traumatising event experienced by a significant other. This stress results from helping or wanting to help a traumatised or suffering person" (Figley, 1995, p10). Secondary traumatic stress produces symptoms similar to those of PTSD in addition to having a significant impact on cognitive functioning including attention, memory and decision-making leading to potential negative consequences for patient care (Mitchell, 1983; Mitchell & Bray, 1990).

Both theories outlined above highlight the distinct role of memory in maintaining trauma symptoms and the value of making sense of trauma experiences in alleviating distress. The systematic review included in this thesis portfolio suggests that PD with clinical staff following exposure to direct and vicarious trauma may be one way to alleviate psychological distress. The original model of PD was Mitchell's (1983) CISD model designed to provide a safe space for emergency service personnel to process trauma through retelling of the event with the aim to reduce immediate distress and prevent the development of consequential PTSD (Becker et al., 2009). Though recommendation now advise against the use of CISD for the prevention and treatment of PTSD, Hobfoll and colleagues (2007) also spoke of the importance of developing an environment promoting a sense of safety, calm, sense of self, connectedness and hope when supporting individuals following trauma. These findings are consistent with those of the systematic review which revealed that clinical staff valued the opportunity PD provided to discuss traumatic events with colleagues and gain a shared understanding and peer support.

Another theoretical concept which can be used to explain the impact of high intensity working on healthcare professionals is that of burnout. Burnout is described by Pines and Aronson (1988) as "a state of mental, physical and emotion exhaustion thought to develop over

time as a result of working in emotionally demanding and high stress environments". Burnout is common amongst those in helping professions however symptoms are often so subtle that it is difficult to recognise their presence until they accumulate causing a decline in physical and mental health (Braithwaite, 2008; Eriksson, Starrin & Janson, 2008; Wicks, 2007). The parallel symptoms of STS and burnout can explain why the empirical paper revealed strong positive associations between the two, consistent with previous findings amongst healthcare professionals (Cieslak et al., 2014). Self-awareness and knowledge of the impact of burnout and the development of self-care coping strategies is thought to be essential in the prevention of burnout (Wicks, 2007).

This thesis portfolio revealed that there are a number of factors which influence healthcare staff experience of STS and burnout including self-compassion and a supportive working environment. One such self-care strategy thought to protect against the impact of STS and burnout is self-compassion described as caring for oneself. Neff (2003) model suggests that self-compassion consists of three components: (1) self-kindness: treating ourselves with kindness and understanding when we make a mistake or fail, (2) common humanity: seeing our own pain as part of a larger human experience and recognising that life is not perfect, and (3) mindfulness: accepting feelings as they are without suppression or avoidance. It is widely accepted across the literature that self-compassion is associated with reduced psychopathology (MacBeth & Gumley, 2012) and a protective factor for healthcare professionals against the negative consequences of providing care (Birnie, Speca, & Carlson, 2010; Duarte et al., 2016; Richardson et al., 2016). The findings of the empirical paper are consistent with those of previous studies revealing self-compassion to significantly predict variance in STS and burnout. In addition to the reduction of psychopathology, self-compassionate people have been found to be more likely to engage in

health-promoting behaviors (Sirois, Kitner & Hirsch, 2015; Terry, Leary, Mehta, & Henderson, 2013) and less likely to engage in health risk behaviors (Adams & Leary, 2007; Kelly, Zuroff, Foa, & Gilbert, 2010) and that increasing self-compassion reduces stress (Shapiro, Astin, Bishop & Cordova, 2005) and improves work satisfaction (Scarlet, Altmeyer, Knier & Harpin, 2017). These results suggest that increasing self-compassion not only protects against psychological distress but has the potential benefit of promoting further advantageous self-care coping strategies.

This thesis portfolio demonstrated the value of a supportive working environment for healthcare professionals. The systematic review provided evidence to suggest that clinical staff perceived PD to be helpful and valued the opportunity to gain a shared understanding and support from colleagues. The empirical paper found that overall satisfaction with their working environment including support from seniors and colleagues was associated with lower STS and burnout. Interestingly, previous research has suggested that the availability of support alone can be enough to mitigate psychological distress amongst healthcare professionals regardless of whether support is used of not (Matthews, 1998). In addition, subjective views of support being helpful are commonly found regardless of whether objective measures show reduced distress. One explanation for this is the common perception held that "talking" can be helpful and that the offer of such support holds a powerful representation of care (Rose et al., 2003).

The importance of self-care coping strategies and a supportive working environment have also been highlighted as important to counteract the potential costs of empathy amongst healthcare professionals. Empathy is broadly described as concern for others and is viewed as an essential characteristic amongst healthcare professionals found to be associated with good quality patient care. Though the empirical paper found that empathy did not significantly predict

levels of STS and burnout, negative associations between the concepts were revealed. Given the mixed findings within the literature regarding the impact of empathy on STS and burnout, these findings are not unexpected (Abendroth & Flannery, 2006; Leinweber & Rowe, 2008; Richardson et al., 2016; Wagaman et al., 2015). Davis (1983) model of empathy describes two main components of empathetic concern; others-oriented concern for the well-being of other people (empathetic concern) and self-focused personal feelings of distress and anxiety in response to another's misfortune (personal distress). It was hypothesized that each element leads to different motivational predispositions with personal distress motivating behaviours to reduce personal distress and empathetic concern leading to a focus on and possible priority towards the needs of others (Batson et al., 1987). Previous literature suggests that being overly responsive to the suffering of others in the form of high empathetic concern, can lead to burnout and compassion fatigue (Hodges & Biswas-Diener, 2007; Figley, 2012) if not appropriately balanced with self-oriented care (personal distress) (Batson et al., 1987). Further research investigating the impact of empathetic concern and personal distress amongst healthcare professionals working in high intensity environments is required.

Clinical Implications

Findings from this thesis portfolio suggest that given healthcare professionals vulnerability to psychological distress as a result of repeated exposure to traumatic events, it would be beneficial for services to provide support both following exposure to trauma in the workplace and proactively in the form of interventions to increase coping and mitigate the potential negative impacts of delivering care including STS and burnout.

Previous research has highlighted the importance of education and normalising emotional responses to trauma (Ehler & Clark, 2000). Increasing clinician's awareness of compassion fatigue was found to lead them to seeking support sooner resulting in a reduction of STS and burnout (Perry, Toffner, Merrick & Dalton, 2011). Therefore, offering psychoeducation around STS and burnout would be useful. Findings from the empirical paper revealed that ward environment and interpersonal climate within the team can influence levels of STS and burnout in particular feeling supported and having access to appropriate support if required. Therefore, creating a working culture which promotes support seeking would be beneficial.

The importance of healthcare professionals developing strategies to mitigate the negative impact of delivering care has been acknowledged across the literature (Wicks, 2007). One such strategy found in previous research is to increase levels of self-compassion. Compassion focused training that increased self-compassion was found to significantly improved job satisfaction (Scarlet et al., 2017) and reduce compassion fatigue amongst healthcare professionals (Duarte et al, 2016). Findings from the empirical paper found that self-compassion was a significant predictor and potential protective factor against STS and burnout, thus supporting previous findings. Therefore, interventions designed to nurture and enhance self-compassion may be beneficial.

Though the findings from the systematic review were tentative there was evidence to suggest that PD following exposure to a traumatic incident at work was perceived to be helpful and reduce distress symptomology. The most recent reviews (Richins et al., 2019) and studies of service-specific debriefing protocols (Archibald & O'Curry, in press; Blacklock, 2012; Clark et al., 2018; Keene, Hutton, Hall & Rushton, 2010) suggest that PD approaches tailored to the context of the working environment considering the needs of the whole service may be most

beneficial. The importance of establishing an approach to PD which is supported by the organisation within which it is implemented and an approach which builds on existing support within a team has also been highlighted (Richins et al., 2019). In the longer term, it may be beneficial to develop a formal standardised protocol for facilitating PD within clinical settings which services are able to adapt to meet the needs of their team. Such a protocol would be useful to guide services wishing to introduce PD as a form of support, however the development and implementation of such a protocol is largely reliant on future research.

Strengths and Limitations

One noteworthy strength of the thesis portfolio is that both the systematic review and empirical paper focused on the impact of and possible support for staff following exposure to direct and vicarious trauma in high intensity clinical working environments. Given the controversial evidence-base regarding the use of PD following exposure to trauma and the populations for which PD is appropriate, the systematic review uniquely contributed to the literature by being one of the first review to focus specifically on the use of PD with clinical staff populations working within clinical environments. In addition, the scope of this review expanded beyond the scope of those previously conducted by examining staff perceptions of PD alongside assessing its efficacy for reducing psychological sequalae therefore providing a broader understanding of its usefulness. However, despite the intention of the review to focus purely on clinical populations, due to the limited evidence available, studies including mixed samples of both clinical staff and non-clinical populations were included. Therefore, given this and the small sample sizes used in the included studies, generalisability of the results is tentative.

