

Traumatic Birth History as a Predictor for Burnout in NICU Nurses: Time for a Paradigm Shift

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Abstract: The etiology of NICU nurse burnout focuses primarily on job-related factors. Burnout resulting from countertransference stress between nurses and patients is unexplored. This study explored the novel concept that nurses' traumatic perinatal histories may be associated with their burnout. Two hundred eighty-three NICU nurses completed the Maslach Burnout Inventory and a Birth History Survey. Multiple regression analyses determined which demographic and birth history variables were predictive of burnout. Younger age ($p < .001$), history of NICU hospitalization ($p < .01$), heelsticks ($p < .05$), and precipitous delivery ($p < .05$) were significant predictors of burnout. The concept that NICU nurses are vulnerable to countertransference stress stemming from traumatic early experiences received some support. Future longitudinal research is warranted.

Keywords: prenatal and perinatal psychology, birth psychology, birth trauma, countertransference stress, burnout, Neonatal Intensive Care Unit (NICU)

The time for a paradigm shift in Neonatal Intensive Care Unit (NICU) nursing has come. Within mental health professions, it is well established that the practitioner's own psychological health profoundly matters to the health and safety of one's patients, and that a prudent therapist will undergo personal supervision (i.e., psychotherapy) in order to become an efficacious care provider and prevent professional burnout. Similarly, the holistic nursing framework recognizes that the nurse must be engaged in

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her¹ own healing process in order to be an effective healer for her patient (American Nurses Association, 2013). The concept of “doing one’s own *psychological* homework,” specifically, has yet to be widely applied within the nursing profession, and has never been conceptualized within the pediatric or neonatal intensive care setting. While the pervasiveness of burnout in NICU nurses is well established in the literature, a clear etiology (and thus clear implications for treatment) is lacking. Most of the literature focuses on *external*, job-related causes of burnout; in contrast, this study explored the novel concept that not only might the NICU nurse’s own psyche be associated with her risk for burnout, but it is her very earliest life experiences in particular, which may matter most.

Purpose of the Research and Guiding Assumptions

Grounded in Prenatal and Perinatal (PPN) Psychology theory, the purpose of this study was to determine whether nurses’ traumatic birth histories are associated with their levels of professional burnout. The assumptions guiding this research are threefold:

- 1) traumatic events—both physical and psychological—may occur throughout the prenatal period into infancy and may be stored as implicit memories that have the potential to be “triggered” or re-experienced later in life;
- 2) the experiences of burnout and birth trauma are notably similar and thus it is theorized that the two may not be intra-psychically differentiated; and
- 3) countertransference stress (while caring for NICU infants) that stems from an unresolved traumatic birth history is theorized to be a mechanism by which burnout may develop. (See below for a more thorough description of countertransference stress).

Literature Review

Overview of Burnout

Working in a NICU entails constant exposure to the fast-paced, “life and death” nature of critical care fraught with highly emotional and often ethically challenging aspects. Accordingly, the presence of burnout in nurses is well documented, as are its myriad of negative consequences, including physical and mental ailments, increased use of sick time, and substance abuse (Bartz & Maloney, 1986; Braithwaite, 2008; Downey,

¹While the author recognizes that nurses may identify as female, male, or agender, for simplicity, nurses will be referred to as female throughout this paper, since they are the dominant gender population in the profession.

Bengiamin, Heuer, & Juhl, 1995; Favrod et al., 2018; Oehler & Davidson, 2002; Oehler, Davidson, Star, & Lee, 1991; Poncet et al., 2007; Tawfik et al., 2017; van Servellen & Leake, 1993; Yam, Rossiter, & Cheung, 2001). The current literature is narrow in scope in that it primarily focuses on external, job-related contributing factors, such as scheduling issues (Poncet et al., 2007), interpersonal conflicts with coworkers (Oehler & Davidson, 2002; Poncet et al., 2007), job stress and tension (Oehler & Davidson, 2002; van Servellen & Leake, 1993), younger age/fewer years of experience (Bartz & Maloney, 1986; Poncet et al., 2007), caring for dying infants (Downey, Bengiamin, Heuer, & Juhl, 1995; Poncet et al., 2007), and other work-related stressors (Braithwaite, 2008; Favrod et al., 2018; Tawfik et al., 2017). Additionally, burnout theory suffers from conceptual confusion in that a clear and comprehensive understanding of its etiology has not emerged. For instance, much of the literature erroneously conflates burnout with secondary traumatization (Frenkel, 2004), compassion fatigue (Stevens-Guille, 2003), caregiver stress (Ewing & Carter, 2004), and/or disenfranchised grief (Doka, 1989). As a result, a consensus on the best way to treat burnout remains elusive.

