Trauma in NICU Nurses: A Grounded Theory Study

by

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Abstract

The Neonatal Intensive Care Unit (NICU) is a high stress, high stakes environment where the sickest and smallest patients receive care. This advocacy for vulnerable patients and everyday moral dilemmas means that NICU nurses are at high risk of experiencing workplace trauma. The purpose of this study is to explore the research question "How do NICU nurses at The Moncton Hospital manage their self-identified trauma in the context of the workplace?"

I recruited eight nurses who are or have worked in The Moncton Hospital NICU and self-identify as having experienced occupational trauma. Data collection included semi-structured interviews. The data was coded using the Grounded Theory constant comparative approach, with the end goal of forming a mid-range theory.

It is anticipated that findings will facilitate the implementation of interventions to support nurses to manage their trauma experiences.

Dedication

To the courageous nurses of the NICU who were willing to take a chance and share their heart and souls to make things better for others. To my family and friends for their unwavering support, time, and patience. And to my son, born in the middle of writing my thesis. May you be as resilient as these nurses in the face of challenges, as graceful under pressure, and always willing to share your light.

Acknowledgements

I would like to acknowledge the incredible support and contributions of Dr. Petrea Taylor to this work and to myself as a novice researcher and nurse. I could not have done it without you. Thank you for going on this journey with me; your guidance, enthusiasm, insight, humor, and flexibility helped me more than you know.

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List of Symbols, Nomenclature, or Abbreviations

NICU-Neonatal Intensive Care Unit

L&B-Labour and Birth Unit

GT-Grounded Theory

RN-Registered Nurse

TMH-The Moncton Hospital

MFCU-Maternal Fetal Care Unit

PTSD-Post Traumatic Stress Disorder

STSD- Secondary Traumatic Stress Disorder

HCP-Health Care Provider

IVH-Intraventricular Hemorrhage

Introduction

While there is burgeoning attention and study related to parents' trauma during the birth and care of their baby in the Neonatal Intensive Care Unit (NICU), less attention is paid to the repetitive occupational trauma nurses undergo as they care for fragile infants and their families (Woolgar & Archibald, 2021). Recurrent occupational trauma can have far-reaching impacts such as burnout, high turnover rates, job dissatisfaction, depression, moral distress, and difficulty coping at work and at home (Woolgar & Archibald, 2021). These personal and professional effects can present an unrecognized burden to staff members who often are required to re-expose themselves to the same traumas without pausing to address their needs, in the interest of caring for their patients (Woolgar & Archibald, 2021).

While staff coping and repetitive trauma are emergent topics, the exploratory qualitative research approach of Grounded Theory (GT) may present a unique opportunity to understand both the burden and proposed supports and mitigating factors in nurses' own words. A deeper awareness of trauma through interviews and first-hand accounts by nurses may help nurses feel that their trauma is understood and carries weight with the public, administrators, organizations, and amongst each other (Cavaliere et al., 2010). Local context related to nurses' trauma experiences and needs will build upon what is known within current literature, helping to inform changes at personal, professional, and organizational levels. Forming a mid-level theory with GT may aid in communicating what is and is not helpful in managing nurses' occupational trauma experiences. I will explore the following research question using the GT methodology: how do NICU Nurses at TMH manage their self-defined trauma in the context of the

workplace? While the focus is on management to capture the social phenomena occurring, an exploration of what trauma is, according to participants, will also co-occur and be investigated as part of answering the research question. Wuest's method of GT will be used to co-construct meaning and an answer to the occurring social phenomena in this population, with Wuest's focus on a feminist lens highlighting areas for advocacy and adding sensitivity to power imbalance (Wuest, 2012).

The literature concerning trauma in the context of work uses many terms and contexts to define the concept, illustrated in Figure 1. The proposed study draws heavily on the occupational trauma literature for sensitivity, but participants will define the phenomenon themselves. For the sake of consistency, the terms "trauma" and "occupational trauma" are used throughout this study to describe the subject matter. Flexibility in how nurses describe their trauma at work captures a wider range of experiences and may lead to a more encompassing definition of trauma from working as a NICU nurse, constructed by participants.

Trauma may be cumulative, repetitive, related to stress, isolated, primary, or secondary (Pannel et al., 2017; Walden et al., 2020). In the literature review below, each of these terms are defined and explored as discussed in the literature as well as other subsets and nuances related to trauma, such as moral distress. The term occupational trauma will be used since the phenomenon of interest is trauma that is incurred due to the course of duties as a NICU nurse. Occupational trauma is used to focus the commonality and impetus of the experience and subsequent management of this phenomenon. GT methodology and the self-defined and self-identified nature of trauma of participants will be used as a larger concept within which the problem and process will emerge.

It is also important to note that there are external contributors to occupational trauma, such as the local context, that are also central to this study (Panell et al., 2017). There may also be external influences that include personal stressors and triggers, such as having needed NICU at their own child's birth, being a mother, personal stressors such as divorce, and other factors (Walden et al., 2020). While these are not specific focal areas, I remained sensitive to other variables affecting experiences and responses. Indeed, GT aims to embrace these additional factors to add richness to the findings, as it is impossible to extricate human experience from the context and setting (Wuest, 2012).

An additional area of needed research is identifying the supports most helpful to nurses in the local context (Walden et al., 2020). There are nuances of driving contributors to trauma, including moral distress, unsafe staffing, multidisciplinary cohesiveness, and capacity of both individual nurses in providing care as well as the unit's ability to take on more admissions and higher acuity of care (Woolgar & Archibald, 2021). Likewise, the proposed solutions identified in the literature span considerable supports and tactics and often are implemented sub-optimally even though they are evidence-based (Woolgar & Archibald, 2021). This study addresses both factors by exploring them directly with research participants who are front-line NICU nurses working at the bedside, which is also supported in a Feminist methodology (Taylor, 2023; Wuest, 2012).

I recruited Registered Nurses (RNs) who have actively worked at The Moncton Hospital (TMH) NICU department to participate in the proposed study. RNs from this department engage in a wide range of care that they may perceive as traumatic, including: withdrawing or re-directing care of a neonate, offering palliative care, resuscitating the ill

or premature neonate, performing complex and prolonged resuscitations including chest compressions, participating in the intubation of infants, and witnessing social and moral dilemmas such as childhood apprehension, neglect, abuse, and substance exposure withdrawal. During interviews, participants discussed a variety of traumatic experiences such as prolonged invasive care on infants, witnessing parental distress, working short staffed and without experienced staff, extreme change in staff and practice, and lack of support from administration. While the concept of trauma was as broad if not broader than anticipated, applying GT methodology allowed for novel exploration of what NICU nurses find most difficult and traumatic about their job and what they do to manage this. This breadth of self-identified trauma is in keeping with the results of the literature search discussed below, with the literature reflecting many different causes and identifying terms applied by NICU nurses to the difficulties and consequences of their profession.

Environment and Context

The Moncton Hospital is one of three Level III NICUs in New Brunswick, meaning they care for infants born at gestations of 23 weeks and older and provide acute care for neonates at the highest level in the province, whether born on site or transferred in from lower acuity units (PerinatalNB, 2022). The NICU at TMH operates within an adult hospital as a specialized area. This means that while the patients are acutely ill, there are no neonatal surgical services on site, and adjunct specialties are specialized in adults but not neonates. Limited resources influence policies and procedures and other nursing tools and supports that are available to the unit, as everything is designed for adults within Horizon Health Network in contrast to our referral hospital, the IWK Hospital, or other children's hospitals. TMH NICU, however, is part of the Canadian

Neonatal Network and is accustomed to operating as a small center within an adult hospital. Indeed, there are a variety of ways that the 27 NICUs across Canada are configured, from large referral-based surgical centers to smaller units providing high-acuity care such as TMH. While the percentage of neonatal death and stillbirth is low due to the small population in the province (PerinatalNB, 2022), even one patient death or high acuity birth requiring acute intervention may yield a traumatic experience for NICU nurses, in addition to other traumatic occurrences. While in another center there may be upwards of 100 RNs and 10 or more neonatologists, in a smaller center such as TMH, the same care providers will be repeatedly exposed to all complex situations.

TMH NICU nursing staff is approximately 35 RNs with the majority being full time, working 12-hour shifts on rotation, supported by a small resource pool shared with the Pediatrics Unit. There are 4 practicing neonatologists, all of whom have started working at TMH within the last two years. As an inborn facility, TMH NICU receives patients from the onsite Labour and Birth Unit (L&B), which benefits from a full Maternal Fetal Care Unit (MFCU) and specialists that follow high risk pregnancies, and also receives transfers from smaller "feeder" hospitals with level II and I nurseries providing lower acuity care within the province. Travel nurses were hired during the study period to supplement staffing in TMH in the Women and Children's Health Program, including in the NICU.

NICU staff attend high risk births for conditions such as prematurity, abnormal fetal heart rate patterns including bradycardia, meconium-stained fluid, congenital malformations, and other reasons including obstetric provider request; operating under the Newborn Resuscitation Program (NRP) to provide care with and without admission to

the unit and supported by a Registered Respiratory Therapist and a neonatologist as needed. The neonatologist is not always present in the hospital for births and emergencies. Due to staffing concerns, this may mean one NICU nurse or ideally two or more will attend a high-risk birth. The current NICU at TMH is an 18-bed open bay concept with four pods of four beds and a two-bed isolation room. At the time of the study, the unit was operating at approximately 13 beds due to equipment and staffing constraints, with fluctuations based on the availability of these same resources. A new building that will house Ante- and Postpartum, L&B, NICU, Breastfeeding and Discharge Clinics, and MFCU is under construction and expected to be operational in the Fall of 2024. The new NICU will have 12 beds with six private rooms with parental space (bed and bathroom) and two bays of three beds. Numerous studies have targeted the influence both positive and negative of single-bed rooms on everything from safety to infection control to language development of the infants (Brand et al., 2021). There is evidence that transition to single room care provides immediate benefits to parents but that the first year of this transitional time is an increased period of stress for staff (Brand et al., 2021). This time of change and adaption to a new normal at TMH NICU could create a unique opportunity to study and create meaning from the nurses' experiences and perspectives, informing ways to support nurses with their difficulties working in an NICU. All interviews were conducted during the construction of the new building, prior to occupancy.

Literature Search

Although some GT theorists posit that a literature search is not necessary (Beck, 1999; Glaser 1992), for my purposes as a student and for a complete thesis and guide to my investigation, it has been useful. A literature review may help demonstrate the necessity of further investigation into this topic due to a gap in research, as well as summarize the common themes and aid in sensitization to emergent findings. This created an awareness of the purpose and need for the study, as well as added to my knowledge of the area under investigation (Wuest, 2012).

While the trauma of NICU experiences on families has lasting consequences that cannot be understated (Moore & Schellinger, 2018), the staff spends potentially an entire nursing career in the NICU and also experiences trauma (Moore & Schellinger, 2018). Proposed solutions and supports for occupational trauma range from paid time off, debriefing, entirely changing unit culture in regard to managerial and administrative awareness and support, therapy, and more (Favrod et al., 2018). Experiences related to trauma, such as caregiver burnout, post-traumatic stress responses, and moral distress, have been reported by 25% to over 50% of NICU staff (Favrod et al., 2018). The variation in sequelae of concern highlights the unique opportunity for qualitative research, as well as specifically the GT methodology, in its ability to co-create theories grounded in the experience of front-line staff and their reality. These findings can be used to share the experience and look for contextually specific commonalities and therefore effective solutions.

GT is most effective when used as an inductive and exploratory approach regarding a topic where little is known (Wuest, 2012). Much of the literature includes

investigation into the stressors encountered by families and their infants in the NICU with a focus on uncertainty, the environment including constant alarms and multiple machines, and unnatural circumstances following what should be a joyous occasion in the birth of a child (Moore & Schellinger, 2018). These stressors are understood to contribute to depression and post-traumatic stress responses, which can impact families for decades (Moore & Schellinger, 2018). NICUs were reshaped with the advent of Family Integrated Care (FiCare) to offset some of these stressors by bringing the family into the circle of care and having them be an intrinsic part of the care of their infant instead of keeping them at a distance as was the practice historically when healthcare providers were considered experts and family members were visitors and non-essential to their child's care (Bry & Wiegert, 2022). However, these stressors affect more than families and FiCare may cause an additional unintentional burden on staff (Bry & Wiegert, 2022). Deductive reasoning points to these consequences possibly affecting staff vicariously. Vicarious trauma is a newer topic in the literature, encompassing the trauma that occurs from healthcare providers bearing witness to the trauma of others, creating a second victim (Winnings et al., 2021). It can be difficult for staff to avoid being affected by patients' and families' trauma (Winnings et al., 2021). Additionally, while some trauma is universal to all NICUs, just as the literature shows is the case for families, each NICU is unique with its own culture and environments, and therefore, unique trauma experiences (Brand et al., 2021). While research on trauma in different contexts is helpful, comparing larger centers such as those that are in children's hospitals, to outborn facilities that receive transfers only without their own inhouse births, and even the

different levels of NICU may lead to imprecise data that does not reflect the individual circumstances and needs of some units.