The empirical paper expanded on the findings of previous research by exploring the impact of STS and burnout beyond the experience of nursing populations to include all clinicians and non-clinical staff. Though no conclusions could be drawn regarding the experience of non-clinical staff given the limited participant numbers, the findings generated from including all staff across the neonatal services highlight the importance of considering the needs of the whole unit. In addition, the empirical paper focused on staff working in neonatal care units, a high intensity environment currently underrepresented in the literature.

Another strength of the portfolio is the diverse range of clinical populations represented including samples of multiple specialty nurses and emergency department clinicians in the systematic review and a sample of all staff working in neonatal care units in the empirical paper. Therefore, the findings and suggested clinical implications are likely to be at least in part relative to multiple high intensity clinical environments.

A limitation of the thesis portfolio is that both the empirical paper and a large proportion of the studies included in the systematic review used cross-sectional survey designs. Though survey designs are useful for collating initial descriptive data and opinion, causal conclusions are unable to be drawn. Participants completing surveys are also voluntary purposive samples which has the potential to bias results given possible differences between those who chose to complete the survey and those who did not. For example, clinical staff experiencing the highest levels of compassion fatigue may be underrepresented given their already limited capacity and the time required to take part. In addition, staff currently on long-term sick leave were not included in the survey, further suggesting that those most at risk of STS and burnout may be understated.

Alongside the limited number of papers included in the systematic review, another weakness is the heterogeneity of the studies included in terms of study design, method of data

collection and psychometric measures used, meaning a formal meta-analysis was not possible. The studies included also lacked longer-term longitudinal designs, therefore no conclusions could be drawn regarding any potential long-term detrimental effects of PD attendance as has been highlighted within previous research.

Future Research

Across the thesis portfolio there is an evident need for more robust research investigating the impact of direct and vicarious trauma on clinical staff working in high intensity environments. This is evident from the limited studies suitable for inclusion in the systematic review with only one RCT identified. However, though more robust research is required in this area, the appropriateness of a true RCT needs to be considered against possible ethical implications of denying support to individuals within an appropriate time frame following a traumatic event. The use of longitudinal non-randomised experimental trials, where "no treatment" controls involve individuals who choose not to attend PD or comparisons with alternative, lower-level interventions, may be more appropriate.

It is worth noting that during the study selection process of the systematic review a number of articles outlining the implementation of new service specific PD protocols had been published (Appleton, Nelson & Wedlund, 2018; Harrison & Wu, 2017; Rose & Cheng, 2018). It is hoped that future publication evaluating these protocols will be released after which a repeat systematic review would be recommended. In addition, to improve the comparability across studies and improve the quality of the research base, there is a need for increased homogeneity across research. Increased longitudinal quantitative experimental study designs using validated psychometrics to assess psychological symptomology would be valuable in achieving this and

enable a meta-analysis to be conducted. Increasing the evidence base evaluating the use of PD with clinical staff may also support the development of a standardised PD protocol to test across high intensity settings.

While regression analyses in the empirical paper significantly explained the variance in STS and burnout a large amount of variance remained unexplained. One factor which was not considered in the study and could have been included was perceived social support outside of the working environment and the presence of health-promoting behaviours.

There is consensus across the literature of the importance of perceived social support in the maintenance of psychological well-being (Feeney & Collins, 2015; Taylor, 2011) with social support believed to protect against the effects of stress (Cohen, Gottlieb & Underwood, 2000; Cordes & Dougherty, 1993; Prati, Pietrantoni, & Cicognani, 2010). In NICU nurses, perceived social support was found to mediate the effect of work stress on compassion satisfaction and moderated the effect of work stress on STS (Barr, 2017). With regards to health-promoting behaviours, good quality sleep and regular exercise was found to be associated with increased compassion satisfaction amongst nurses (Wang et al., 2019). Further research to investigate whether these factors influence levels of STS and burnout amongst neonatal staff would be of value.

Finally, the empirical paper concluded that developing support interventions aimed at (1) increasing awareness about the symptoms and impact of STS and burnout, (2) teaching skills to enhance self-care and (3) nurture self-compassion may help to mitigate against the impact of STS and burnout amongst neonatal staff. Based on the findings that both clinical and non-clinical neonatal staff members experienced distress in response to trauma, facilitating such interventions available for all staff within a working environment which promotes support seeking would be

valuable. Future research regarding the implementation and evaluation of the efficacy of such an intervention for reducing distress symptomology in high intensity clinical environments is needed. In addition, future studies should consider including non-clinical participants e.g. porters, reception and administration staff in their research to gain a better understanding of their experience following exposure to trauma.

Conclusion

The thesis portfolio aimed to explore the impact of direct and vicarious trauma on clinical staff working in high intensity environments. The findings of the portfolio revealed that staff working in these environments are repeatedly exposed to traumatic events which surpass the average person's experience leading to psychological distress including STS and burnout. Self-compassion and a supportive working environment were found to impact on levels of psychological distress. The thesis portfolio suggests that support following exposure to trauma in the form of PD and interventions aimed at increasing awareness of distress symptoms, teaching skills to enhance self-care and self-compassion may be beneficial to mitigate against the negative consequences of providing care. It is also suggested that such support should be available to everyone within a team including non-clinical staff. Future research evaluating the use of PD following trauma with clinical staff working in clinical settings would be beneficial. Studies implementing and evaluating support interventions for staff working in high intensity environments would also be of value.

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Appendices

Appendix A: British Journal of Psychiatry Author Guidelines

Instructions for contributors

About

The British Journal of Psychiatry (BJPsych) is a leading international peer-reviewed journal, covering all branches of psychiatry with a particular emphasis on the clinical aspects of each topic. Please visit About the BJPsych for further information about the focus, mission, ownership, management, content and audience of the journal.

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Manuscripts should be submitted online as a word document via https://mc.manuscriptcentral.com/bjpsych. Authors may track the progress of their manuscript(s) at any time via the submission website. For assistance with online submission, please email bjp@rcpsych.ac.uk or call + 44 (0) 20 3701 2546.

Preparing your Submission

Checklist: What to Include

Authors will be asked to confirm the following elements are included during submission. Any omissions may cause delays.

Word Document:

1. **Title** – The title should be brief and relevant. Titles should not announce the results of articles and (apart from editorials) they should not be phrased as questions.
2. **Author Names** – The full names of the authors should appear on the title page in the form and order that is wished for publication**.**
3. **Main Text** – See relevant Article Type for individual specification.
4. **Clinical Trials Registration** – In accordance with ICMJE guidelines, the *BJPsych* requires all clinical trials to be registered in a public trials registry at the beginning of the research process (prior to patient enrolment). Trial registration numbers should be included in the abstract, with full details of the trial in the Methods section.
5. **Ethics Statement** – All authors are required to follow the ICMJE guidelines on the protection of research participants. Reports on research involving human participants must include the following statement in the Methods section: *The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008. All procedures involving human subjects/patients were approved by [name of the relevant local, regional or national review body and approval number]*. For further assistance in writing an ethics statement please visit Ethics Statement Generator.

6. **Consent Statement** – Reports on research involving human participants must include the following statement in the Methods section: *Written [or verbal] informed consent was obtained from all subjects/patients.* Where verbal consent was obtained this must be followed by a statement such as: *Verbal consent was witnessed and formally recorded.* This confirms that any research participant has consented to the inclusion of material pertaining to themselves, that they acknowledge that they cannot be identified via the manuscript; and that the participant has been fully anonymized by the author. If research participants are identifiable, authors should complete and upload a Consent Form. Where someone is deceased, please ensure you have written consent from the family or estate.
7. **Author Details** – At the end of the manuscript list the degrees, job titles, affiliations and countries at the time the work described in the paper was carried out. Identify one corresponding author with an email address appropriate for publication.
8. **References** – References should be numbered in the order that they appear in the text and listed at the end of the manuscript using the Vancouver style. Unpublished doctoral theses may be cited but no other citation of unpublished work, including unpublished conference presentations, is permissible. Authors are responsible for checking all references for accuracy and relevance before submission.

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4. **Author Contribution** – All authors should meet all four ICMJE criteria for authorship. Please provide a very brief description of the contribution of each author to the research including their roles in formulating the research question(s), designing the study, carrying it out, analysing the data and writing the article.
5. **Data Availability –** Authors should indicate whether they had access to the study data, with an explanation of the nature and extent of access, including whether access is on-going. Where appropriate, the statement should indicate where the data associated with a

manuscript is available and include links and DOIs to the data set. The DOI, repository name and number should also be included in the abstract. See here for more details.