Countertransference Stress

In addition to job-related factors, there exists another important yet overlooked factor that may contribute to burnout: the activation of nurses' unresolved psychological material. Countertransference stress (Glod, 1998) and trauma recapitulation (Castellino, 2005; Emerson, 1998) are concepts that describe the process by which a difficult or traumatic aspect of a person's past may become "triggered" or re-experienced in present time. In the nurse-patient relationship, countertransference stress occurs when the nurse experiences emotional stress because some aspect within that relationship reminds her, either consciously or unconsciously, of a previous painful experience (Ens, 1998; Frenkel, 2004; Jackson, 2004; O'Kelly, 1998).

Similarly, trauma recapitulation occurs when a person is compelled to engage in behaviors or create experiences, either consciously or unconsciously, that re-enact the trauma in an attempt to resolve it (Castellino, 2005; Emerson, 1997, 1998). For example, some nurses are drawn to their profession in order to resolve their early childhood traumas (Pines, 2005). Importantly, the re-experiencing of past traumas may manifest as somatic dysregulation, such as rapid heart rate, breathing changes, and numbness, to name a few (van der Kolk, 1994). That is, implicit memories can be stored and later re-experienced through the body and at times may even bypass cognition or consciousness awareness (Rothschild, 2000).

While the holistic nursing framework (American Nurses Association, 2013) acknowledges the importance of nurses' self-care, self-awareness,

and the relationship between countertransference and nurses' emotional challenges (Cumbie, 2001; Ens, 1998; Gilkerson, 2004; Jackson, 2004; Jones, 2004; O'Kelly, 1998), no authors have considered this within the nurse-*infant* relationship. The notion that nurses are in relationship with their infant patients is not well recognized, likely because our current culture does not fully acknowledge the sentience of infants and prenatates, nor their capacity for memory and consciousness during their very earliest periods of development².

Prenatal and Perinatal Psychology

David Chamberlain writes, "I think it is time we set aside the notion that the immaturity of the physical brain at birth makes birth memory impossible," (1999a, p. 67). He adds:

Birth memories are a new form of literature and are autobiographical documentaries on the experience of birth, the nature of modern obstetrics, and the complex relations of newborns with parents, siblings, and birth professionals. (Chamberlain, 1999a, p. 71)

A burgeoning body of literature from multiple interdisciplinary fields, including Fetal Programming, Developmental Origins of Health and Disease, Infant Mental Health, Epigenetics, Neurodevelopmental Psychology, Consciousness theories, Attachment Theory, Psychoneuroendocrinology, and Prenatal and Perinatal (PPN) Psychology, all point to the concept that what happens during the earliest phases of development—perhaps even pre-conception—may have life-long implications. Specifically, the grassroots field of PPN Psychology posits that:

- 1) prenatates and infants are more conscious and more capable of learning/memory than ever thought before, and
- 2) implicit memories formed very early in development have the potential to be remembered or re-experienced later in life (Castellino, 2005; Chamberlain, 1999a; Chamberlain, 1999b; Chamberlain, 1999c; Emerson, 1997; Emerson, 1998; Landsman, 1989; McCarty, 2004; Noble, 1993; Roedding, 1991; Salk, Lipsitt, Sturmer, Reilly, & Levat, 1985; Siegel, 1999; Verny & Weintraub, 2002; Ward, 1999, 2004).

² The Newborn Individualized Developmental Care and Assessment Program (NIDCAP) is the only organization within mainstream nursing and psychology literature to state that nurses are "in relationship" with NICU infants (Als, 1999). However, although NIDCAP acknowledges how the nurse's behavior affects the infant, it fails to recognize how the infant may in turn affect the nurse's experience. NIDCAP fails to acknowledge that countertransference (and thus countertransference stress) may be activated within this relationship.

Psychiatrist, Thomas Verny, MD, describes the mother's womb as the first "school" her infant attends that from the moment of conception they are in constant dialogue on molecular, sensory, and intuitive levels (Verny & Weintraub, 2002). For instance, infants born to mothers with PTSD secondary to a traumatic event during pregnancy tend to exhibit the same abnormal cortisol levels as their mothers, as though they, too, were experiencing PTSD (Yehuda et al., 2005).