The search subjects of ("neonatal intensive care" OR nicu) within 2 words of (nurse OR nurses OR nursing) AND trauma OR stress OR burnout OR "moral distress" OR "moral injury" OR "moral stress" OR "compassion fatigue" OR "moral exhaustion" OR "secondary trauma" OR "vicarious trauma" OR "occupational stress" OR "occupational trauma" OR "occupational fatigue" were searched in CINAHL, PubMed, and PsychInfo. This yielded 259 English language articles. Due to not fitting the subject matter, 212 articles were excluded (see Table 1). Eight relevant articles were also found within the reference lists of articles.

Table 1.

Article Exclusion

Reason for Exclusion	Number of Articles (n=)
Maternal Population Focus	n=16
Pediatric/General/Critical Care Nursing Focus	n=14
Very Narrow Subject Focus[a]	n=22
Paternal or Family Population Focus	n=33
Baby Focus	n=35
Wrong Subject	n=75
Duplicate	n=7
Not Original Research	n=10

[a] Specific symptom, intervention, or scale that limits applicability overall

Themes in the Literature

Trauma in NICU nursing staff is a complex issue that forms numerus subcategories in the literature, as illustrated in Figure 1. Articles retrieved go back as far as the 1980s, focusing on more obvious traumatic events such as patient deaths, before changing over time to include other less overt traumas such as moral distress. The study of trauma in NICU nurses occupies international attention, with articles from India, Hong

Kong, The Netherlands, and other countries making up the body of literature with works from Canada and the United States of America. Types of studies include scoping reviews, scale and tool verification, semi-structured interviews, and descriptive statistical analyses. Qualitative studies focus on larger themes versus specific phenomena or possible supports (Molloy et al., 2015; Woolgar & Archibald, 2021). Quantitative studies focus on specific occurrences such as personality traits or emotional intelligence (Barr, 2018; Lewis, 2019). Various specific contributors to trauma are highlighted, including futile care, interdisciplinary cooperation or lack thereof, and interpersonal relationships with families and other nurses (Ayetkin et al., 2013; Lewis, 2019). All studies acknowledged the need for more NICU-specific studies as there is a dearth of literature in this specific area of specialization. As new research emerges, many studies focus on one specific facet of data, for example moral distress or burnout, but overarching themes and commonalities are easy to identify and connect to occupational trauma.

Negative Consequences to Working in the NICU

Nurses in NICUs experience higher levels of stress, fatigue, depressive mood, and anxiety than general medical unit nurses (Fujimaru et al., 2012). Nurses overall are at increased risk of STSD and vicarious trauma due to witnessing patients and their families' experience of trauma (Moore et al., 2018). Participants who experienced secondary trauma reported avoidance, intrusion, and arousal symptoms (Favrod et al., 2018; Moore et al., 2018). These outcomes relate to unwanted feelings or even flashback intrusions, arousal of the nervous system such as irritability and insomnia, and avoidance methods such as numbness, intent to leave a position, and isolation (Favrod et al., 2018). Other symptoms may include fatigue, nightmares, headaches, and both moral and

spiritual suffering, leading to negative work outlook and decreased patient care (Favrod et al., 2018).

Working in the NICU involves circumstances and environment that may cause high occurrence and high exposure to traumatic or deeply disturbing events. This can lead to increased rates of moral distress as well as complicated grieving in the case of patient death, unsuccessful resuscitation, or other negative outcomes ([see below for definition] DeBoer et al., 2016; KatiÃºscia Vergutz Diel et al., 2018; Moore et al., 2018). Relationships with families and infants are viewed positively but may also contribute to trauma and grief in the case of a poor outcome (Greene, et al., 2015; Moore et al, 2018). Ethical quandaries also occur alongside moral distress, such as in the resuscitation of babies on the edge of viability, and feelings of futility of treatment when facing an unlikely positive outcome (Moore et al., 2018). Overall, the nature of working in the NICU is inevitably filled with occupational trauma (Walden et al., 2020), however the precise causes and sequelae are still important topics of investigation. The negative consequences identified as occupational hazards overlap but can be identified under topics such as burnout, compassion fatigue or emotional exhaustion or vicarious or secondary trauma, and moral distress (Walden et al., 2020). Each of these consequences can have mental, physical, emotional, and spiritual implications that affect nurses on a personal as well as occupational level (Walden et al., 2020).

Moral Distress

Moral distress is defined as the inability to provide care according to moral convictions, leading to moral compromise: when professional and personal values cannot be reconciled (Cavaliere et al., 2010). Moral residue, or the long-term consequences of

being in moral distress, can last decades or an entire lifetime after the event (Ford et al., 2018). It contributes to job dissatisfaction and has been found to correlate with intent to leave a position (Hally et al., 2021). The consequences are physical, emotional, and psychological and can result in lower quality patient care, higher cost of care, interdisciplinary communication problems, and ethically complex working environments (Cavaliere et al., 2010; Ford et al., 2018). Nurses are vulnerable to moral distress due to the empathetic and intimate patient-nurse relationship, and power to change actions or have independence in practice may be limited (Cavaliere et al., 2010; Ford et al., 2017). Cavaliere et al. (2010) found that the frequency and intensity of moral distress among NICU RNs are individualized. However, the causes of moral distress are commonly shared, including end of life care, futile and aggressive treatment without benefit to the patient, patient harm, pain, suffering, depersonalization of patients, constraints from policy and procedure, inadequate staffing, incompetence of colleagues, and cost saving measures (Cavaliere et al., 2010). NICU RNs may encounter moral distress at a higher rate than other areas of nursing due to the nature of their patient population and other unique predispositions such as frequently facing morally challenging issues, for example resuscitation of neonates at the edge of viability (Cavaliere et al., 2010; Hally et al., 2021).

Caregiver Burnout and Burden

Caregiver burnout is a slow and insidious syndrome that occurs in response to chronic stressors related to the care of others and is correlated with the intent to leave a position (Thomas et al., 2022). Burnout is known to be high in NICU nurses and is thought to be a consequence of intensive care including emotional and physical demands,

urgent decisions made under pressure, the intimate nature of nursing, and the acuity of the patients (Thomas et al., 2022). Other co-morbidities associated with burnout are emotional exhaustion, depersonalization/numbness, and depression (Thomas et al., 2022). Mitigating measures include awareness of burnout symptoms and fostering a supportive environment both at the unit and managerial or organization level (Thomas et al., 2022).

Secondary Traumatic Stress

Secondary Traumatic Stress (STS) or vicarious trauma are occupational hazards for healthcare providers. Nurses are uniquely vulnerable due to the patient- or family-nurse relationship that involves empathy, trust, proximity, and duration (Tatano Beck et al., 2017). Compassion fatigue is a combination of STS and burnout (Tatano Beck, et al., 2017). STS is similar in expression to PTSD but STS is caused by indirect experience of trauma, rather than the primary exposure to trauma as is the case with PTSD (Tatano Beck et al., 2017). However, research by Tatano Beck et al. (2017) and Nissanholtz Gannot et al. (2021) highlights the difficulty differentiating secondary from primary trauma in nurses. Regardless, unique NICU situations that may contribute to STS, be it diagnosable or not, include attachment to patients and families, parental witnessed resuscitation, infants withdrawing from substance exposure, and caring for patients after parental abandonment (Tatano Beck et al., 2017). NICU RNs experienced trauma by feeling that they were forced into "torturing" patients with unnecessary procedures or ignoring patient pain, second-guessing their abilities to provide good care, and bearing witness to family grief after patient death (Tatano Beck et al., 2017; Ford et al., 2018). These findings reinforce the duality of personal primary trauma from nursing

participation that co-occurs with secondary trauma from experiencing this with families and being exposed to family retellings of events (Tatano Beck et al., 2017).

Bio-Physical Response

Just as continuous exposure to moral distress and occupational trauma can slowly contribute to burnout, or any traumatic situation can lead to traumatic stress, there is a physical component to trauma exposure (Fujimaru et al., 2010). Fujimaru et al. (2010) found increased stress markers such as elevated cortisol in NICU RNs' saliva compared to other RNs. Brand et al. (2021) obtained the same findings and correlated this with other factors such as duration of shifts, working night shifts, single family room units (SFRs), and fulltime employment status. Other reported physical trauma responses include exhaustion, irritability, and insomnia (Nissanholtz Gannot et al., 2021).

Mental Response

Within common trauma responses are multiple negative mental health sequelae. This includes intrusive flashbacks, distressing dreams, grief responses, memory loss, issues with concentration, negative thoughts, negative self-regard, decreased interest in previous enjoyable engagements, distance from others, or lack of positive emotions (Moore & Schellinger, 2018; Nissanholtz Gannot et al., 2021; Pannell et al., 2017). Favrod et al. (2018) showed higher rates of STS-like symptoms in NICU nurses compared to midwives, which they discussed as being due to additional exposures to stressors not present for other disciplines and in other areas of nursing. Emotional exhaustion was highlighted as being particularly prevalent and includes many of the above symptoms. Walden et al. (2020) posited that increased worry among NICU nurses may cause them to lose the joy that lends meaning to their work.

Supportive/Protective Factors

In the literature, the most common helpful support for NICU nurses experiencing occupational trauma is peer support (Bry & Wigert, 2022; Downey et al., 1995). NICU nurses feel that co-workers understand what it is like to experience occupational trauma, whereas friends and family do not, although these are also commonly availed supports. Access to debriefing following a patient death or other traumatic event is also perceived as key (Woolgar et al., 2021). Debriefings must be offered in a timely fashion, where emotional/psychological safety is central and being able to discuss areas of improvement or alternative choices may decrease moral distress (Woolgar et al., 2021). Feeling that they have a voice may improve satisfaction in nursing practice as well as individual wellbeing and resilience to trauma (Woolgar et al., 2021; Ford et al., 2018). Also protective is interdisciplinary cooperation and communication, particularly a positive nurse-physician relationship or culture (Woolgar et al., 2021; Sano et al., 2018). Other proposed supports include access to Employee Assistance Programs; time to recover between traumatic events; education about palliative care, communication, and trauma; managerial support for workplace culture and socially to individuals; and paid time off for mental health (Favrod et al., 2018; Cooper 2018; Lavoie-Tremblay et al., 2016).

Gaps in Research

Identified gaps in the currently available research are tailored supports for nurses to specifically explain and manage their experiences of occupational trauma. There is a lack of specific quantitative and qualitative research into the experience of NICU nurses, requiring comparison to literature studying other ICUs and emergency departments or other disciplines such as midwifery to draw conclusions that may miss nuances or lack

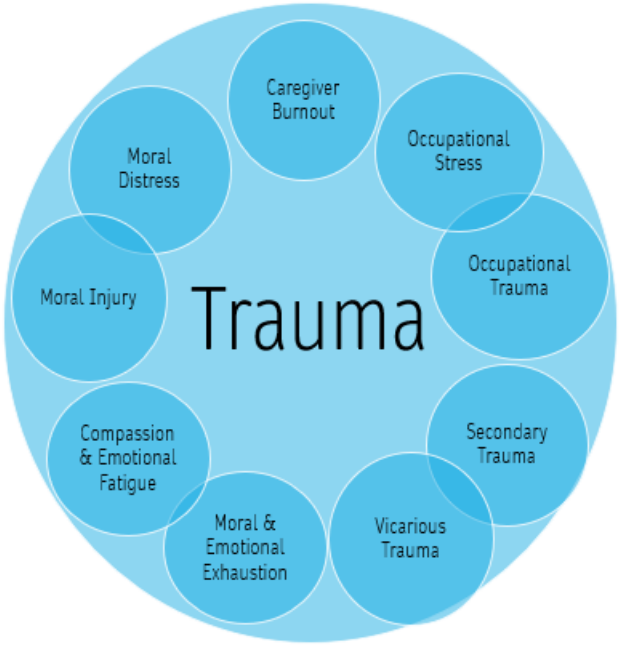
specificity to NICU nursing (Favrod et al., 2018; Pannell et al, 2018). Choosing areas of support and management to focus on for organizations can be challenging when solutions are vast and include pre- and post-death debriefings, mindfulness-based interventions to target burnout, peer-to-peer support or social support, resilience-focused and proactive coping educational sessions, and other targeted education for tools needed by nurses in this traumatic environment (Woolgar & Archibald, 2021; Moore & Schellinger, 2018). The following study asks NICU nurses about not only their experiences with occupational trauma but focuses on their management strategies. Knowing more about management strategies may help inform the supports necessary to support nurses in not only staying at the front lines of TMH NICU but also add to the discussion present in the literature discussed above.