Other Documents:

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3. **Supplementary Material** – Material related to a paper but not essential to a general understanding of the paper will be published as an online data supplement. Supplementary material is peer reviewed but will not be copyedited or typeset and should be supplied as authors wish to appear online. Supplementary material should be uploaded as a separate file and referenced in the manuscript. This material includes, but is not restricted to:
   - Additional data presented as tables or figures
   - Details of a search strategy employed in a literature review
   - Details of the literature retrieved but not further discussed in the body of the manuscript
   - Technical details of specialist (but not novel) methodology, statistical analysis and supporting references
   - Authors who have contributed in some sense to the paper but don't qualify for an authorship credit (e.g. group authorship) should be added to supplementary material rather than included in the footnote or acknowledgement section
4. **ICMJE Conflict of Interest Form** – All authors are required to complete the ICMJE Conflicts of Interest form disclosing all financial and personal relationships that might bias or be seen to bias their work as detailed in the ICMJE guidelines. The forms must be uploaded as supplementary files and will be published online for all accepted research papers.
5. **Publication Agreement -** A signed publication agreement must be submitted online when submitting a revised version of the manuscript, or immediately after acceptance if no revision is required.

6. **CONSORT, PRISMA, or CHEERS Checklist/Flow Diagram** – If relevant, see here for more information.

Article Types

Paper

- The word count should be between 3,000 and 4,000 words (excluding references, tables and figure legends) and may include up to 25 essential references beyond those describing statistical procedures, psychometric instruments and diagnostic guidelines used in the study.
- Structured abstract of up to 250 words with the headings: **Background; Aims; Method; Results; Conclusions (Trial Registration Number** and **Data Set Information** where appropriate). Please find further guidance on writing an effective abstract here.
    - Quantitative studies: abstracts should provide effect sizes with confidence intervals (not *P*-values alone).
    - Conclusions, in isolation, are likely to be used by others citing or promoting the work and must therefore be an accurate reflection of the study's main findings.
- Main text should include the following sections: **Introduction, Method, Results and Discussion.**
    - Introductions should be no more than one paragraph. Longer introductions may be permissible but should be split with subheadings if they exceed two paragraphs.
    - Discussion section should always include limitations of the paper to ensure balance, use of subheadings is encouraged in this section.
    - A Conclusions section is not required in the main text.
- In total, up to four tables and figures may be included in the print version of each paper (e.g. three tables and one figure). Additional tables and figures may be included as online only supplementary material. All large tables (exceeding one journal page) will be published as online only supplementary material. Authors are encouraged to present key data within smaller tables for print publication.

Review

- There is no word limit or maximum number of references, tables or figures.
- The abstract and main text should be structured in the same way as Papers (above).
- We require authors to register the protocol for **systematic reviews** on an accessible, searchable site such as PROSPERO and include the registration number in the abstract. If the review has not been registered, we are unable to consider your submission.
- Systematic reviews are preferred, narrative reviews will be published only under exceptional circumstances.
- Previously published Reviews for groups such as the Cochrane Collaboration and the National Institute for Health and Care Excellence should be submitted with the latest version of the parent review and its status, so an informed decision can be made about the added value of the submitted paper.

Transparent Reporting: Equator Guidelines

Authors must abide by the following guidelines and documentation, if applicable:

- CONSORT guidelines: **Randomised controlled trials** (submit a completed checklist and flowchart)
- STROBE guidelines: Cohort, case-control, and cross-sectional **observational studies in in epidemiology**
- PRISMA guidelines: **systematic reviews or meta-analyses of evaluations studies** including randomised controlled trials (submit a completed checklist and flowchart)
- MOOSE guidelines.: **meta-analyses of observational studies in epidemiology**
- CHEERS guidelines: **economic evaluations** (submit a completed checklist)

Statistics

Attention should be paid to providing a clear description of study designs and objectives, and evidence that the statistical procedures used were both appropriate for the hypotheses tested and correctly interpreted. The statistical analyses should be planned before data are collected and full explanations given for any post hoc analyses carried out. The value of test statistics used (e.g. t, F-ratio) should be given as well as their significance levels so that their derivation can be understood. Standard deviations and errors should not be reported as ± but should be specified and referred to in parentheses.

Trends should not be reported unless they have been supported by appropriate statistical analyses for trends. The use of percentages to report results from small samples is discouraged, other than where this facilitates comparisons. The number of decimal places to which numbers are given should reflect the accuracy of the determination and estimates of error should be given for statistics. Use of confidence intervals is encouraged but not mandatory. Authors are encouraged to include estimates of statistical power where appropriate. To report a difference as being statistically significant is generally insufficient, and comment should be made about the magnitude and direction of change.

Appendix B: Guidance Notes for the Quality Assessment Tool for Studies with Diverse Designs

Sirriyeh, Lawton, Gardner, & Armitage (2011)

Table 1 Quality assessment tool and scoring guidance notes

Criteria	0 = Not at all	1 = Very slightly	2 = Moderately	3 = Complete
(1) Explicit theoretical framework	No mention at all.	Reference to broad theoretical basis.	Reference to a specific theoretical basis.	Explicit statement of theoretical framework and/or constructs applied to the research.
(2) Statement of aims/objectives in main body of report	No mention at all.	General reference to aim/objective at some point in the report including abstract.	Reference to broad aims/objectives in main body of report.	Explicit statement of aims/objectives in main body of report.
(3) Clear description of research setting	No mention at all.	General description of research area and background, e.g. 'in primary care'.	General description of research problem in the target population, e.g. 'among GPs in primary care'.	Specific description of the research problem and target population in the context of the study, e.g. nurses and doctors from GP practices in the east midlands.
(4) Evidence of sample size considered in terms of analysis	No mention at all.	Basic explanation for choice of sample size. Evidence that size of the sample has been considered in study design.	Evidence of consideration of sample size in terms of saturation/information redundancy or to fit generic analytical requirements.	Explicit statement of data being gathered until information redundancy/saturation was reached or to fit exact calculations for analytical requirements.
(5) Representative sample of target group of a reasonable size	No statement of target group.	Sample is limited but represents some of the target group or representative but very small.	Sample is somewhat diverse but not entirely representative, e.g. inclusive of all age groups, experience but only one workplace. Requires discussion of target population to determine what sample is required to be representative.	Sample includes individuals to represent a cross section of the target population, considering factors such as experience, age and workplace.
(6) Description of procedure for data collection	No mention at all.	Very basic and brief outline of data collection procedure, e.g. 'using a questionnaire distributed to staff'.	States each stage of data collection procedure but with limited detail, or states some stages in details but omits others.	Detailed description of each stage of the data collection procedure, including when, where and how data were gathered.
(7) Rationale for choice of data collection tool(s)	No mention at all.	Very limited explanation for choice of data collection tool(s).	Basic explanation of rationale for choice of data collection tool(s), e.g. based on use in a prior similar study.	Detailed explanation of rationale for choice of data collection tool(s), e.g. relevance to the study aims and assessments of tool quality either statistically, e.g. for reliability & validity, or relevant qualitative assessment.
(8) Detailed recruitment data	No mention at all.	Minimal recruitment data, e.g. no. of questionnaire sent and no. returned.	Some recruitment information but not complete account of the recruitment process, e.g. recruitment figures but no information on strategy used.	Complete data regarding no. approached, no. recruited, attrition data where relevant, method of recruitment.
(9) Statistical assessment of reliability and validity of measurement tool(s) (Quantitative only)	No mention at all.	Reliability and validity of measurement tool(s) discussed, but not statistically assessed.	Some attempt to assess reliability and validity of measurement tool(s) but insufficient, e.g. attempt to establish test–retest reliability is unsuccessful but no action is taken.	Suitable and thorough statistical assessment of reliability and validity of measurement tool(s) with reference to the quality of evidence as a result of the measures used.
Fit between stated research question and method of data collection (Quantitative)	No research question stated.	Method of data collection can only address some aspects of the research question.	Method of data collection can address the research question but there is a more suitable alternative that could have been used or used in addition.	Method of data collection selected is the most suitable approach to attempt answer the research question
Fit between stated research question and format and content of data collection tool e.g. interview schedule (Qualitative)	No research question stated.	Structure and/or content only suitable to address the research question in some aspects or superficially.	Structure & content allows for data to be gathered broadly addressing the stated research question(s) but could benefit from greater detail.	Structure & content allows for detailed data to be gathered around all relevant issues required to address the stated research question(s).
Fit between research question and method of analysis	No mention at all.	Method of analysis can only address the research question basically or broadly.	Method of analysis can address the research question but there is a more suitable alternative that could have been used or used in addition to offer greater detail.	Method of analysis selected is the most suitable approach to attempt answer the research question in detail, e.g. for qualitative IPA preferable for experiences vs. content analysis to elicit frequency of occurrence of events, etc.
Good justification for analytical method selected	No mention at all.	Basic explanation for choice of analytical method	Fairly detailed explanation of choice of analytical method.	Detailed explanation for choice of analytical method based on nature of research question(s).
Assessment of reliability of analytical process (Qualitative only)	No mention at all.	More than one researcher involved in the analytical process but no further reliability assessment.	Limited attempt to assess reliability, e.g. reliance on one method.	Use of a range of methods to assess reliability, e.g. triangulation, multiple researchers, varying research backgrounds.
Evidence of user involvement in design	No mention at all.	Use of pilot study but no involvement in planning stages of study design.	Pilot study with feedback from users informing changes to the design.	Explicit consultation with steering group or statement or formal consultation with users in planning of study design.
Strengths and limitations critically discussed	No mention at all.	Very limited mention of strengths and limitations with omissions of many key issues.	Discussion of some of the key strengths and weaknesses of the study but not complete.	Discussion of strengths and limitations of all aspects of study including design, measures, procedure, sample & analysis.