Zoologist Lorenz first described the process of imprinting in animals: an imprint can be defined as a "very fast, single-event learning that happens during a time of extreme stress or transition" (Noble, 1993, p. 56). Imprints are mediated via the implicit memory system and exert their effects through the unconscious aspects of the psyche (Emerson, 1998); that is, implicit memories are stored and retrieved via the body. PPN Psychology posits that there exists the potential for traumatic imprints to occur throughout the perinatal period. In particular, many obstetrical and neonatal care interventions, though intended to sustain life, are often the very events later recalled as painful or traumatic. Shock syndromes, power complexes, boundary complexes, bonding deficiencies, control/rescue complexes, annihilation, and tactile and gaze aversion defensiveness have been described (Emerson, 1997; Emerson, 1998), especially when interventions are used unnecessarily. During birth regression therapy, Emerson notes clients have reported experiences of pain, intrusion violence, coldness, fear, invasion, interruption, feeling drugged, loss of control, loss of power, loss of motivation, numbing, freezing, spacing out, helplessness, and terror.

Traumatic obstetrical interventions and near-death experiences at birth have been associated with later suicidal behavior (Roedding, 1991; Salk et al., 1985; Ward, 2004). For example, asphyxiation during birth was noted to be four times higher in suicides by strangulation, hanging, and drowning than in control groups (Roedding, 1991).

Additionally, imprints of loss within the family system during the perinatal period (such as previous fetal loss, abuse, divorce, death, natural disasters, etc.) have been described as debilitating to the developing fetus or infant (Castellino, 2005).

An essential assumption to the current research is that the reported experiences of birth trauma and feelings of present-day burnout are notably similar and thus may not be intra-psychically differentiated. What then, are the implications for people who have experienced early trauma and are exposed daily to neonates experiencing those same traumas? *Might NICU nurses who had perinatal trauma be inundated repeatedly with reminders of their own traumatic early histories?*

One cannot ignore the emerging literature across multiple disciplines that, generally speaking, what happens very early on may have a life-long impact. Recognizing it can be ethically and logistically challenging to study PPN Psychology via traditional, "gold-standard" methods (such as

randomized-controlled trials) most valued in medicine, and because PPN Psychology literature is comprised primarily of case studies and qualitative design, its knowledge has not been incorporated into the mainstream medical realm. The current study, however, is one of the first to test this theory empirically.

Methods

Participants and Sampling

Nurses who were members of the National Association of Neonatal Nurses (NANN) and living in California were recruited. The mailing address labels for all 936 Californian NANN members was purchased; 29 were discarded because the author knew these individuals personally and another seven were discarded randomly. A total of 900 packages containing an invitation letter and two surveys for completion were mailed to participants. Two hundred and ninety-five nurses (33% response rate) returned the surveys and 12 were excluded due to either late or incomplete data, yielding a final sample of 283 nurses. The Santa Barbara Graduate Institute IRB granted approval for this study and informed consent was implied if participants returned completed surveys. Sample demographics are summarized in Table 1.

Table 1 Sample Demographics (n = 283)			
		<u>FREQUENCY</u>	<u>%</u>
<u>GENDER</u>			
	Female	279	98.6
	Male	4	1.4
<u>AGE</u>			
	≤30	39	13.8
	31-40	47	16.6
	41-50	83	29.3
	51-60	95	33.6
	≥60	15	5.3
	Missing	4	1.4
<u>PARTNERSHIP STATUS</u>			
	Single	57	20.1
	Married/Partnered	185	65.4
	Separated/Divorced	32	11.3
	Widowed	7	2.5
	Missing	2	0.7

<u>ETHNICITY</u>		26	9.2
	Asian	3	1.1
	African American	219	77.4
	Caucasian	17	6
	Hispanic	18	6.4
	Other/Combination*		
<u>RELIGION</u>		87	30.7
	Catholic	79	27.9
	Christian	33	11.7
	Protestant	40	14.1
	Other/Combination**	43	15.2
	No Affiliation	1	0.4
	Missing		
*American Indian, Alaskan Native, Native Hawaiian, and Other Pacific Islander were collapsed into the "Other/Combination" category.			
**Buddhist, Eastern Religions, Hindu, Jewish, Muslim, Orthodox, and Sikh were collapsed into the "Other/Combination" category.			