Study Site Specific Issues

From my experience working in TMH NICU, there is a high turnover of experienced staff, lack of policy and procedures for this area of specialization, minimized targeted education, and multiple stressors such as working short, challenging family dynamics, and a high rate of change eliciting a feeling of helplessness and disengagement from remaining staff. While some of the supports identified in the literature have been implemented with varying degrees of success at TMH, morale continues to decrease and absenteeism and turnover increases. Numerous surveys have been administered by management and third parties, but lasting improvements remains elusive. In fact, prior to interviews and in informal discussion, staff reported less engagement as the perception is that a survey goes out and nothing is done, leaving staff feeling insulted that proposed solutions are continually ignored. Perhaps the addition of GT and peer-to-peer

interviewing can help staff feel heard, raise awareness of these issues, and propose tailored solutions with increased buy in due to staff participation throughout the process.

Figure 1. *Trauma Terminology*



Methodology

Little is known about how NICU nurses manage their trauma. GT is of particular use when little is known about a process, or existing knowledge does not adequately explain outcomes (Wuest, 2012). In this case, we know that NICU nurses are heavily and repeatedly exposed to both large and small traumas by their occupation (Favrod et al., 2018). Nurses are not able to manage this without consequence, resulting in high rates of absenteeism, turnover, and undesired symptoms of trauma such as sleeplessness, depression and other personal and professional effects (Favrod et al., 2018; Woolgar et al., 2021). GT may bridge the gap in knowledge by asking nurses directly in a semi-structured interview how they manage their trauma, leading to a mid-range theory that can be applied to explain this process (Wuest, 2012). Additionally, enabling participants to self-identify and self-define their trauma may elicit more nuanced data by eliminating terminology constraints and rigidity. This strategy may also allow for more efficient operationalization of data by focusing on management strategies.

Theoretical Perspective

GT was founded by sociologists Dr. Barney Glaser and Dr. Anselm Strauss and focuses on a conceptual theory that accounts for behavior used to manage a socio-psychological problem (Glaser & Strauss, 1967). Dr. Glaser had expertise in descriptive statistics, while Dr. Strauss's background was in symbolic interactionism (Chun Tie et al., 2019). The first part of GT development was the constant comparative method, which Glaser and Strauss believed helped fill a gap in qualitative data analysis and organization (Chun Tie et al., 2019). Further collaboration led to foundational works in GT and its establishment as a rigorous alternative to the quantitative methodologies that dominated

scientific hierarchies at the time. A focus on inductive reasoning versus the heretofore relied-on deductive reasoning, set the theory apart from other methodologies. Inductive reasoning takes the larger picture of data and narrows it to a theory to explain a pattern, whereas a deductive approach tests a formed hypothesis against the data to draw the concrete from abstract (Chun Tie et al., 2019). Both are used in GT, although it is a mainly inductive methodology where the data leads theory formation (Glaser, 2012). This can mirror or confirm established theory, but as an emergent fit (Glaser, 2001) and not in traditional deductive ways commonly seen in quantitative analysis.

GT has changed considerably since its initial establishment as a methodology by Glaser and Strauss (Chun Tie et al., 2019). Several generations of Grounded Theorists have resulted in philosophical differences, including Chamaz's constructivism to Strauss and Corbin's perspective of symbolic interactionism, to Wuest's incorporation of feminism (Chun Tie et al., 2019; Wuest, 2012).

Wuest is heavily influenced by Glaser's traditional GT, but acknowledges the dynamic nature of an approach as each student and teacher leaves their mark (Wuest, 2012). She has pioneered the addition of feminist GT to give a more critical approach, accounting for power differentials and opportunities for social justice inquiry (Wuest, 2012; Wuest et al., 2001). This is applicable to my research as I am positioned as a researcher but also qualify as a participant, and that power differentials based on role restrictions, gender, and more may affect my data. GT without Wuest's addition of feminism may lead to poorer awareness of these subconscious influences, which are especially relevant with an all-nursing and additionally all female identifying participant

cadre at TMH NICU who may be experiencing moral distress from overtreatment or various other issues that may be affected by power differentials.

The Grounded Theory Process

GT, while non-linear and recursive, still requires careful planning and following of the process to produce useful theory (Chun Tie et al., 2019; Corbin, 2008). The iterative nature helps guide and indeed "ground" the theory in the data, reducing bias and the influence of preconception while allowing the meaningful data to emerge as applicable theory (Chun Tie et al., 2019).

Coding

Coding in GT is the notation of data and incidents within interview transcripts and observations so that they can be abstracted into concepts (Corbin et al., 2008). It is an examination of processes and relationships that build the foundation of GT. It is a way to view raw data such as an interview transcript through the lens of the research question as the first stage in the GT process. Initially, the data in the transcripts are coded line by line at a descriptive level to ensure nothing is missed or overlooked (Chun Tie et al., 2019). Questions that the researcher asks while analyzing the data include, "What is going on in this situation?" (Wuest, 2012), with keen attention to differences and similarities throughout the data. While inductive reasoning is used to form more abstract codes, these are also deductively compared against the present data and compared against incoming data (Wuest, 2012). An example of initial coding is naming raw transcript data about nurses' trauma in providing care specifically, such as pressure, not having enough

resources, delivering best care possible, did I do the right thing[1], among others. One participant related:

> It's a whole life in your hands. and I think it would be situations that make you question your care that would be the hardest to deal with. As a NICU nurse if you're ever like oh my goodness, did I do that right? Should I call the doctor sooner? …Call the doctor the minute you suspect anything. It prevents anything from happening to you because you will never have that on your conscience. But if you don't, then you will regret it.

This was coded to pressure, did I do the right thing, delivering best care possible, removing doubt, handling crisis situation, distaste and rejection of unpleasant circumstances, and death and poor outcome. After constantly comparing these initial codes to one another, they were collapsed into a category named pressure, which eventually informed the emergence of the basic psycho-social problem described below, as well as the behaviour of interest, the management strategies. While one initial individual code may have only fit one specific case, as codes were collapsed, the applicability to other cases became clear as the codes became more abstract, and the core of the issue became apparent.

Memoing

Memoing is completed by the researcher for the researcher throughout the grounded theory process (Wuest, 2012). It is a key element for quality assurance, leaving

[1] Underlining is used to denote codes, italics are used to demonstrate concepts

an audit trail of thought process that includes decisions made during research, feelings, intuition, and questions that are generated during consideration and analysis of the data (Chun Tie et al., 2019). These recorded decisions may include those regarding codes and categories for how and why they are formed, notes on relationships between codes and categories, especially as they are expanded or collapsed (Chun Tie et al, 2019). These changes lead to higher levels of abstraction and diagrammable links between categories and concepts (Corbin et al., 2008). The memoing process is dynamic and essential due to its ongoing nature (Chun Tie et al., 2019). Layers on layers of memos at each stage of coding are key to abstraction. Memoing also aids momentum as thoughts and ideas are captured in the development of the final theory (Chun Tie et al., 2019). In this process, superficial theories and biased and misleading directions are presented and discarded as part of grounding the theory back into the data (Corbin et al., 2008). The culmination of GT where codes lead to abstract categories that are integrated into the whole theory, takes place with help from the memos throughout the process (Corbin et al., 2008). Memoing helped to keep track of emerging findings. For example, I had initially suspected a link between the codes pressure, feeling responsible, and questioning if I did the right thing. Documenting this emerging link cued me to re-code earlier data, a process that allowed me to see that the data coded as pressure, feeling responsible, and questioning if I did the right thing, fit all three of these codes. In other words, all of this data coded as any of these three codes, represented the same concept, cueing me to collapse the codes into the category pressure. The memo read as follows:

> feeling responsible for own practice-did I do the right thing; feeling responsible for outcome-delivering best care; feeling responsible for actions of whole unit or

collective care or care delivered under adverse effects especially constraints of system, being only senior staff or not having adequate support. part of this is isolation in role, and also another aspect of pressure

Constant Comparative Method

Another key element of GT is the constant comparative method, one of the first parts of GT defined by Glaser and Strauss in the 1960s (Chun Tie et al., 2019). Using this method, systematically obtained data is continuously refined throughout the research process. This system in obtaining and examining data allows for organization and analysis of qualitative data for similarities and differences (Chun Tie et al., 2019). Incidents and findings from different interviews are compared to each other as new data is added. This comparison and re-visiting creates a layered approach that favors the inductive process leading to increasingly abstract concepts (Chun Tie et al., 2019). Part of this process may also involve abduction, where inductive reasoning leads to hypotheses that are proven or disproven deductively against ongoing data as it is collected, or in other words seeking the simplest and most direct solution or explanation (Chun Tie et al., 2019). The iterative nature of this process and the combination of inductive, deductive, and abductive reasoning is foundational to GT, especially in combination with theoretical sampling (Chun Tie et al., 2019). Indeed, it is these two components of constant comparison and theoretical sampling that take GT beyond purely descriptive analysis (Chun Tie et al., 2019).

As I constantly compared the data, collapsing descriptive codes into categories, I returned to the raw transcript data to check that the emerging findings were reflective of the data obtained. This is a method of "grounding" the data. For example, early in the

concurrent data collection and analysis, outlier data emerged about the need for education as a nurse who is new to the NICU that did not fit other participants' experiences or to the central problem. Indeed, at that time, the problem was described as guilt/doubt and pressure. However, as the problem continued to emerge and as I continued to interview other participants, *need for [2]support, closure,* and *finding meaning* became clear. These concepts combined with not having the tools necessary to integrate into a new workplace clearly fit with what would emerge as the problem, *the risk of meaningless harm.*

Theoretical Sampling

Theoretical sampling involves choosing a sample based on theoretical knowledge formed at the outset of research, with a focus on discovery and a goal of saturation (Wuest, 2012). Initially, sampling is based on convenience, then purposive sampling is used, and finally theoretical sampling is used as a culmination of the process to explore relationships, answer questions developed during coding, and form the final GT (Wuest, 2012). Convenience sampling relies on those who it is convenient to access as participants, which then leads to purposive sampling, where participants who can answer the question are deliberately selected (Chun Tie et al., 2019). Instead of relying on numbers and randomization like many quantitative studies, a small initial pool of participants is carefully recruited from those who have the knowledge sought (Wuest, 2012). The first set of data is collected, coded, and analyzed before more participants are recruited. Further rounds of recruitment are guided by the data and may have different

[2] italics are used to demonstrate GT concepts of the original theory developed in this study

requirements as the knowledge needed may change. Further data is used to fill in gaps and expand codes and categories. Continuing to select participants to answer new aspects of the question and clarify the data until saturation is achieved ensures the final theory is in fact grounded in data (Chun Tie et al., 2019).

In my context, I initially recruited a variety of levels of experience. Participant characteristics that were sought out to fill gaps included those with less years of experience, those who had left NICU, and those who voiced their intentions to remain in NICU for the duration of their career. This process also includes surveying the literature to constantly compare with the emerging data (Wuest, 2012). The commonalities and differences between levels of experience enriched the data, adding to transferability and as per the example above around initial education and preparation, aided in combining various disparate elements into categories and eventually the grounded theory itself. In my experience, smaller NICUs such as TMH, with smaller staffing pools and number of staff on duty, require greater focus on experience level to be able to provide the high-level acuity care on a smaller scale characteristic of this type of unit. While the larger number of staff may reduce the focus on education and experience level in larger units, it is a daily area of concern when staffing smaller units where there may be only one staff with enough experience to deliver the highest level of care on a shift. Due to this high level of responsibility and the influence on unit culture as well as individuals, interviewing nurses with various levels of experience revealed nuances to the problem of *risk* and enriched the management strategies by providing variation, supporting my opinion. Conducting research within a unit such as TMH adds to the current data in the literature and the transferability of the theory to smaller units and the ability to focus on

nuance such as experience that may otherwise be neglected. Other key demographics that added richness include previous nursing experience outside the NICU as well as experience in NICUs outside TMH, as this may inform management strategies as well as highlight the impact of unit culture on the above. While initially level of experience appeared to heavily impact management strategies as well as perceptions of trauma, the individual codes were able to be collapsed into categories that represent the richness of the data and contribute to saturation.

Theoretical Sensitivity

Theoretical sensitivity is the researcher's ability to draw on personal knowledge and perspective to have theoretical insight into conceptualization of data as well as to perceive and describe relationships between concepts (Wuest, 2012). It is the balance between an open mind and focusing on important elements throughout the research process (Chun Tie et al., 2019). Glaser (2001) noted that "all is data" in GT (p. 145). Theoretical sensitivity is key to knowing what is and is not important to the emerging theory out of all the data collected (Chun Tie et al., 2019). Data may include not only interviews, but also questionnaires, letters, reports, memos, and other sources (Wuest, 2012). For my purposes, I relied on semi-structured interviews and the transcripts generated. I immersed myself in the data by conducting the interviews, transcribing them, and coding them myself. This made it less likely for me to lose important context such as tone, which may decrease or cause ambiguity in the assigned and perceived meaning, as this is also essential and not just the words (Chun Tie et al., 2019). It was important to maintain an open mind during this process, without prematurely discarding data while maintaining focus on what is truly important (Chun Tie et al., 2019).