Appendix C: International Journal of Nursing Studies Author Guidelines

INTRODUCTION

The *International Journal of Nursing Studies* (IJNS) provides a forum for publication of scholarly papers that report research findings, research-based reviews, discussion papers and commentaries which are of interest to an international readership of practitioners, educators, administrators and researchers in all areas of nursing, midwifery and the caring sciences. Papers should address issues of international interest and concern and present the study in the context of the existing international research base on the topic. Those which focus on a single country should identify how the material presented might be relevant to a wider audience and how it contributes to the international knowledge base. Selection of papers for publication is based on their scientific excellence, distinctive contribution to knowledge (including methodological development) and their importance to contemporary nursing, midwifery or related professions.

Submission to this journal proceeds totally online and you will be guided stepwise through the creation and uploading of your files. The system automatically converts your files to a single PDF file, which is used in the peer-review process.

Amongst the many submissions received we recognise that some will have been previously formatted for another journal. The Your Paper Your Way service (described later) means that authors can submit these papers to the IJNS without worrying about formatting the manuscript again to exacting specifications.

The IJNS also offers a rapid review service for newsworthy papers under our 4* submission service.

Types of papers

The IJNS publishes original research, reviews, and discussion papers. In addition, we publish editorials and letters. Where a case is made we will also publish protocols of trials which meet our general criteria for interest and significance.

Research Papers — 2,000–7,000 words

Full papers reporting original research can be a maximum of 7000 words in length, although shorter papers are preferred. Research papers should adhere to recognised standards for reporting (see guidance below and the Author Checklist).

Reporting guidelines

The editors require that manuscripts adhere to recognized reporting guidelines relevant to the research design used and require authors to submit a checklist verifying that essential elements have been reported for all primary research and systematic reviews.

Reporting guidelines endorsed by the journal are listed below:

•*Observational cohort, case control and cross-sectional studies* – STROBE - Strengthening the Reporting of Observational Studies in Epidemiology, http://www.equator-network.org/reporting-guidelines/strobe/

• *Qualitative studies* - COREQ - Consolidated criteria for reporting qualitative research, http://www.equator-network.org/reporting-guidelines/coreq

• *Quasi-experimental/non-randomised evaluations* - TREND - Transparent Reporting of Evaluations with Non-randomized Designs, http://www.cdc.gov/trendstatement/
• *Randomised (and quasi-randomised) controlled trial* - CONSORT - Consolidated Standards of Reporting Trials, http://www.equator-network.org/reporting-guidelines/consort/
• *Study of Diagnostic accuracy/assessment scale* - STARD - Standards for the Reporting of Diagnostic Accuracy Studies, http://www.equator-network.org/reporting-guidelines/stard/
• *Systematic Review of Controlled Trials* - PRISMA - Preferred Reporting Items for Systematic Reviews and Meta-Analyses, http://www.equator-network.org/reporting-guidelines/prisma/
• *Systematic Review of Observational Studies* - MOOSE - Meta-analysis of Observational Studies in Epidemiology, http://www.ncbi.nlm.nih.gov/pubmed/10789670
Where relevant, more specific extensions to the generic guide should be used, for example:
•**Cluster** Randomised Controlled Trials(where participants are randomised in groups, rather than as individuals)-*Consort 2010 statement: extension to cluster randomized trials*http://www.equator-network.org/reporting-guidelines/consort-cluster/
•*Observational studies using routine data*- RECORD - The Reporting of studies Conducted using Observational Routinely-collected health Data http://www.equator-network.org/reporting-guidelines/record/
You are required to adhere to these guidelines (or a suitable recognized alternative) and to submit a completed checklist from the reporting guideline to assist the editors and reviewers of your paper. You can search for the correct guideline for your study using the tools provided by the EQUATOR network: http://www.equator-network.org/ The guideline used must be indicated in the Author Checklist.

Ethics in publishing
The IJNS is a signatory journal to the Uniform Requirements for Manuscripts Submitted to Biomedical Journals, issued by the International Committee for Medical Journal Editors (ICMJE), and to the Committee on Publication Ethics (COPE) code of conduct for editors. Our guidelines should be read in conjunction with this broader guidance. The ICJME requirements can be found at http://www.icmje.org/ and the COPE's guidelines at http://publicationethics.org/files/u2/New_Code.pdf.
All studies must be conducted to a high ethical standard and must adhere to local regulations and standards for gaining scrutiny and approval. The work described in your article must have been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments involving humans http://www.wma.net/en/30publications/10policies/b3/; EC Directive 86/609/EEC for animal experiments http://ec.europa.eu/environment/chemicals/lab_animals/legislation_en.htm. This must be stated at an appropriate point in the article. The approving body and (if relevant) approval number should be identified in the Author Checklist.
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Informed consent and patient details
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Use of inclusive language

Inclusive language acknowledges diversity, conveys respect to all people, is sensitive to differences, and promotes equal opportunities. Articles should make no assumptions about the beliefs or commitments of any reader, should contain nothing which might imply that one individual is superior to another on the grounds of race, sex, culture or any other characteristic, and should use inclusive language throughout. Authors should ensure that writing is free from bias, for instance by using 'he or she', 'his/her' instead of 'he' or 'his', and by making use of job titles that are free of stereotyping (e.g. 'chairperson' instead of 'chairman' and 'flight attendant' instead of 'stewardess').

Contributors & Acknowledgements

All authors should have made substantial contributions to all of the following: (1) the conception and design of the study, or acquisition of data, or analysis and interpretation of data, (2) drafting the article or revising it critically for important intellectual content, (3) final approval of the version to be submitted. In the covering letter to the editorial office, we ask you make a true statement that all authors meet the criteria for authorship, have approved the final article and that all those entitled to authorship are listed as authors. We ask that roles for each and every author be individually described, with reference to the criteria for authorship. Those who meet some but not all of the criteria for authors can be identified as 'contributors' at the end of the manuscript with their contribution specified. All those individuals who provided help during the research (e.g., collecting data, providing language help, writing assistance or proofreading the article, etc.) but who do not meet criteria for authorship should be acknowledged in the paper.

For papers with many authors we may ask that you give a corporate name for the research group (e.g. ATLAS Research Group) to appear at the front of the article and list all authors [as defined above] at the end of the paper. Any contributors and acknowledgements should be listed additionally, as described above.

Submission

Our online submission system guides you stepwise through the process of entering your article details and uploading your files. The system converts your article files to a single PDF file used in the peer-review process. Editable files (e.g., Word, LaTeX) are required to typeset your article for final publication. All correspondence, including notification of the Editor's decision and requests for revision, is sent by e-mail.

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PREPARATION
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References
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Formatting requirements
There are no strict formatting requirements but all manuscripts must contain the essential elements needed to convey your manuscript, for example Abstract, Keywords, Introduction, Materials and Methods, Results, Conclusions, Artwork and Tables with Captions and "Contribution of Paper" (where applicable).
If your article includes any Videos and/or other Supplementary material, this should be included in your initial submission for peer review purposes.
Divide the article into clearly defined sections.
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Please ensure the figures and the tables included in the single file are placed next to the relevant text in the manuscript, rather than at the bottom or the top of the file. The corresponding caption should be placed directly below the figure or table.

ALL SUBMISSIONS

The following documents are needed for all submissions (please refer to the Author Checklist for further guidance on preparing your manuscript).
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Blinded manuscript (no author details) – The main body of the paper (including the references, figures, tables and any Acknowledgements) should not include any identifying information, such as the authors' names or affiliations. Please ensure that the manuscript includes page numbers for ease of reference during the review process.
Author Checklist – completed reporting guidelines for the relevant research design.
Covering letter – to the editor in which you detail authorship contributions and other matters you wish the editors to consider.

Contribution of the Paper
All submissions (with the exception of Letters and Editorials) should include "Contribution of the Paper" statements. This should take the form of a clear summary of 'What is already known about the topic?' and 'What this paper adds', identifying existing research knowledge relating to the specific research question / topic and a summary of the new knowledge added by this study. Under each of these headings, please provide clear statements in the form of two or three short bullet points for each. The statements should be placed in the manuscript file between the Abstract and the main body of text, as well as supplied as a separate standalone file at submission.
Do not give general statements in what is known, instead focus on the results of research addressing the same question(s). Do NOT give process statements of what the paper does. eg. *"This review demonstrates that nurse-led intermediate care reduces hospital stay but increases total inpatient stay"* (outcome) NOT *"This review considers the impact of nurse-led intermediate care on acute stay and total inpatient stay"* (process. Contribution of the Paper statements ('**What is already known about the topic**?' and '**What this paper adds**') should be uploaded as a separate file at submission; and included as bullet points, under the correct heading, between the Abstract and the main body of text in the manuscript file (authors are asked to refer to a recent copy of the journal for guidance) The statements in the separate file and in the manuscript *should be identical*.

GENERAL GUIDANCE
Essential title page information
• ***Title.*** Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible.
• ***Author names and affiliations.*** Please clearly indicate the given name(s) and family name(s) of each author and check that all names are accurately spelled. You can add your name between parentheses in your own script behind the English transliteration. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lowercase superscript letter immediately after the author's name and in front of the appropriate address. Provide the full postal address of each affiliation, including the country name and, if available, the e-mail address of each author.

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Title

The title should be in the format 'Topic / question: design/type of paper' and identify the population / care setting studied.(e.g. The effectiveness of telephone support for adolescents with insulin dependent diabetes: controlled before and after study). The country in which the study was conducted should not normally be named in the title.

Abstract

Abstracts should be less than 400 words, and should not include references or abbreviations. Abstracts of research papers must be structured and should adopt the headings suggested by the relevant reporting guidelines (see below). In general they should include the following: *Background*; *Objectives*; *Design*; *Settings* (do not specify actual centres, but give the number and types of centre and geographical location if important); *Participants* (details of how selected, inclusion and exclusion criteria, numbers entering and leaving the study, relevant clinical and demographic characteristics); *Methods*; *Results*, report main outcome(s)/findings including (where relevant) levels of statistical significance and confidence intervals; and *Conclusions*, which should relate to study aims and hypotheses. Abstracts for reviews should provide a summary under the following headings, where possible: Objectives, Design, Data sources, Review methods, Results, Conclusions. Abstracts for Discussion Papers should provide a concise summary of the line of argument pursued and conclusions.

Keywords

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

Abbreviations, acronyms and initialisms

As a rule the International Journal of Nursing Studies does not permit the use of abbreviations, acronyms and initialisms (abbreviations for brevity). We make a limited number of exceptions but we do not allow the use of any abbreviations that are not widely recognised. The limited exceptions include cases where the abbreviated form has near universal recognition (e.g. USA), statistical terms and tests (e.g. df, t, ANOVA) and instruments that are generally identified by their initials or an abbreviation (e.g. SF36)

As a rule, any abbreviations which the authors intend to use should be written out in full and followed by the letters in brackets the first time they appear, thereafter only the letters without brackets should be used. For additional guidenace, see the editorial policy/style on abbreviations, initialisms and acronyms.

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Standard methods of presenting statistical material should be used. Where methods used are not widely recognised explanation and full reference to widely accessible sources must be given. Exact *p* values should be given to no more than three decimal places. Wherever possible give

both point estimates and 95% confidence intervals for all population parameters estimated by the study (e.g. group differences, frequency of characteristics) Identify the statistical package used (please note that SPSS has not been "Statistical Package for the Social Sciences" for many years).

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There should be no more than five tables and figures in total and these should be included in the manuscript at the appropriate point. All tables and figures should be clearly labelled. If your manuscript includes more than 5 tables in total, or for very large tables, these can be submitted as Supplementary Data and will be included as such in the online version of your article.

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List funding sources in this standard way to facilitate compliance to funder's requirements:
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If no funding has been provided for the research, please include the following sentence:
This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Appendices

Normally there should be no appendices although in the case of papers reporting tool development or the use of novel questionnaires authors must include a copy of the tool as an appendix unless all items appear in a table in the text.

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Where applicable authors should confirm that informed consent was obtained from human subjects and that ethical clearance was obtained from the appropriate authority.

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Permission to reproduce previously published material must be obtained in writing from the copyright holder (usually the publisher) and acknowledged in the manuscript.

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Our experience suggests that all things being equal, readers find shorter papers more useful than longer ones. Given this, and competition for space in the Journal, shorter papers of between 2,000 and 3,500 words are preferred. However, full papers may be up to 7,000 words in length, plus tables, figures, and references. Ordinarily there should be no appendices although in the case of papers reporting tool development or the use of novel questionnaires it is usual to include a copy of the tool as an appendix.

Tables

Please submit tables as editable text and not as images. Tables can be placed next to the relevant text in the article,. Number tables consecutively in accordance with their appearance in the text and place any table notes below the table body. Be sparing in the use of tables and ensure that the data presented in them do not duplicate results described elsewhere in the article. Please avoid using vertical rules.

References

Citation in text

Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Unpublished results and personal communications are not recommended in the reference list but may be mentioned in the text. If these references are included in the reference list they should follow the standard reference style of the journal and should include a substitution of the publication date with either 'Unpublished results' or 'Personal communication'. Citation of a reference as 'in press' implies that the item has been accepted for publication.

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As a minimum, the full URL should be given and the date when the reference was last accessed. Any further information, if known (DOI, author names, dates, reference to a source publication, etc.), should also be given. Web references can be listed separately (e.g., after the reference list) under a different heading if desired, or can be included in the reference list.

Data references

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

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Reference style

Text: All citations in the text should refer to:

1. *Single author:* the author's name (without initials, unless there is ambiguity) and the year of publication;
2. *Two authors:* both authors' names and the year of publication;
3. *Three or more authors:* first author's name followed by 'et al.' and the year of publication.

Citations may be made directly (or parenthetically). Groups of references can be listed either first alphabetically, then chronologically, or vice versa.

Examples: 'as demonstrated (Allan, 2000a, 2000b, 1999; Allan and Jones, 1999)…. Or, as

demonstrated (Jones, 1999; Allan, 2000)… Kramer et al. (2010) have recently shown …'
List: References should be arranged first alphabetically and then further sorted chronologically if necessary. More than one reference from the same author(s) in the same year must be identified by the letters 'a', 'b', 'c', etc., placed after the year of publication.

Appendix D: Survey Plan

Page 1: Information sheet and consent

Page 2: Demographic information

1. Gender
2. Age
3. Ethnicity
4. Which NICU are you currently working at?
5. Job role
6. Years post professional qualification
7. Employment Status
8. Average hours contracted per month
9. Approximate sick days in the last 12 months?
    a. How many of these sick days were anxiety, stress, depression related?

Page 3: Stress

Secondary traumatic stress scale (17 items)

Page 4: Burnout

Burnout measure (21 items)

Page 5: Self-compassion

Neff's self-compassion scale, short form (12 items)

Page 6: Empathy

IRI: empathetic concern and personal distress subscales (14 items)

Page 7: Ward environment

1. Is clinical supervision offered to you as a member of NICU staff?

2. Do you use clinical supervision? (If yes follow up questions)

   a. If yes approximately how many hours supervision have you had in the last 12 months?

3. What others forms of supervision are available to you?

4. Is there an opportunity within your team to attend training on resilience, communication or self-care?

5. Do you have team social events throughout the year?

6. How you would rate the following factors within your current NICU working environment?

Five-point likert scale: Very unsatisfactory, unsatisfactory, neither unsatisfactory nor satisfactory, satisfactory, very satisfactory

a. Work load

b. Communication

c. Support from seniors

d. Support from colleagues

e. Leadership

f. Clarity of your current role

g. Sense of working as a team

h. Access to shared team space for breaks

i. Opportunities for professional training and development

j. Opportunities for career progression

k. Opportunities for team projects

Page 8: Thank you

Appendix E: Measures

Secondary Traumatic Stress Scale (STSS)

The following is a list of statements made by persons who have been impacted by their work with traumatised clients. Read each statement, then indicate how frequently the statement was true for you in the past seven (7) days by clicking the corresponding number next to the statement.