Using a feminist perspective and conducting a literature review prior to conducting interviews was helpful in maintaining theoretical sensitivity. By being aware of opportunities for social justice and advocacy as well as key themes in the literature (Wuest, 2012), I was able to ask new questions that uncovered further data about areas that I may otherwise have ignored or glossed over. For instance, I was sensitive to the recurrent theme of power imbalance between front line staff RNs and administration in terms of trauma and trauma management. Because of the sensitivity to power differentials, I was able to draw out the impact of workplace culture, which includes a simultaneous undercurrent of self-protection in terms of nursing as a collective, while also highlighting the participants' advocacy efforts to work within the system alongside administration in the common goal of a safe workplace that fosters excellence in care and enables trauma management strategies. This resulted in the final subcategory of *setting boundaries* but also underpins both the psycho-social problem and solution within the theory.

Feminism also supports both the nature of choosing front line staff to be participants as well as establishing rapport with participants to increase credibility of findings (Taylor, 2023). By recognizing my own bias, I am better able both to engage in research with a feminist lens and augment front line workers' voices from a position of strength while using reflexivity to decrease the impact of my preconceived notions (Taylor, 2023). I approached this research with the feminist stance that the front-line RNs are the experts in their own trauma and the intention to convey their experience and empower them to be part of the solution was essential to me. This was a common and intentional theme beginning with the self-defined nature of trauma in recruitment through

to the results that have self-determination and self-identity and power differentials inextricably woven together.

Rigour

Validity and rigor as criteria for "good" research differs for qualitative research (Emden & Sandelowski, 1998). There has been an evolution from using quantitative quality measures to a multiplicity of paradigms in different types of research modalities with a culmination in various schools of thought on appropriate criteria for qualitative research. The prevailing paradigm has resulted in validity and rigor being closely comingled with ethical standards for research. Research must be both relevant, and readers must be able to trust it as an accurate representation of the issue that richly describes the phenomenon within its context (Emden & Sandelowski, 1998).

I considered the need and applications for this research. It is important to me that research serves a purpose and fills a need. GT lends operationalization to descriptions of processes through the formation of a theory versus describing a phenomenon and leaving the application entirely to the reader and thus suits my purposes and intent (Chun Tie et al., 2019). I have already had requests from staff and administration for my thesis as a complimentary support strategy for staff retention, in addition to more surveys as described.

My personal experience as a NICU RN strengthens the rigor of this study. I have seen the trauma that occurs in my co-workers and myself after each new high-risk birth, each time we fear risking our license due to the imbalance of high patient needs and limited resources, and every time a parent requires extensive emotional support as they navigate the difficulties of caring for a medically fragile infant. As per Emden and

Sandelowski (1998), I made a plan to incorporate rigor in research from planning to conclusion, closely associated with ethical considerations. A large part of this centered on myself fitting my inclusion criteria and interviewing my co-workers for my research, thus strengthening my understanding of the data. GT allows for this with the concept of memoing and co-construction of meaning with participants (Chun Tie et al., 2019).

Care was given to following the GT process and careful memoing with attention to bias. While the fact that I fit the research participant criteria as the researcher may increase risk of bias, it was also essential to the collection and understanding of data. Not requiring additional explanation pertaining to the mechanics of the NICU surrounding the traumatic incidents, and by sharing a common language, enhanced my ability to understand their experience. I hope I was able to help the participants to feel comfortable to share in-depth and rich experiences that may not be acquired by a researcher who does not work in the NICU. The iterative process of GT and regular discussions with my supervisor in this methodology were used to reduce my biases and assumptions. Through this reflexive process of memoing and journaling, I became aware of any potential assumptions that will inform further questions and analysis in the emergence of the final theory. I paid careful attention in the interviews to not lead the participants with my assumptions or my own experiences. This actually presented an unanticipated difficulty with numerous participants beginning to answer a question or describe an experience and then stating “well, you know what I mean” or “you were there with me”. While this comfort and awareness was helpful as I had hoped, I then needed to assure participants that I did know what they meant but I needed them to explain to ensure I could capture the nuance and their lived experience and not my own. It is also an interesting confluence

that one of the key supports proposed in the literature is indeed peer debriefing (Favrod et al., 2018). As noted in my Letter of Interest (Appendix A), I am hopeful that the interviews may have been supportive, therapeutic, and validating for participants.

Yvonna Lincoln and Egon Guba (1985) formed criteria for rigor in qualitative research. This included establishing trustworthiness by the researcher to the reader. Four characteristics are included: credibility, transferability, confirmability, and dependability (Lincoln & Guba, 1985). Credibility is the accuracy of the depiction of reality in the data. This can be accomplished by prolonged engagement and by persistent observation (Lincoln & Guba, 1985). In addition to my over nine years of experience at TMH NICU; I also immersed myself in the data by performing each part of data collection from recruitment to interview, to transcription, and coding. Keeping personal information private and confidential as discussed below helped to develop trust with the participants, increasing their comfort level to share difficult experiences, thereby increasing credibility of the study. I sought saturation in my data and confirmed conclusions formed throughout coding in subsequent interviews. One participant felt that the Covid-19 pandemic had had significant influence on their trauma, while another felt that there was minimal impact to their practice. This led me to questioning other participants about this factor and being mindful of post-Covid nursing as an undercurrent. Transferability or generalizability is the likelihood that data collected will be meaningful in other contexts and situations than that which it is collected in and for (Lincoln & Guba, 1985). My setting is quite narrow, with several specific markers of TMH NICU that form the data. Transferability will be whether it is relevant to other NICUs that do not share these common markers. For example, TMH NICU is a small in-born facility, Level III non-surgical changing to

hybrid open-bay and single-family rooms. This is somewhat similar to other NICUs within the health network in Saint John and Fredericton but there may be unique factors during data collection that may limit applicability. However, there may also be findings that are generalizable to outborn surgical Level IV units such as Alberta Children's Hospital NICU or to our linked tertiary care center single family room surgical Level III unit at the IWK. Other areas in which this research may apply include adult nursing specialties such as Intensive Care Units, Emergency Departments, and L&B Units.

Confirmability and dependability are substitute markers for reliability and objectivity in quantitative research (Lincoln & Guba, 1985). Memoing, a key tenet of GT, provides an audit trail for decisions, hypothesis, and leaps in logic (Wuest, 2001). By completing this process throughout the GT research, as well as audit trails of code collapses and other amalgamations of data, the research process is easier to follow and invites the reader to participate and think "what if" in regard to other decisions (Chun Tie et al., 2018). However, the nature of GT means that false trails are quickly marked as dead ends and the final theory is still a result of the data (Wuest, 2012). By using NVivo for coding, memoing, and category formation, there is an electronic audit record of how the theory emerges and evolves from the data. This program also facilitates comparison of early codes against later data, easily highlighting areas that require further inquiry and explanation.

I experienced numerous false trails during my analysis that were corrected by going back to the data. I believed that the environment of the NICU both physical conditions as well as cultural was the problem, but after discussion and consideration of the data, it became clear that the environment was actually the context and not the

problem itself. A key indicator was that the management strategies and process used to deal with the perceived problem were related to more than just the environment and reality of NICU nursing. By going back to the data, the actual problem as discussed in the findings section emerged.

Data Collection

I recruited eight interviewees at TMH. Eligibility requirements included: having worked as an RN in the TMH NICU within the last five years for at least one year. Participants will self-identify as having experienced occupational trauma during their employment as NICU nurses. Eight participants sufficed for a study at the Master Thesis level, while also allowing for sufficiently varied experiences and inputs to achieve saturation with visible similarities and differences to inform the final mid-range theory. The overall pool of participants who met my criteria would be perhaps 35-40 people, so eight allowed for feasibility and saturation with flexibility for purposive sampling in response to emerging data collected.

While the focus is on management strategies, as part of self-selection during recruitment, participants were invited to describe their experience(s) of trauma. This was

discussed to a variety of degrees both overt and more subtle during interviews. While diagnostic criteria for various trauma response syndromes are available, this and other quantitative scales may not accurately capture the spectrum of experiences that NICU nurses accumulate and find traumatic. Similarly, relying on narrow signs and symptoms of trauma-related disorders may negate the trauma management aspect that is focal to this research. Operationalizing occupational trauma according to the participants' definition decreases the risk of narrowing the subject matter and instead allows for a broader range of understandings as perceived and experienced by the nurses. In this way, a wide spectrum of terms that represent trauma in the NICU was used to engage the participants, such as experiences drawn from the literature, from environmental factors, individual factors, to events and actions, can be provided either to aid in recruitment or open up discussion during interviews for what is traumatic, why, and what is being done to manage this. For example, some participants may not view their trauma as such but still had valuable discourse to add to the data, and by self-identifying for recruitment they fit the criteria regardless of word choice. Indeed, many of the keywords from the literature were never named specifically by participants, but the discussion section below enumerates the parallels regardless of language used.

Participants were recruited by social media and word of mouth. An existing Facebook messenger group for TMH employees and page was used to invite participants to be a part of the study by contacting me at a private email or telephone number to set up an interview and answer any questions. Hospital resources were not used to recruit, and interviews were conducted during time off. Using the GT component of purposive sampling, other specific demographics were sought out, such as a newer nurses to

balance those with more years in the NICU, and nurses with nursing backgrounds that varied from only NICU to adult ICU experience, in order to explore gaps in knowledge.

Ethical Considerations

I considered the well-being of the research participants by using the following ethical principles: respect for persons, concern for welfare, and justice. I respected autonomy by obtaining informed consent prior to proceeding with any interviews with participants. I clearly outlined tactics used to de-identify research on transcription and in the final written report, as well as methods to ensure privacy and confidentiality such as not discussing interviews beyond academic purposes with my supervisor and committee member. Laptops were password protected, and programs such as NVivo are encrypted, and university servers were used for any storage. Data was de-identified by myself during transcription by removing names and places. As nurses who are sometimes asked to participate in research, having itemized protections in place in the informed consent letter was a necessary reassurance and helpful in establishing trust. Because of the small number of possible participants, the final thesis generated has less precise and identifiable data used in the final product to reduce the risk of compromising anonymity. This included more generalized terms in the discussion of results, for example. Participants were made aware of this risk and mitigation tactics before they participated.

Interviews were between a half hour to two hours in duration, in an effort to avoid an unfair burden on participants. Interviews were offered in a private space face to face or online using Microsoft Teams. This technology is used in the workplace for virtual meetings and therefore participants had experience with and access to this technology

from home. Microsoft Teams' recording and transcription features were used to facilitate, and I manually completed transcription via comparison with the audio recording.

While risks were minimal, potential risks were discussed with participants at multiple stages throughout the recruitment and interview process. A handout detailing possible stress reactions was given to participants at their request if they believed it would be a useful support, as well as a handout with resources such as Employee and Family Assistance Program (EFAP). Care was taken during the interview to offer pauses as needed or stop at participants' request with sensitivity to the subject under discussion. Possible stress reactions were watched for by the interviewer but only overtly discussed with participants if they agreed this may be helpful to them so as not to lead them or cause additional burden and trauma. By asking participants what supports they anticipate needing for the interview and making them aware of options, it was in keeping with the participant-led modality of research and the research topic without unintentionally incurring additional harm. Potential benefits of participation may have included feeling supported and validated during the interview and knowing that the research may contribute to positive changes.

Key tenets of feminism such as notice of power imbalances, respect for participants, pragmatic use of research knowledge, and reflexivity informed my approach (Wuest et al., 2001). Not only will participants know that what they said will be kept private, I clearly articulated my respect for the emotional labor they engaged in to share it, and how the research could be used to better support themselves and also future NICU nurses.

Findings

Findings from the current study are presented in two main sections, the psychosocial problem and the process of interest, which is the management strategies employed by participants. The problem is discussed in terms of the six Cs of GT methodology where applicable, and the process is presented with relevant subprocesses. The theory is presented in diagram form in Figure 3.

The eight participants had a collective 154 years of nursing experience, with 74.5 years of NICU experience at TMH. The range of years worked at TMH NICU was between 19 and two years, with the majority having 10 years or more experience. Less than half of participants had left the NICU for other employment, and only two participants had worked at other NICUs than TMH. Interviews ranged from 23 minutes to 95 minutes and were participant-led in duration using the semi-structured approach detailed in Appendix C.

The Problem

The basic psychosocial problem of NICU nurses managing self-identified trauma in the context of the workplace is *the risk of doing meaningless harm*. *Meaningless harm* is pain or suffering the infant and family is subjected to as a result of the nurse or the care team's actions or inaction without justification. Harm is operationalized as pain and/or suffering occurring to the infant and family as a direct result of treatment or intervention in the pursuit of health and positive outcomes. Harm without justification includes nurses' subjective determination that the pain and suffering experienced does not yield the likely possibility of health and positive outcomes. The treatment or intervention involves the nurses' action on their own or as a part of the treatment team. Health and

positive outcomes are determined by the family and includes the infant's capacity to grow, thrive and develop in the home.