	Never	Rarely	Occasionally	Often	Very Often
1. I felt emotionally numb	**1**	**2**	**3**	**4**	**5**
2. My heart started pounding when I thought about my work with clients	**1**	**2**	**3**	**4**	**5**
3. It seemed as if I was reliving the trauma(s) experienced by my clients	**1**	**2**	**3**	**4**	**5**
4. I had trouble sleeping	**1**	**2**	**3**	**4**	**5**
5. I felt discouraged about the future	**1**	**2**	**3**	**4**	**5**
6. Reminders of my work with clients upset me	**1**	**2**	**3**	**4**	**5**
7. I had little interest in being around others	**1**	**2**	**3**	**4**	**5**
8. I felt jumpy	**1**	**2**	**3**	**4**	**5**
9. I was less active than usual	**1**	**2**	**3**	**4**	**5**
10. I thought about my work with clients when I didn't intent to	**1**	**2**	**3**	**4**	**5**
11. I had trouble concentrating	**1**	**2**	**3**	**4**	**5**
12. I avoided people, places, or things that reminded me of my work with clients	**1**	**2**	**3**	**4**	**5**

13. I had disturbing dreams about my work with clients	**1**	**2**	**3**	**4**	**5**
14. I wanted to avoid working with some clients	**1**	**2**	**3**	**4**	**5**
15. I was easily annoyed	**1**	**2**	**3**	**4**	**5**
16. I expected something bad to happen	**1**	**2**	**3**	**4**	**5**
17. I noticed gaps in my memory about client sessions	**1**	**2**	**3**	**4**	**5**

Burnout Measure (BM)

How often did you have any of the following experiences in the last month?

1	2	3	4	5	6	7
Never						Always

1. Feeling tired
2. Feeling depressed
3. Having a good day
4. Being physically exhausted
5. Being emotionally exhausted
6. Being happy
7. Being ‘wiped out’
8. Feeling ‘burned out’
9. Being unhappy
10. Feeling rundown
11. Feeling trapped
12. Feeling worthless
13. Being weary
14. Being troubled
15. Feeling disillusioned and restful about people
16. Feeling weak
17. Feeling hopeless
18. Feeling rejected
19. Feeling optimistic
20. Feeling energetic
21. Feeling anxious

Self-Compassion Scale, Short Form (SCS-SF)

HOW I TYPICALLY ACT TOWARDS MYSELF IN DIFFICULT TIMES

Please read each statement carefully before answering. To the left of each item, indicate how often you behave in the stated manner, using the following scale:

Almost never				**Almost always**
1	**2**	**3**	**4**	**5**

1. When I fail at something important to me I become consumed by feelings of inadequacy
2. I try to be understanding and patient towards those aspects of my personality I don't like
3. When something painful happens I try to take a balanced view of the situation
4. When I'm feeling down, I tend to feel like most other people are probably happier than I am
5. I try to see my failings as part of the human condition
6. When I'm going through a very hard time, I give myself the caring and tenderness I need
7. When something upsets me I try to keep my emotions in balance
8. When I fail at something that's important to me, I tend to feel alone in my failure
9. When I'm feeling down I tend to obsess and fixate on everything that's wrong
10. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people
11. I'm disapproving and judgmental about my own flaws and inadequacies
12. I'm intolerant and impatient towards those aspects of my personality I don't like

Interpersonal Reactivity Index (IRI): Empathetic Concern and Personal Distress Subscales

The following statements inquire about your thoughts and feelings in a variety of situations. For each item, indicate how well it describes you by choosing the appropriate letter on the scale at the top of the page: A, B, C, D, or E. READ EACH ITEM CAREFULLY BEFORE RESPONDING. Answer as honestly as you can.

ANSWER SCALE:

A	B	C	D	E
Does not describe me well				Describes me very well

1. I often have tender, concerned feelings for people less fortunate than me
2. Sometimes I don't feel very sorry for other people when they are having problems
3. In emergency situations, I feel apprehensive and ill-at-ease
4. When I see someone being taken advantage of, I feel kind of protective towards them
5. I sometimes feel helpless when I am in the middle of a very emotional situation
6. When I see someone get hurt, I tend to remain calm
7. Other people's misfortunes do not usually disturb me a great deal
8. Being in a tense emotional situation scares me
9. When I see someone being treated unfairly, I sometimes don't feel very much pity for them
10. I am usually pretty effective in dealing with emergencies

11. I am often quite touched by things that I see happen

12. I would describe myself as a pretty soft-hearted person

13. I tend to lose control during emergencies

14. When I see someone who badly needs help in an emergency, I go to pieces

Appendix F: Lay Summary

Working on Neonatal Intensive Care Units (NICU) is stressful and involves being exposed to upsetting events on a daily basis. This can lead to secondary traumatic stress (STS) and burnout over time. This kind of stress is felt by people who support others who have experienced a traumatic event. It can cause feelings of fear, loss of confidence, disturbed sleep, anxiety and low mood. Burnout is described as feeling mentally, physically, and emotionally exhausted. This kind of exhaustion comes from working in stressful and emotional environments.

Previous research has found moderate to high levels of STS and burnout in NHS staff. However, little research has focused on NICU. Therefore, the aim of the current study is to determine the levels of STS and burnout in NICU staff.

The study is also interested in whether kindness and compassion towards ourselves and empathy for others can predict levels of STS and burnout. The influence of ward climate factors such as access to support and supervision will also be tested. The study will involve asking NHS staff currently working in neonatal units in the East of England to complete a 20-minute survey.

The research aims to gain a better understanding of the factors which effect STS and burnout in the hope of informing possible future support programs.

Appendix G: Participant Information Sheet and Consent Form

Factors associated with secondary traumatic stress and burnout in NICU staff

We are inviting you, as a member of NICU staff, to take part in our research study.

We know that working on NICU can be seen as stressful and that repeated exposure to traumatic events whist at work can lead to symptoms of secondary traumatic stress and burnout over time. Therefore, we would like to investigate how you cope to inform future staff support within the NICU environment.

Secondary traumatic stress is described as the emotional and physical consequence of working with people who have experienced a significant traumatic event, such as the babies and families you support on a daily basis. Secondary traumatic stress can lead to symptoms such as feelings of fear, loss of confidence, disturbed sleep, anxiety and low mood.

Though previous studies have found moderate to high levels of secondary traumatic stress and burnout amongst staff working across multiple medical populations, little research has focused on NICU. Therefore, the purpose of this study is to determine the levels of secondary traumatic stress and burnout within NICU staff and identify factors which may impact this.

What's Involved?

Participating in the study will involve completing a survey made up of tick-box/ drop down answer questions. The survey will start by asking you information about yourself and your current work on NICU. Following this, there will be four questionnaires looking at secondary traumatic stress, burnout, self-compassion and empathy. Finally, there will be questions asking about your current NICU working environment.

The survey will take approximately 20 minutes to complete. Participation in the study is completely anonymous.

Benefits to taking part

Participating in the current study will help to improve the understanding of experiences of secondary traumatic stress and burnout in NICU staff and the factors which influence this. This increased understanding will help inform potential improvements in the support being offered to NICU staff and the wider NICU environment.

What are the possible disadvantages of taking part?

Throughout the study you will be asked to think about your current work on NICU and at times this can be distressing. At the end of the survey you will be provided with advice on seeking support if at any point during or following participation you experience distress.

Where will my information be stored?

Answers you provide are completely anonymous, at no point will you be asked to provide us with personal information. If you wish to withdraw from the study at any time simply exit the survey program. Withdrawal will have no detrimental effects, however once the survey has been completed and submitted withdrawal will not be possible due to the anonymous nature of the data.

All information collected during the study will be recorded anonymously within a password protected database and stored securely on the University of East Anglia central server. Your data will be stored in line with the General Data Protection regulations (2018), it will be stored within the server for 10 years after which it will be destroyed.

Who is conducting the research and what will happen to the results of the project?

The current project is being completed by Zoe Scott (trainee clinical psychologist) as part of her doctoral program at the University of East Anglia. The data collected through the survey will be written up as part of Zoe's doctoral thesis and submitted for journal publication. A summary of the findings will also be circulated via NHS mailing lists of all participating NICU services.

If you have any questions or concerns regarding the project, please contact Zoe Scott zoe.scott@uea.ac.uk.

Alternatively, you may contact Niall Broomfield, course director: n.broomfield@uea.ac.uk

The current study has been approved by the UEA Ethic Board: 201819 - 058
IRAS Project ID: 248365

If you give consent to participate, please click on the NEXT button below to start

Appendix H: Disclosure and Debriefing Statement

Thank you for completing our survey

By taking part in our study you have helped to inform research about the factors which impact on secondary traumatic stress and burnout in NICU staff which could have implications for the development of support programs and service improvements in the future.

Support for you:
Thinking about difficult experiences at work can bring up distressing emotion for everyone at times. If you have experienced any distress during the completion of this study, or you experience any difficult emotions following participation, we would recommend that you seek support via your GP or manager.

Alternatively, help and advice can be sought from professional organisations. Some of these organisations are listed below:
MIND
Leading mental health charity in England and Wales. Tel. 0845 766 0163; website: www.mind.org.uk
Samaritans
National organisation offering support to those in distress who feel suicidal or despairing and need someone to talk to. 24-hour Helpline: 08457 90 90 90; website: www.samaritans.org.uk
NANN
You may also wish to join a professional NICU forum such as the National Association of Neonatal Nurses http://nann.org/
Self-Compassion Resources
The following link provides resources which can be helpful to support you to manage distress and to demonstrate compassion toward yourself during these difficult times http://self-compassion.org/category/exercises/#guided-meditations.

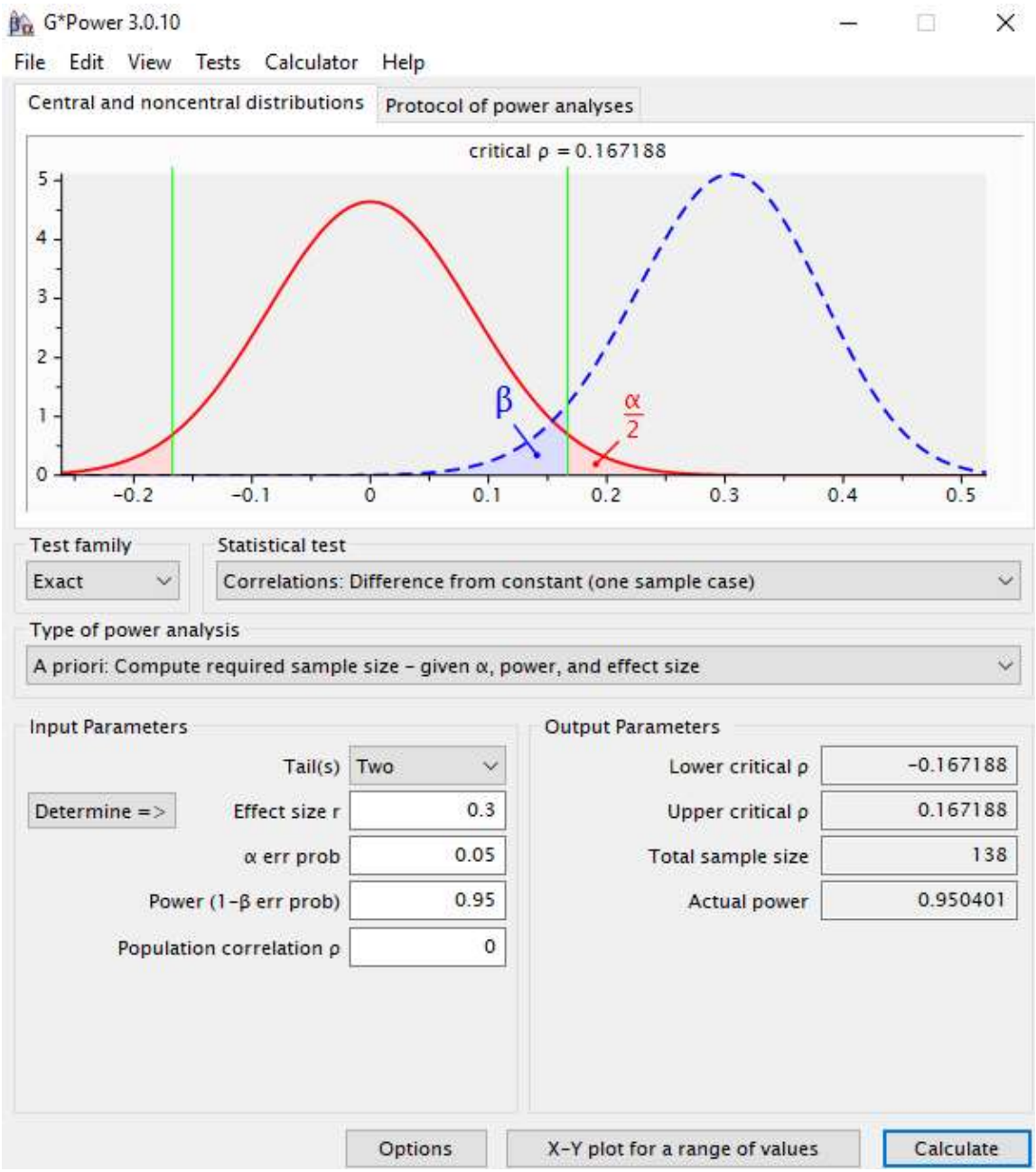
For any further information about the study please email: zoe.scott@uea.ac.uk

If you have any concerns or complaints regarding the survey or research project please contact Niall Broomfield, course director: n.broomfield@uea.ac.uk
UEA Ethic Board: 201819 - 058

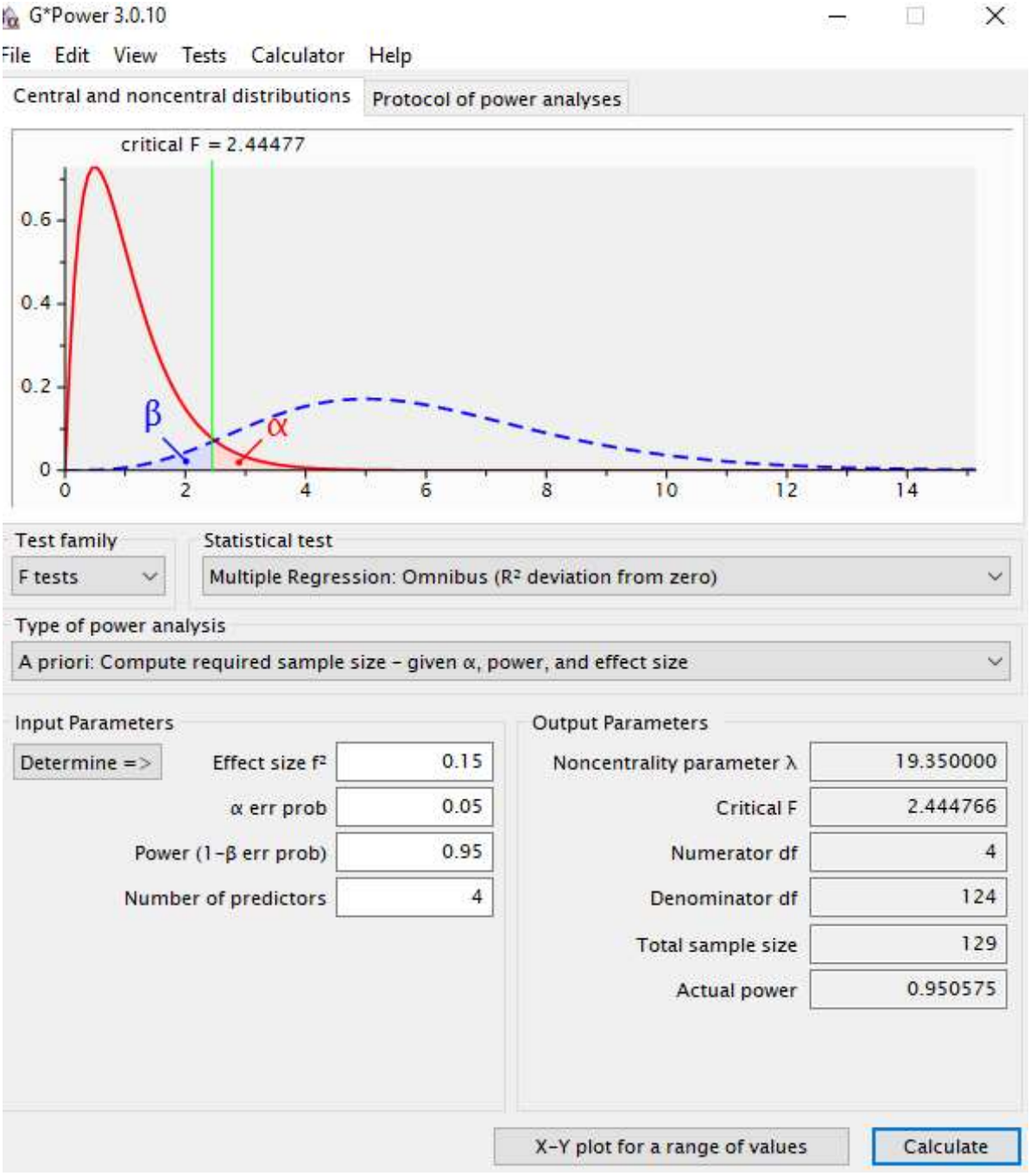
IRAS Project ID: 248365
Thank-you for your participation, you may now leave the survey.