The determination of whether suffering is meaningless, or an intervention is justified, is complex with many determining factors including the nurses' beliefs, values, and experiences in the NICU, families' wishes, guidance from the physicians and other members of the treatment team, and best practices. The determination of *meaningless harm* remains a *risk* or is problematic despite other team members having different opinions. Indeed, nurses' commitment to positive outcomes and the well-being of the infant and family is indicated by the determination of *meaningless harm* that is based on the infant and families' experiences: their pain, suffering, fear, and sense of hopelessness, is absorbed by the nurses. Whereas pain and suffering from a treatment intervention is justified when it is necessary to achieve a likely positive outcome, *the risk* is ever present when there is a disconnect between what is considered a likely positive outcome within the dimension of quality of life versus keeping the physical body alive. Examples of *meaningless harm* include excessive painful treatment for a baby who is not expected to survive and for whom the care will not prolong life or result in quality of life, being a bystander to morally challenging conversations between physicians and families, or witnessing their colleagues delivering care that deviates from protocol and best practice. *Risk of meaningless harm* will be identified as *the risk* in further writing for brevity.

The risk includes the strong possibility of future pain and suffering; therefore, the distress of *the risk* was present even when the infant was doing ok or when the NICU was functioning well, or an adverse outcome did not occur in spite of a strong possibility such

as with unsafe staffing levels. Fear of *meaningless harm* occurring involved the nurses questioning their skills and abilities to prevent pain and suffering.

The risk involves the feeling of being caught between a high level of agency where nurses feel responsible for *meaningless harm* whether hypothetical or actual and are driven to prevent recurrence and diminish *the risk* for themselves and all nurses. This agency, or sense of control over their actions without being unduly influenced by outside circumstance, contributes to a heavy burden of responsibility, ownership, and guilt, especially considering not all parts of *the risk* are within the control of the RNs.

The risk is predicated on the perception of low agency to influence treatment outcome, co-occurring with a recognition of the high stakes of action and inaction. The perception of low agency is self-determined and indicated by a sense of helplessness or loss of control in the prevention or reduction of *meaningless harm.* Low agency involves a sense of hopelessness for the future and disempowerment in practice. Contributing factors include power imbalances with other HCPs including the legal requirement of following doctors' orders whilst having an ethical responsibility to advocate for a vulnerable and voiceless patient, lack of treatment options due to centre size, resources, and availability within the study of neonatology and its constraints, and the chronic nature of insufficient staffing and increasing acuity.

Indicators of the *risk* are nurses' anguish related to past and present experiences with patient and family suffering, and fear of future harm. Thus, *the risk* is characterized by an omnipresent awareness of both concrete and possible harm, with nurses' fears validated by actual events as well as a dread and anticipation of future circumstances unchanged from the past. While some portions of harm are inescapable due to the nature

of NICU nursing, it is the *meaningless* nature of repetitive *harm* without possibility of change that sets this type of suffering apart. One participant related how patient loss affects them: "I mean there's some patients that never leave you. And I have gone a month of crying, not wanting to eat after losing the patient, the baby...everyone that passes takes a piece of my heart with them."

This loss is further complicated by the knowledge nurses have of the inevitability of the death of some patients regardless of the often painful and ultimately futile treatment required. This would include multiple painful chest tube insertions for premature and nonfunctional lungs, or therapeutic hypothermia for preservation of brain function after birth asphyxia. While nurses wish to experience hope and success in treatment along with the patients and families, their increased awareness of both the pain caused to the baby by treatment and the often-futile nature led them to question both the reasoning behind aggressive treatment without potential for success, and to balance empathy with parents hoping for a miracle with the suffering child in front of them, which one participant described as torture. This questioning and doubt as to the morality of their actions eroded hope both in the current experience as well as carrying over to inform future experiences, whether for better or worse outcomes. One participant shared how the experience has changed over time and what she found most traumatic:

> We were just wishing that patient alive and putting [them] through way more than [they] should have had to go through …, when all along the end result was going to be the same. That was so hard, and I felt like we were actually torturing that baby for … weeks. [They] had no quality of life for weeks. But there should have been

conversations, and this never would have happened earlier in my career and now it has been one of the more traumatic things.

Trauma Definition

Trauma is self-defined for the purpose of this study and presents a theoretical touchpoint as it is presented as what the participant identifies it as, but is also a term for the negative and unwanted symptoms incurred from their occupation. One participant outlined some of the impacts of trauma:

> And I would also say...physical [impact]too, because I would say like increased irritability. I would say short tempered... I would say that there's times that in the past...it's made me question my faith and why those things happen and why I might feel like this is my path. Like, I feel like this is my purpose and sometimes I'm still like wow, why would you choose this for me, God? I would definitely say irritability, I would definitely say short temperedness. I would say fatigue...

What participants found most traumatizing is *the risk of meaningless harm*, and their management strategies are focused on this part of their trauma. There are many more facets to trauma, but this is the facet of interest to this study. Trauma is used by participants to note the cause of any unwanted negative symptoms incurred occupationally and is defined by their anguish and suffering at *the risk* to their patients and families, with *meaningless* being the fulcrum that changes expected negative experiences into trauma. This means that trauma as a conceptualization of what participants find most difficult about their occupation as NICU nurses is both an outcome of *the risk*, as well as being the overarching problem of *the risk* itself. Upon reflection of a particularly anguishing patient experience numerous participants discussed, one

participant asked: “Why why why did we put that baby through that? That family through that? Why? That’s what I want to ask. That’s what I want to know.”

Pressure Culture

The *meaningless* nature of *the risk* in the NICU is contingent on external and systemic pressure that is situational and dependent upon resources, work culture, and administration intervention and support. As the systemic pressure worsened, *the risk* increases, causing variation in levels of intensity of trauma, *the risk*, and management strategies. Working chronically short-staffed results in overtime and extended shifts (16 hours plus) becoming the norm instead of exceptional, as well as even expected to keep the unit running. As this became more normalized, administration expected past success in working with low resources to be repeated in the future, regardless of *the risk.* A participant describes the cycle of short staffing and the feeling of responsibility and lack of control:

> For me, the most traumatic thing was being asked to provide high quality care, but not being given the resources to do so... I found it traumatic to be asked to care for very sick kids, knowing that we didn't have the human resources to be able to do that appropriately... It was kind of like, do the best you can with what you've got and most of the time the best we had with what we’ve got, worked out really well. But I know that there were times when they were adverse outcomes. Because the best we had with what we’ve got, wasn't good enough.

In the NICU, when the "best we had” as this participant notes, was not enough to avert disaster, adverse outcomes were human suffering and even death. In effect, participants found that previous near misses that were based on luck or circumstance

were ignored by administration instead of treated as sentinel events signaling future disaster if the same circumstances reoccurred without the same luck. For example, short staffing one night may be a risk but if the same short staffing occurs with a higher level of acuity and an unexpected delivery requiring high intervention, a sentinel event of a central line without trained staff to verify it may result in malpositioning and the baby dying or receiving damaging medication in the liver instead of the central venous system. While this happening once would be incredibly unfortunate, for this luck to be counted on constantly by administration to provide positive outcomes results in an unrelenting pressure culture for front line staff who have to hope that the luck does not run out when they are working. This lack of support and change from administration at a systems level contributes to the *meaningless* nature of *the risk*, and ensuant lack of hope for change from staff, re-emphasizing their lack of control and diminished power in the hierarchy as front-line workers.

Additional variation in findings and pressure is due to the presence of travel nurses, as well as the education and comfort level of staff. In the NICU at TMH, there are levels of care that staff provide according to staff acuity. When more inexperienced staff are present, the pressure on more experienced staff increases because not only are they responsible for the most acute patient assignment, but they are also responsible for mentorship and support of other staff. As the pressure worsens, so does *the risk* increase. When the pressure is improved and lightened, i.e. through travel nurses, *the risk* is diminished, adding to the variation in this process and in occupational trauma in the NICU in general.

Additionally, new physicians create pressure as they rely on senior staff to orient them to resources and policies available to them as well. Senior staff believed that while their peers required their help and knowledge to complete their care and for the unit to continue operating, this value was not acknowledged at the administrative level of managers and the employer. The pairing of unrelenting short staffing and lack of action or validation from administration slowly compromises the work culture, leading to normalization of unsafe staffing situations or even resource availability that previously would have been unacceptable.

This lack of purpose for the suffering of families, patients, and nurses contributes to trauma and specifically hopelessness, and directly to negative management strategies such as leaving the job as no improvement is expected, making the suffering that much more traumatic for nurses as they are unable to *find meaning* within it and achieve *closure*, as is discussed in the next section. This pressure culture is a systemic push to succeed in delivering lifesaving care without sufficient resources that wears down staff as they are forced to constantly attempt to justify *the risk* with *finding meaning* without any consistent change on a systemic level that would let them hope for different outcomes in the future. While occasional short staffing would be an unfortunate but expected norm in the current reality of an ongoing nursing shortage, pressure culture causes nurses to feel responsible for a system they are a part of but not solely responsible for. This lack of support and validation from the administrative level magnifies individual experiences of *meaningless harm* into a pressure culture that removes hope for change and improvement and forces nurses to undertake drastic management choices to negate *the risk* and protect themselves.

Indicators of pressure culture exist in the current and past provision of formal support in the form of debriefings. These debriefings, while organized by administration as an opportunity for support, are actually contributing to the problem and demonstrative of the conditions in the NICU. Often an external psychologist is brought in who specializes in debriefing but has no knowledge of the NICU context, and closely follows a script where each participant is required to answer questions around a circle about their emotional management. Discussing any medical questions or opportunities for improvement is strongly discouraged as it is not in the script. The limits imposed by the outside expert regarding topics for discussion to solely emotional resulted in compounding trauma as well as not being effective. This reinforced *the risk* by demonstrating to nurses that nothing would change, and they would again be in the same position of high *risk* without having been able to learn or change from past experience. Nurses had provided feedback about these debriefings and were able to verbalize how they had been integrated in other settings, and yet the same harmful practices remain. One participant shared their experiences with debriefings and their wishes for future sessions:

> I don't know if we're just so task oriented that we really just want to kind of get to the root of it. And I think that I found that staff respond more to the debriefings with physicians involved. That kind of talk about the case itself and what happened, and if there was anything we could have done differently or not, so more of a debriefing than an emotional session...that's how I personally felt like I could get over it, was to hear that we've done everything that we could. And I

think that's what anybody wants to know...that we did everything that we could. We all deal with our feelings differently.

Variations in conditions such as staffing resulted in different outcomes, demonstrating the systemic nature of the pressure culture. For example, newer nurses who often had support of senior nurses in decision making reported less feelings of responsibility for more than their own practice but equal feelings of being stretched thin by compounding constraints from the healthcare system in terms of staffing and administrative pressure. As the experience of the nurse increased and their comfort with acute and therefore high-risk situations, so did their feelings of responsibility for the situation and questioning of *meaningless harm* vs necessary treatment.

Participants outlined high turnover especially of experienced nurses and discussed the pressure and responsibility they felt as a remaining senior nurse for both their own practice and the practice of those less experienced. They acknowledged that while there had been initial challenges integrating experienced travel nurses into the unit culture, they were now successfully filling numerous gaps; however, there was also an awareness that this help was temporary and concern was noted that after the travel nurses left, nothing would have changed. Other participants newer to the unit outlined issues with their preparation to work in the unit and achieve competency and comfort, as they sought support to do their part and take advantage of learning opportunities. This includes ongoing improvement to the orientation to NICU nursing, standardizing said orientation, policies and procedures being updated and available, as well as educational opportunities to meet the needs of staff in a timely manner so that they feel confident in their ability to provide care.

Alarming Environment

The context of the *risk* is the environment *the risk* occurs within. The environment of the NICU includes the physical surroundings as well as the working conditions. The NICU, especially in the open bay design, lacks privacy, causing not only a cacophony of alarms and conversations to be ubiquitous for staff and families, but also presenting a very abnormal space for the expected activities of bonding with a newborn. In the case of resuscitation or decline, this environment can further contribute to trauma due to the lack of privacy and the knowledge that not only are the family with the infant at the center of resuscitation observing often painful treatment but so are other families. In an open bay unit, any adult present in the room may be privy to any occurrence, including listening to resuscitations and hearing ventilator and monitor alarms, counting with chest compressions, and team communication of outcomes, as well as family reactions to baby's death or dying. This communal awareness and lack of privacy may contribute to not only primary trauma but secondary as well for both staff and families. The lack of privacy was described by one participant as being traumatic in the following way:

> ...Because expecting people to go in and just act like nothing happened is...it adds to the trauma. And I think it spreads it. Like I saw it and you saw it in, you know, some of our patients in the unit where the mother was witness to [a death or resuscitation] so many times, and then you're having these nurses come and care for your child that you know they just been through something traumatic...Everybody has it on their radar and it's, you know, it kind of influences the feel of the unit.

The context of *the risk* is characterized by nurses' value and commitment to the health of the patients. This results in high stakes and high internal pressure to provide the best care possible to reduce or negate *the risk*. This internal pressure is often expressed as constant doubt and questioning of themselves as individuals as well as an examination of the actions and inactions of their colleagues, with *the risk* being present in not only individual actions but also the collective course of treatment of vulnerable infants that form the context of NICU nursing. The environment is shaped by the high value for nursing care for a vulnerable population, setting the foundation for the specific problem and trauma in general to occur. Other key context in the NICU is the acuity of the patient population and the awareness that regardless of action or inaction, not all patients will survive or have positive outcomes. While nurses continue to feel responsible and feel a duty to deliver the best care and indeed enjoy the acuity, In the NICU, each touch, sound, smell, action, and inaction must be carefully considered as it can have lasting impact on not only the physical survival of the patient, but also the developing brain, as well as the mental and emotional wellbeing of the family. This awareness of impact contributes to *the risk.* The impact was described by one participant as follows:

> It was the lack of support that was more traumatic to me, as opposed to the actual happenings, because I can deal with the happenings to the baby, I'm trained to deal with that. But I have no control over staffing and my ability to provide care. So that was a traumatic thing for me, not being able to provide the care that I needed to.

Contributors: Isolation and Responsibility

Isolation contributes to *the risk* for participants. Isolation is the state of feeling separated from surrounding individuals due to a lack of understanding and similar experience. This includes more experienced staff being few in number and are being asked to take on extraordinary burdens, without validation or understanding from both peers and administration. Isolation can also include feeling that friends and family cannot offer the same level of support as peers because they lack understanding of the context and demands of the NICU. For one participant, it was challenging to feel understood by their family, and they felt that their work followed them home:

> You're not as available because I feel like your work takes a lot from you and you have that big trauma and you're trying to process that and trying to process the things in your regular life. They definitely compete for time in your brain and there isn't enough. And you're trying to also... act like nothing happened because your family doesn't know...all they know is something terrible happened. But you're trying to then be home and be normal and be like nothing happened when there really was a thing that happened.

Additionally, integrating into a new workplace or a changing workplace can also cause feelings of isolation, contributing to *the risk* by limiting support in decision making and learning for both experienced and less experienced staff. Isolation as a contributor is closely linked to internal pressure as the context, as well as external pressure conditions due to limited resources. This isolation often resulted in magnified guilt and sense of responsibility but also in the experience of feeling like just a body, resulting in seeking validation and understanding from others of the value of the nurse as an individual.

Responsibility

Increased comfort in practice or experience results in increased feelings of responsibility and a higher likelihood to discuss the compounding nature of smaller stressors, as well as identify this increased feeling of responsibility as a contributing factor to *the risk*. Less experienced RNs were more likely to focus on more concrete traumas and ways of managing them, while abstraction and concern about *the risk* increased with years served. All participants were able to acknowledge the cost of trauma caused by their occupation, whether they witnessed it in themselves or in their peers.

Loss and Leaving

The risk results in trauma or negative outcomes with physical, mental, emotional, and spiritual repercussions. This may include irritability, exhaustion, compounding trauma from re-exposure without closure, and the unwanted need for boundaries such as leaving the NICU or distancing from patient families for protection of the self. *The risk*, and managing it, causes loss. This parallels the loss experienced by families and patients in the NICU of the normal newborn experience and opportunity for happiness and bonding. Nurses lose hope and trust in administration and their own ability to effect change. This feeling of hopelessness in the face of *the risk* results in having to use management strategies that are unwanted, such as leaving a job that brought great joy and fulfilment. Consequences such as irritability and exhaustion also affected nurses outside of the occupational setting, with participants reporting envy of other jobs without the same *risk*, and trauma, as well as shaping their personalities and participation in life both at work and at home. Insidious changes also resulted from *the risk* and ensuant trauma that resulted in participants not recognizing themselves or liking how they acted as a result.

The Process: Finding Meaning

The psychosocial process used to deal with the problem of *the risk* for NICU nurses is *finding meaning*. This process goes beyond merely rationalizing the sometimes painful procedures that are common in the NICU, where each diaper change causes nervous system disruption. It encompasses the moral distress of knowing the correct way of doing something from a procedure, up to redirecting futile care, to palliation, with compassion for the RN, health care providers (HCPs), and the families and patients. Part of the process includes rationalization of why sometimes meaningless or incorrect processes are carried out, tempered by management strategies of either seeking to understand and make sense of actions through s*eeking closure*, *seeking* formal *support* in the form of debriefings and mental health support, and also *seeking support* in the form of advocacy and education. Participants also set boundaries to protect their self-identity and reconcile *the risk* with their values as a human being and as a NICU RN.

These management strategies, whether formal or informal, internal or external, allowed participants to find sufficient fulfilment in their occupation that it was worth continuing to navigate *the risk.* The inability to access and implement management strategies resulted in first disengagement from the environment in a mental and emotional sense, and then once the scale tipped too far to recover, a physical departure. This may be due to a single event where *the risk* was immediately apparent, and the participant was unwilling to continue but was more often a realization of the cumulative *risks*. Leaving was ultimately protective of the participant's identity as a nurse who does not engage in *meaningless harm*. If they were not able to achieve fulfilment through *finding meaning, seeking support and closure, or setting boundaries*, they avoided *the risk*, in this case by

leaving their employment as a NICU nurse. However, there is key theoretical data in the spectrum of these management strategies between the recognition of *the risk*, through attempting to implement management strategies, and ultimately the success and failure and therefore whether the participant continues on or leaves. This theory provides insight into pivotal interventions and supports that can result in the fulfilment and self-efficacy required to navigate and endure the environment and continue to provide care even with the trauma and fear of *the risk*.

Finding Meaning

Finding meaning is assigning value to the work that was done, and living and embracing the uncertainty of outcomes within *the risk.* It is looking at why something happened and acknowledging the limitations of the care possible for vulnerable infants and their families while simultaneously rejoicing in the care that was possible. It is knowing that outcome and success are not identical and finding peace in that paradox and using it to power the care going forward. It is finding therapeutic and healing moments in terrible traumatic instances, and in the asking of what can be done so this doesn't happen again. Its antithesis is the senseless suffering of self, peers, and patients, of being limited by the system, and the moral distress in the inability to deliver the care a participant knows is possible.

Finding meaning is predicated on the duty and value nurses feel towards their occupation and their patients. One participant shared how she kept coming back to NICU nursing even after leaving over the working conditions and wanting to explore other options:

> I really feel like working in the NICU is one of those things that if you feel like it's your calling...If you feel it's your place, you have to do it. Nothing anybody says is gonna make that difference. You have to do it... Yeah, I heard all the warnings before I even [started working in the NICU]. All of them. I did it anyway. Yeah, I feel like for the most part even if it's a short time that we spend together [with the families and babies] I feel like that time is meaningful. I really do. I feel like that time is meaningful and I believe that's why I choose to stay with moms and babies right now.

Participants *found meaning* through *seeking closure, seeking support,* and *setting boundaries*. If moral distress is caused by knowing how to do something better and being unable to do so, *finding meaning* is accepting working to capacity while still wanting to improve factors such that *the risk* is reduced in the future. Indeed, one management of moral distress is *finding meaning* and giving grace to self and others that the best they could do was sufficient, regardless of outcome, but still without the passive acceptance that blunts the drive for improvement and thus self-protection of identity and ensuant fulfilment.

While *finding meaning* in the context of *the risk* is the central part of the process, there are also subcategories of *finding meaning* outside of the direct occupational context as a method of management. Participants used distraction as a way to imbue value in other parts of their life to maintain balance and be able to better reconcile the suffering they witness and were afraid to experience again without justification. This use of distraction often took place after a difficult shift in the transition home. Participants described otherwise occupying themselves, whether with the drive, good food, hiking and

getting outside, and even self-reflection. Adjacent to the occupational setting, *finding meaning* is characterized by seeking out opportunities to celebrate the care given and successful or justified treatment of patients and families. This may be accomplished by receiving visits from now healthy former patients or meaning-making activities such as through the Beads of Courage program where each step of treatment is commemorated and creates an eye-opening string of beads marking an individual's treatment and journey. Another participant shared what she enjoyed about the NICU and how she reflected on positive outcomes and her purpose as a way to *find meaning*:

> ...in NICU you can have very sad cases and they don't end well...but the happiness outweighs that. When you have a little baby come in and the parents are scared to touch it and then you take that and then you're teaching them how to care for their baby and the little nuances of prems. And you watch them go from not wanting to touch [the baby] to doing everything for them, and to then be able to take their baby home. That for me is completely worth it.... So I love it.

Seeking Closure

*Seeking closur*e is a central sub process of *finding meaning* to manage occupational trauma. *Closure* is actively bringing to an end a traumatic experience so that a new beginning can be achieved. *Closure* is characterized by seeking information of the consequences of actions and inactions, in essence finding out the end to the story so that lessons can be learned and applied to the future with the goal of reducing *the risk*. This offers a sense of fulfillment and hope by learning from the past and present with an active role in changing future care. Doing this helps participants feel that suffering is less *meaningless*. An example of *closure* would be finding out on autopsy that a baby died

from an unknown and untreatable genetic defect and that participants feel a sense of absolution that they did everything possible in the care of the baby even in the setting of a poor outcome. A participant described closure and how she felt it was helpful:

> I spoke with the physicians about what was found in the baby [on autopsy]. And then it made sense why the baby turned the corner so quickly. The baby went down hill really, really fast…Anyway, once I knew medically what was happening, which we couldn't see from the outside looking in, having that extra knowledge I was like, OK, that makes sense... that helps me cope because I understand medically what happens there, right? It wasn't like, did we miss something? How did that happen so fast? I don't know, that part helped."

Variances include learning that treatment was futile and changing practice to include advocacy for quality of life or changing assessment to learn from new experiences. A consequence of not having *closure* or being blocked from achieving it, was feeling invalidated and out of step with the larger healthcare team. This is most apparent in the debriefing process described below.

A subprocess of *seeking closure* is *seeking support* and includes formal support and informal support. *Seeking support* encompasses seeking validation and acknowledgement and is a key part of *finding meaning*. Formal support includes debriefings and counselling with a mental health professional. Informal support includes speaking with peers and family. *Support* needs to be offered in a state of deep understanding and trust, usually provided by someone who understands what the participant had been through and therefore whose opinion the participant trusts and values. *Seeking support* is defined as actively searching outside oneself for tools and

resources to accomplish goals, in this case *finding meaning* and therefore managing trauma. This process is characterized by the conditions of trust and feeling understood by the provider, as well as accessibility. Barriers to accessing support include ongoing staffing issues, high turnover impacting trust and psychological safety within the unit culture, as well as employee programs and financial constraints on access to mental health support. Seeking may involve trying various modalities of support or various providers and may be a single opportunity or ongoing.

A formal opportunity for *support* is a debriefing, a meeting of all team members involved in a traumatic situation, providing an opportunity to discuss what occurred. Debriefings require a trusted, internal leader, and to be offered in a timely manner so as not to reopen wounds that have begun to heal, with a true purpose to deal with what has occurred and not just emotions. Participants discussed the debriefing process offered in the past, highlighting being forced to focus on emotions to the exclusion of reviewing what happened and how to learn from it and prevent a recurrence or provide better care in the future. This was viewed as not only useless in managing trauma but became traumatic in and of itself by reinforcing a universal instead of tailored approach, contributing to feeling devalued and dehumanized. When participants were blocked from *seeking closure*, they felt excluded or invalidated as part of the team, as well as continuing to wonder and feel guilt. The majority of participants discussed what had not worked in past debriefings and what they would like to be offered to them, with one participant sharing:

> But I know for me, the part I feel heavy about is the care decisions. Something we could have done or should have done...I'm gonna feel sad and bad anyway, the family's gonna feel sad and bad anyway... that's just something we're going to

> work through with time. I don't know that I need help with that. But I want to talk about what could have been done...Yeah, I want to learn from it. Is there anything else we could do or how can we do it or what was the thing that we missed? Or was this just going to happen anyway? I think those are all the questions they go through my mind.