Appendix I: G*Power Calculations

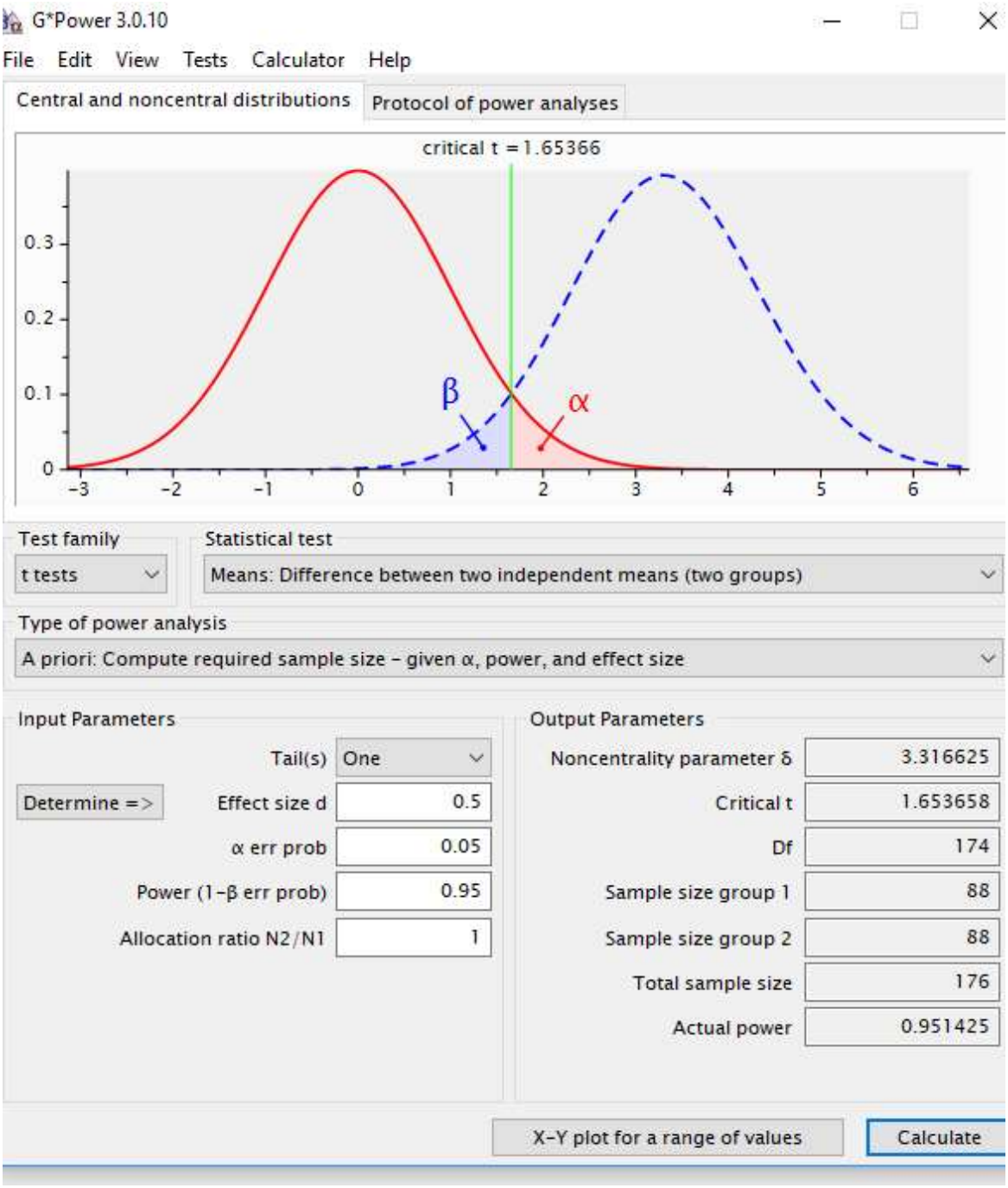
Bivariate Analysis



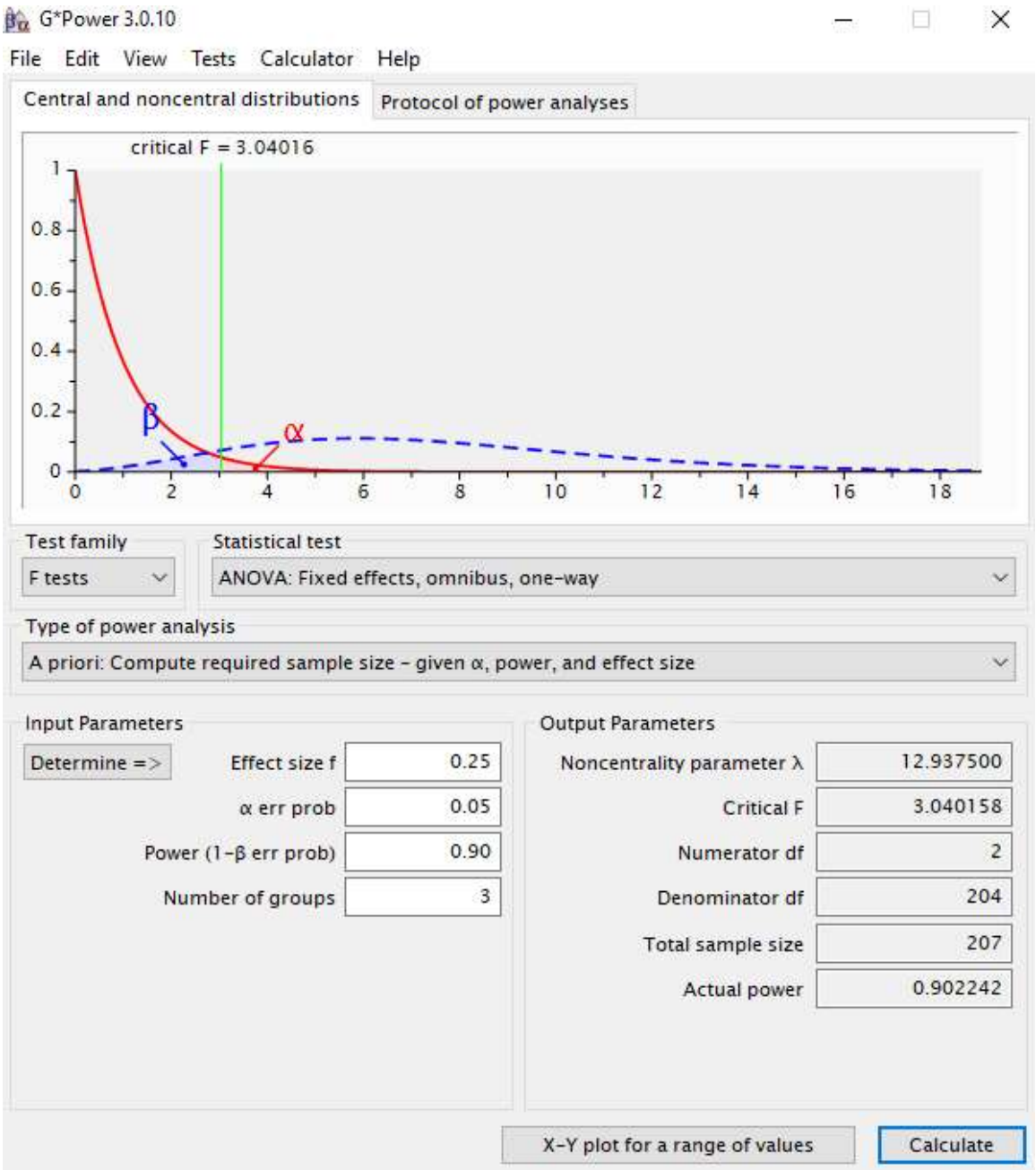
Multiple Regression



Independent Sample T-test



ANOVA


G*Power 3.0.10
File Edit View Tests Calculator Help
Central and noncentral distributions
Protocol of power analyses
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β
α
Test family
F tests
Statistical test
ANOVA: Fixed effects, omnibus, one-way
Type of power analysis
A priori: Compute required sample size – given α, power, and effect size
Input Parameters
Determine =>
Effect size f 0.25
α err prob 0.05
Power (1-β err prob) 0.90
Number of groups 3
Output Parameters
Noncentrality parameter λ 12.937500
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Denominator df 204
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Actual power 0.902242
X-Y plot for a range of values
Calculate