Seeking support includes relying on peers for validation, or informal support, reinforced by the limited and limiting offerings of formal support from administration (i.e. debriefings by outside experts). Other key areas of informally *seeking support* include psychological safety in sharing after establishing trust and common experience that promotes understanding. Informal support may be sought as peer to peer conversation and validation of choices in work, or beyond the boundaries of work, as participants stated that having a colleague check in with them after an upsetting event was incredibly supportive and reinforced the perception of support and value individually and within the work culture. Another key element of *seeking closure* and *support* is education. This is achieved by advocacy and intentional participation in improvement activities, characterized by a drive to always learn from experience and do better. Participants would prefer to have education and policy to validate their choices in *high-risk* situations. Ideally, this would result from debriefings or case studies of what has occurred that worked well or did not and reflect real-time needs of front-line staff. While balanced against identified change fatigue, evidence-based practice which is predicated on constant improvement and "know better, do better," was empowering to participants and co-occurred with *finding meaning* as well as validating the high stakes and high value care given. A sense of feeling prepared or set up for success was viewed as integral to

being able to provide meaningful care, and a frequent area of advocacy. A participant discussed the need for specialized education and protocols:

> It's needed for everything...like we have an IVH protocol. Why? Because it's important and we know that those babies need to be nursed and cared for in a certain way to decrease the risk of IVH. So we have a protocol…You need a starting point. You can't just have the admitting physician who does it one way and then the next physician comes in and says, why was this done? I don't know. I'm not the doctor who ordered it, and there's no protocol to follow. So if we are calling ourselves a Level 3 center and that we can do this level of care, then that absolutely needs to be in place for every disease pathway.

This facet of *finding meaning* is foundational to reducing *the risk* by having protocol in place that reassures RNs that they have done all they can without tipping over into futile care. This is accomplished by ensuring consistent, holistic, evidence-based care that has been accepted and ratified by all HCPs. By removing the questioning and doubt that is central to attempts to *find meaning*, participants are further empowered in proactively managing their trauma.

Finally, the last key component of s*eeking support* is validation. Participants want to be seen as a valuable team member and not a number, worthy of support and acknowledgement. Participants did not expect thanks or to have their every wish fulfilled by administration or even their friends and family, but wanted to be appreciated for the work they do and the value they bring. This was tied to their self-identity as a NICU nurse. One participant related wanting to feel heard, and connected it directly to trauma:

> If they had really taken a look at what was happening, they would have recognized what was happening to their nurses and the emotional trauma that we're put through on a daily basis. And I think that they could have done things to help. They can't change the acuity. They can't grow nurses, but they could have recognized and validated how the nurses were feeling when they were bringing up their concerns...I think personally that if I had just felt heard, I probably wouldn't have found some of those situations as traumatic as I did.

Once *support* is found, nurses were able to tolerate greater *risk* as it lessens the impact of past experience and allows for greater hope for the future. Lack of *support* diminishes the ability to be resilient to the ongoing *risk* and threatens loss of hope, which will lead to nurses leaving the NICU as they are unable to reconcile continuing with *the risk*. *Support* in this case fits with the common allegory of "tools in a toolbox" that allows nurses to continue to work through trauma and *risk* using effective management strategies.

Setting Boundaries

Setting boundaries is a result of trauma or enduring and existing within *the risk* and is a management strategy used as part of *finding meaning* to mitigate the uncertainty of recurrent trauma inside the occupational setting. It is also a response to the compounding and incessant nature of the trauma, coupled with the tipping point at which participants made the decision to undertake the ultimate management strategy of leaving or staying. *Setting boundaries* is a tool to protect the self, to create division between work and other parts of life. By protecting the self, they were able to endure *the risk* and the negative symptoms through compartmentalization or even simply exercising agency over

continued NICU employment. This was often learned from colleagues, who witnessed their effective use of *boundaries* to achieve longevity of career and resilience to trauma. *Setting boundaries* was characterized by empowerment, either through empathy and allowing oneself to be affected by the families and patients in a bid for human connection to power care, or through self-reflection and choosing to pursue other options either for employment or management of trauma such as limiting emotional involvement in crisis situations.

If the necessary adaptations to *the risk* could not be reconciled, often the nurse would leave the NICU for another environment they felt either reduced *the risk* or provided sufficient resources that *harm* became unlikely and/or they felt they would receive support to manage this possibility. This is the ultimate expression of *setting boundaries*. Continuing to work in the NICU is contingent on the ability to endure *the risk* while working toward reducing it.

This ability to endure is different for each RN, often including a tipping point or final straw. Once this point was reached, if participants were not able to justify continuing to incur *the risk* and were unable to *find meaning* in continuing, or perceived the cost to be too high, they would leave the environment for another one that they viewed as either not having the same degree of *risk* or that has a better chance of successful management. One participant described arriving at the decision to leave:

> And it's not like there was, like, this one big thing that I can be like oh, there's the source of all my trauma. No, it was kind of like little things, just like build up, build up, build up and then you realize I can't do this anymore because I'm a

miserable person at home. I'm a miserable person at work. You just need to get out and find something else to do.

Some factors were supportive of this endurance, such as resolution of physical issues through the new building of an updated unit, better staffing from the travel nurses even if only for a brief period, or just the passage of time and improvement to policies and procedures, and the accumulation of experience. The ability to rationalize *the risk* was key to this endurance, as was the belief or hope in the ability to make change or tolerate conditions long enough for them to correct.

The enjoyment of the care delivered and high value for duty or the difference made were also protective of enduring or staying. Participants genuinely enjoyed interacting with families and felt that their work made a difference. They expressed excitement at the changes coming to the neonatal specialty in the future and reflected on the changes to practice they had witnessed. Factors that were identified as contributing to leaving included feeling like just a body lacking individuality and value, lacking validation and acknowledgement from administration, or being exposed to senseless suffering and not being able to see any change or even hope for change that would result in this not happening again.

In the end, the greatest contingency of the ability to endure *the risk* is hope for change. If the participant was able to endure current and past high-risk scenarios by hoping that the future would not be the same, they were likely to stay and continue working. If they had reached a tipping point and either perceived the cost as too high or no longer were able to have hope that the future would be different, they would leave. This hope and endurance combination was often an active process and part of the

management, with participants not passively accepting the status quo, but able to identify what had been traumatic in the past and present as well as solutions or management strategies they employed or would like to receive support in employing. Those who no longer held hope for change or had reached the point where the cost of continuing was too high, were instead focused on what leaving (i.e. *setting boundaries*) had provided them for management strategies, such as supportive administration or a change to working conditions that decreased or eliminated *the risk*. Hope is a part of the active choice to endure, not a passive acceptance of *the risk*.

While the expression may differ, all participants whether newer or more experienced, struggled with the ability to *seek closure* and *support* from peers or from administration through education, staffing, and availability of debriefings. However, when nurses could access this *support* and couple it with *setting boundaries*, it allowed them to *find meaning* in their work, which is how they manage *the risk of meaningless harm.*

Feminism

Feminism as it intersects with GT allows for the examination of power differentials across gradients of not only gender but also the social structures that promote these same inequal distributions of power. Participants conveyed a strong sense of "us versus them" in their views of support, especially when looking at peer versus formal support as they felt that in order to receive adequate support they must be understood. For example, in a debriefing, participants wanted all HCPs to be in attendance, not only nursing, and they wanted someone they worked with to facilitate the debriefing, not an outside professional. This "us versus them" dynamic was nowhere more apparent than in nursing versus administration. Not only was the power differential described in terms of understanding the needs and struggles of bedside staff but also in terms of validation and punitive versus collaborative actions for change. This lack of power interfered in feelings of fulfillment as lack of agency compromised excitement and ardor for best practice and advancement and resulted in change fatigue and this divide between bedside staff and administration. Additionally, due to the position of nursing in the hospital power hierarchy, many contributing factors such as unsafe staffing were not only chronic but also out of the control of bedside staff. All of this feeling of division and powerlessness against administration and even physicians contributed to the fear of *the risk of doing meaningless harm*.

Figure 2. *Theory Diagram*

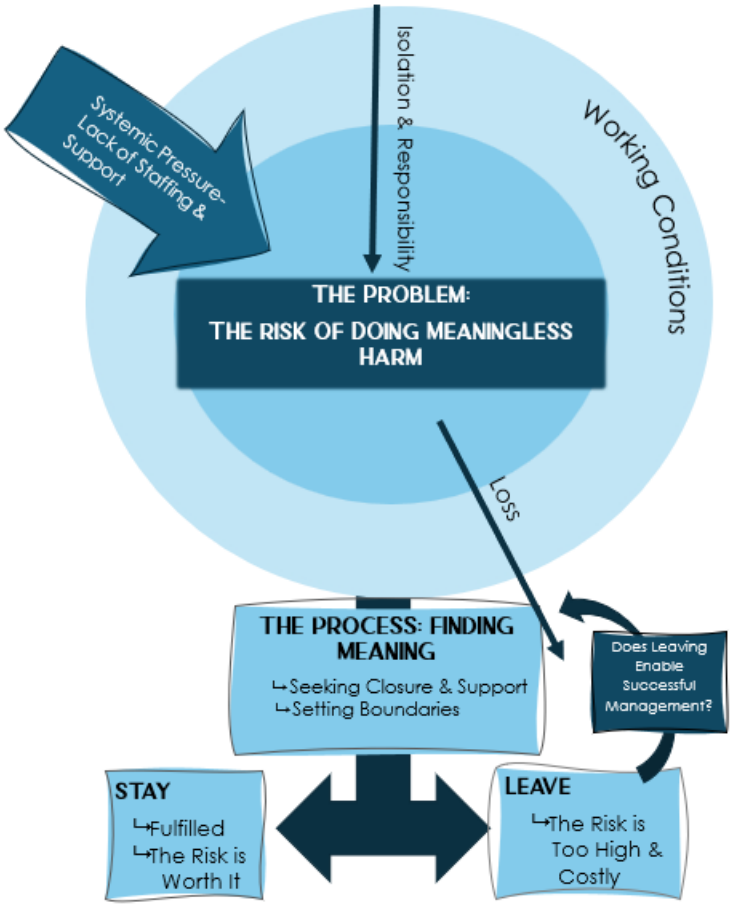


Figure 3. *Cause and Result*

Discussion

Trauma in this study was found to be a result of *the risk of meaningless harm* and managed by *finding meaning,* and also the cause of the psychosocial problem and process highlighted in this grounded theory and depicted in Figure 3. In the literature, trauma has manifold meanings and causes, and management strategies are just as varied (Favrod et al., 2018; Walden et al., 2020). While many study authors separated traumatic and non-traumatic stressors (Favrod et al., 2018), this study enabled participants to self-identify and self-define trauma, allowing for rich and varied data not limited by cause, but instead with a management focus. This approach is novel, with most qualitative studies in the literature focusing on broad themes versus specific management strategies (Molloy et al., 2015; Woolgar & Archibald, 2021).

The risk is a novel problem for research in this area, although it closely parallels some parts of existing literature. *The risk* carries undertones of common themes such as burnout, moral distress, emotional exhaustion, and secondary trauma as are identified in previous studies (Favrod et al., 2018; Woolgar et al., 2018), but the current study does not use this language because participants discussed the concepts without naming them as such. The context of *the risk* parallels that of the literature, encompassing the NICU environment, and the mental and emotional load on parents and nurses (Walden et al., 2020). However, the conditions that set the scene for *the risk* were not universal foci of the literature, including chronic unsafe staffing levels, level of staff experience and comfort with care and mentorship, and the specifics of offered debriefings. The contributor of self-identity as well as isolation is expanded on in the current study, while it is discussed in mainly a quantitative fashion in the literature (Barr, 2018; Lewis, 2019).

The consequences of *the risk* parallel consequences to trauma in the literature (Hally et al., 2021), although participants do provide a more direct decision pathway to staying or leaving without the detailed focus on unwanted and negative trauma symptomology, likely due to the focus of the interview questions on management. Contingencies of agency, empowerment, and hope for change were likewise parallel to the literature findings (Cavaliere et al., 2010; Ford et al., 2017; Walden et al., 2020). The compounding nature of *the risk* is echoed in many studies, with stressors and trauma adding up exponentially (Brand et al., 2021; Walden et al., 2020). The finding of increased pressure and feelings of responsibility for self as well as the unit as a whole, is a novel covariance. This may be due to the local context and conditions of the value placed on nursing as well as the work culture and chronic nature of resource and staffing issues at TMH.

The psychosocial process used to address the problem of *the risk* is *finding meaning.* The processes within *finding meaning* are *seeking closure* and *support* and *setting boundarie*s. *Seeking closure* is accomplished with formal and informal *support* and education. *Support* is well documented in the literature, with peer support as the most common and most effective management strategy used (Bry & Wigert, 2022; Downey et al., 1995). In this study, peer support is also central to trauma management, although it is more deeply entangled in workplace culture, with greater highlighting of the nuance of isolation from non-NICU nurses. Formal support such as counselling and debriefings are also well documented in the literature, with similar factors such as timeliness, accessibility, and psychological safety clearly set out as requirements (Woolgar et al., 2021). Furthermore, Woolgar et al. (2021) establishes the necessity of debriefings, or group meetings after traumatic events, to empower nurses and aid in feelings of agency.

The current study expands on this with the possible damage and re-traumatization from improper debriefings that limit support to emotional expression only instead of combining emotional support and practice solutions. The need for specialized education leveraged to meet NICU nurses' needs, and the support of a robust policy and procedure, as noted in this study, are also found in the literature (Favrod et al., 2018; Cooper et al., 2018).

Setting boundaries is not language that is used in the literature but is reflected in mitigation measures such as raising awareness and advocating for better resources and treatment from administration, which are noted management strategies in the existing research (Thomas et al., 2022). While the findings of this study concur with the literature that *finding meaning* through *closure and support* are largely relationship based, this study found that nurses sought support from mostly other nurses and did not seek support nurse-to-physician or nurse-to-other HCP (Woolgar et al., 2021; Sano et al., 2018). Power imbalances and specifically the nurse-physician relationship were discussed to a greater extent in the literature than was found in the results of this study, removing a suggested support. This may be due to high turnover of both nurses and neonatologists or could be an area that could be developed to aid in the local context.

The results from this study closely parallel Walden et al. (2020)'s work aptly titled "What Keeps Neonatal Nurses Up at Night and What Gets them Up in the Morning?" Walden et al. examined occupational stress and found that meaning making activities were central to management, such as positive experiences with patients and families and professional pride and satisfaction. This close parallel of findings to the current study suggests that not only are the factors of limited resources, mistakes, and

failure to rescue causes of worry and stress, but are actually traumatic to nurses. As the identified problems are nearly identical, so too are solutions that focus on making meaning and increasing fulfilment and professional satisfaction. This then can be expanded on by the current study to complement other findings in the literature and directly address the key management strategy of peer support.

The focus for this study was not on causes of trauma, although it was often discussed in interviews due to the subject matter. The variety of causes were similar to those found in the literature, blurring trauma and stressors similar to Bry and Wigert (2022) and Thomas et al. (2022). *The risk* involved many of the noted traumas such as death and dying, staffing concerns, and limited resources. While Favrod et al. (2018) differentiated stressors from trauma, this would have directly contradicted the self-identification and self-defined nature of the current study. The current study also offered the opportunity for participants to express their specific needs for support, including asking what had been effective in the past as well as what they would like to receive in an ideal world. This parallels the diverse causes as well as symptomology of trauma in the literature. Existing literature includes mainly static points and quantitative inquiry into supports, which may limit the data obtained as well as the rich discussion around trial and error of management strategies. Interventions in the literature are often not monitored on an ongoing basis for the dynamic and evolving needs that may be better captured by more open-ended questions. By focusing on management strategies and self-defined trauma, the current study findings expand on other more descriptive studies while also providing a building block for adaptation of research to front line use through theoretical knowledge building.

Implications

Trauma in NICU nurses has many causes and far-reaching impacts on wellbeing, continued employment, and care delivered. *The risk of meaningless harm* is at the root of many of these unwanted negative trauma symptoms and addressing it is an opportunity to improve outcomes for all concerned. By supporting nurses in *finding meaning*, employers, family, friends, colleagues, and nurses themselves can better manage their trauma and have better outcomes for their patients and themselves.

The risk may be present to a certain degree, as is trauma, due to the nature of NICU nursing. However, there are many variables that can be acted upon. A key issue is the debriefings currently offered, with an external leader and a focus on emotions only. This is not only a management opportunity that requires support, but the way they are currently conducted increases *the risk* and trauma. Debriefings, with an internal guide that allow for validation and explanation of actions and choices amongst the entire treatment team, with a focus on improvement and change, is the intervention most discussed in terms of need for *support* from administration and the health care team. This intervention is well documented in the literature, with several studies examining the most effective opportunity to deliver debriefings for the support of nurses and other HCPs (Bry & Wigert, 2022; Cavaliere et al., 2010; Figuera et al., 2016).

Finding meaning illustrates the need for change at many levels within the healthcare system. Enabling nurses to be part of the solution is in effect part of the solution itself as it contributes to them *finding meaning*, validates their work and contributes to the hope for change and improvement. Future opportunities for research include other methodologies examining *meaning*-making activities and needs in this

demographic, adding to the body of work from Favrod et al. (2018), Walden et al. (2020), and others. The identification of the problem and the process nurses engage in demonstrates that instead of assuming what causes NICU nurses' trauma, they should instead be engaged in the research process and be empowered with the opportunity to come up with their own solutions and identify their own management strategies.

Research conducted from within the demographic, while increasing the risk for bias, is supported by findings of participants feeling they cannot be understood effectively by someone who has not been exposed to NICU nursing, and is also similar to study findings from Walden et al. (2020). This study advances the literature by removing the limitations of specific terminology such as moral distress and burnout and allowing participants to self-define and self-identify trauma and examine effective management strategies. Having findings parallel to those of Barr (2018), Brand et al. (2021), Favrod et al. (2018), Lewis (2019), and Walden et al. (2020) among others, means that research terminology could be expanded and still capture the phenomenon of interest in more general terms, allowing for further opportunities for intervention and support.

Limitations

Limitations of this study include a small sample size. Although a variety of demographics were present in the sample, the small sample size did not allow for all variables to be captured. As an example, international nurses or male-identifying nurses would be a demographic for future research. A cross-sectional design limits the capture of the dynamic research subject to a snapshot. By limiting the research to a single centre, variability in environment is limited and could skew data. The writer is a member of the population that was interviewed and while the methodology was closely followed in an effort to limit bias, bias may still be present and may affect interpretation.

Finally, the transferability of the study findings is limited by the specific circumstances of the unit where participants work. It is likely that they have different working conditions than larger centres or smaller centres with less acuity. This unit is characterized by recent turnover and low staffing that has become chronic, and as a result fewer experienced NICU nurses and more novice nurses to the specialty make up the staffing complement. Another limitation is the COVID-19 pandemic may have influenced the findings' validity and generalizability by introducing a temporary influx of travel nurses. The circumstances required to limit the spread of the virus meant that there were less staff and more difficult logistics due to quarantine, as well as a global shortage of trained nurses within the hospital regardless of speciality. This was somewhat mitigated by travel nurses, but this was a temporary solution. This study was conducted in 2023 when quarantine had been lifted, but masking and other infection control methods were still impacting hospital nursing. The reality of the setting now as time passes since the more stringent lockdowns and staffing shortages may impact specific

contributors of *the risk*, but some degree of *the risk* is unchanged, as are the support needs for management strategies. Other centres may have similar contributing factors of short staffing and turnover, or they may be different, limiting transferability.

Conclusion

NICU nurses are exposed to ongoing trauma throughout their career that has lasting impacts on all parts of their lives. This trauma and its negative consequences are caused by *the risk of meaningless harm.* The need is clear for nurse-driven solutions that increase the opportunity for *finding meaning* through debriefings, *closure*, and a general focus on *support* of staff looking after the hospital's smallest patients. If these management strategies cannot be supported and integrated, nurses will protect themselves by *setting boundaries*, up to and including leaving the job they loved and that brought them joy and fulfillment.

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Appendix A-Letter of Information

Letter of Information

Research Project
Trauma in NICU Nurses: A Grounded Theory Study
Researcher
Ashley McKim, Registered Nurse and Master of Nursing Student, University of New Brunswick. Email: ashley.mckim@unb.ca
For further questions about this research, you may contact the Chair of the UNB Research Ethics
Board, Dr. David Coleman by email at dcoleman@unb.ca or by telephone 1 506 451 6977
Supervisor
Dr. Petrea Taylor, RN MH PhD, Faculty of Nursing, Moncton Campus
University of New Brunswick
Email: petrea.taylor@unb.ca
(506) 962-4690

What is the study about?
The purpose of this study is to develop a mid-range theory about how Neonatal Intensive Care Unit (NICU) RNs who are working or have worked at The Moncton Hospital experience and manage occupational trauma using a Grounded Theory (GT) methodology.
What will happen during the study?

- I will be invited to talk about how I experience and manage trauma incurred in my work as a NICU RN at TMH. This will be done in a private video interview online or an in-person interview with Ashley. The interview will last about 1 hour. The video-call software is "Microsoft Teams". UNB uses this software with built-in security to ensure privacy. Ashley will email me instructions on how to set up "Microsoft Teams" as a guest user as needed.
- Our voices during the interview will be recorded and typed word for word. This data will be saved in a secure file folder on a password-protected computer. Participants will have the choice of whether to use visual or audio only. The visual part of the video call will not be recorded. The recording of the interview will be deleted once transcription is complete.
- Ashley will share some of the final results of the study via email if wanted.

Privacy

- No one else but Ashley and her supervisor will see the typed interview files.
- My real name and contact information will not be on the interview file, only an ID code.

- Ashley is the only person who knows which interview is mine. Any of my personal information will be kept in a different and secure place from the interview files. My name will not be used in the final report or in any public use of the study findings. Any specific information during the interview that could be used to identify me will not be transcribed. All information in the final research findings will be aggregated so I cannot be specifically identified by readers of the final report.
- Interview transcripts and consent of participants will be kept in a secure file in password protected computer for 2 years after the study. After this time, the documents will be erased.

Benefits

- Sharing my experiences in this study may assist other RNs working in the NICU or elsewhere in managing trauma incurred at work.
- Talking about my experiences might help me to see my strengths as I have managed occupational trauma. Peer support is widely accepted as a potential tool for management of trauma and this interview process may fulfil part of or this need for me.
- Being in this study may help develop or target areas for improvement at an organisational level, including what supports should be highlighted or developed to support frontline RNs in TMH NICU and beyond.

What about risks?

- Talking about the challenges I may have experienced could cause me discomfort and stress.
- Ashley will help me to connect to resources that can help me deal with discomfort or stress. A list of accessible supports such as the Employee and Family Assistance Program will be given to me if I think that will be helpful.

Other

- I know that my participation is completely voluntary.
- I know that I may choose not to answer any question and I can choose to stop the interview at any time. I may withdraw from the study at any time without having to give a reason, up until group data is used in the final process, whereupon my data cannot be feasibly isolated from the whole. A list of support services will be given to me if I choose to stop the interview or withdraw from the study or at any time I request it.
- I know that the study findings will be shared with others as a thesis and may also include presentations and articles to educate others. In the case of another study, Ashley would apply for ethics approval before using the information.

- If I experience any distress during the interview, Ashley will ask how I would like to proceed. She will offer a break from the questions and offer me support. I can choose to stop at any time or do the interview at another time.
- If I wish, I will have a copy of the final report summary at the end of the study. My consent to receive this is kept separate with my contact information and not with my interview data.
- I have been given a chance to ask questions and all have been answered to my satisfaction.
- If I have any additional concerns, information to add, or wish to withdraw from the study at any time, even after the interview, I will contact Ashley.
- Ashley is aware that as a co-worker as well as a researcher she is in a privileged position and will make every effort to safeguard my information and trust. Any concerns I have about confidentiality or use of my data or impact on employment or relationships have been addressed to my satisfaction prior to proceeding with the interview. I understand that Ashley hopes that common experience will make it easier for me to discuss my experience and management of trauma in a non-judgemental and peer-supportive environment.

Do you have any questions about this study or your participation in it? Yes/No

Do you wish to proceed with participating in the study? Yes/No

Name:_____ Date:_____

This project has been reviewed by the UNB Research Ethics Board and is on file as

REB 2023-050

Appendix B-Advertisement

Sample Advertisement and Eligibility Form

Research Study Opportunity

NICU Nurses deal with a lot occupationally, including trauma because of their jobs. I am seeking to understand what this means and how you manage it.

What do I need from you? One hour of your time for an interview in person or virtually through Microsoft Teams. You would be asked to discuss your experience as a NICU nurse, how this has impacted you, and how you manage this impact.

To be eligible, you must be a NICU RN at The Moncton Hospital or have been one for at least a year out of the past 5 years, be willing to complete the interview in English, and have access to an email address to set up the interview. Please contact me at ashley.mckim@unb.ca.

This study has been reviewed by the UNB Research and Ethics Board and is on file as

REB 2023-050.

Appendix C-Interview Guide

Interview Guide

Opening statement: NICU nurses are witnesses to the beginning of life and also to death as part of their job.. Thank you for meeting with me to share your experiences. In this study, I have referred to wanting to know about your traumatic experiences. This can be defined however you see it. In this way, I would like to understand what negative impact your job has had on you physically, mentally, and spiritually, with a focus on what you do to manage this impact.

General:

- *Tell me about your experiences as a nurse in the NICU, including experiences you find traumatic.*
- *What experience or type of experience caused you the most difficulty? How do you manage this type of experience?*
- *Tell me about the strengths and challenges in managing these experiences.*
- *If expansion required: What did you find most helpful in management? What increased your difficulty in management? What would you do again? What has not worked in the past?*

Demographics:

- *How long have you worked in the NICU in general? At The Moncton Hospital?*
- *How long have you been a nurse?*
- *Tell me about your level of training/experience in the NICU.*

What one person considers a part of the job may be a stressor or traumatic for others. There is no wrong answer. You define the impact on you; it is what you say it is.

This interview guide is semi-structured and may change based on purposive sampling and data collected.

Curriculum Vitae

Candidate's Full Name: Ashley McKim

Universities Attended: University of New Brunswick, Bachelor of Nursing, 2014

Publications:

Conference Presentations: EPIQ Poster Presentation 2018,2020

UNB Nursing Research Day 2023