Measures

Two questionnaires, the Maslach Burnout Inventory (MBI; Maslach, Jackson, & Leiter, 1996) and a Birth History Survey (BHS) were utilized. The MBI is one of the most widely used, validated burnout assessment tools and is designed to capture respondents' self-reported frequency (ranging from zero [never] to six [everyday]) with which they typically experience the feelings described in each of three subscales: Emotional Exhaustion (EE; nine items), Depersonalization (DP; five items), and Personal Accomplishment (PA; eight items). On the EE and DP subscales, a higher numerical score indicates a higher level of burnout, whereas on the PA subscale, a higher score indicates a lower level of burnout.

The BHS was developed by the author and consists of 35 multiple-choice and Likert-scale questions about participants' demographics, work experience as a nurse, and self-report of their perinatal histories including a wide range of medical interventions at birth, neonatal nutrition, mothers' obstetrical histories, and other pertinent PPN Psychology-related information. Participants were instructed to report events whether they were completely sure or simply "had a hunch" that the particular event occurred during their birth and or newborn period.

Methods

The hypothesis of this study was that nurses with traumatic birth histories are more likely to experience burnout (i.e., greater Emotional Exhaustion, greater Depersonalization, and reduced Personal Accomplishment) than their peers without such histories. All BHS items regarding perinatal/birth history were tested in a series of regressions along with demographic and work experience items. Certain BHS items were highly correlated with one another (e.g. age and years of nursing experience) thus only one of the similar items was selected for the equation in those instances. Because level of burnout is scored on three separate subscales (EE, DP, and PA), the hypothesis was tested using three separate multiple regression equations. Based on the sample size, a maximum of six predictor variables per equation was suggested; all BHS variables (including demographics and birth history) were initially studied for frequency and co-occurrence (cross-tabs) in order to identify which items most significantly accounted for variance in burnout. For each regression, these six BHS items were then entered as predictor variables: NICU Hospitalization (whether participant was in a NICU as an infant), Heelsticks (whether participant had blood sampling via heelstick as an infant), Precipitous Delivery (whether participant was born precipitously or “very fast”), Feeling Called (whether participant felt “called” to work in the NICU), Age (participant’s present day age in years), and Religion (whether the participant identified with some religious affiliation). EE, DP, and PA scores, respectively, were entered as the dependent variables.

Results

Levels of Burnout (MBI)

Participants’ EE scores ranged from 0-53 with a mean of 18.4, indicating a “moderate” level of EE burnout. Their DP scores ranged from 0-22 with a mean of 4.2, or a “low” DP burnout. Their PA scores ranged from 14-48 with a mean of 38.4, or a “moderate” level of PA burnout.

Birth History (BHS)

Type of Delivery. Two hundred and fifty-one (88.7%) reported being born by vaginal delivery and 25 (8.8%) by caesarean section. Seven (2.5%) indicated “I don’t know.”

Gestational Age. Thirty-four (12%) reported being born prematurely, 39 (13.8%) post-maturely, and 195 (68.9%) “right on time.” A remaining 15 (5.3%) responded “I don’t know” or left the item blank.

NICU Hospitalization. Twenty-nine (10.2%) nurses spent time in NICU or special care nursery for an average length of stay of 37 days, with all length of stays ranging from several hours up to nine months. The remaining 247 (87.3%) responded they were not admitted for advanced care.

Maternal Analgesia During Labor and Delivery. Fifty-eight nurses (20.5%) reported their mothers received “no drugs for pain control,” 46 (16.3%) reported “one to several doses; mom awake and conscious,” 49 (17.3%) reported “one to several doses; mom sleepy or ‘knocked out,’” and 21 (7.4%) received general anesthesia. One hundred and six (37.5%) reported “I don’t know” and another three (1.1%) left the item blank.

Family Circumstances. Experiences of loss for the participant’s mother (prior to conceiving the participant), including miscarriage(s), abortion(s), stillborn birth(s) or some other loss of a child were reported by 49 (17.3%) of the nurses; 208 (73.5%) reported no experiences of loss and 26 (9.2%) reported they did not know. Thirty-four (12%) nurses reported their parents had been hoping for a child of the opposite sex whereas 148 (52.3%) did not report this. Another 100 (35.3%) did not know and one (0.4%) left the item blank. Nine (3.2) of the nurses were adopted, although their age at the time of adoption was not sought. Four (1.4%) left this item blank and the remaining 270 (95.4%), therefore, were not adopted.

Nutrition. Eighty-one (28.6%) were exclusively breastfed, 126 (44.5%) were exclusively formula-fed, and 54 (19.1%) were both breast- and formula-fed. Nineteen (6.7%) of the nurses did not know, and three (1.1%) left the item blank.

The majority (222, or 78.4%) replied they had “few or no feeding challenges” during the first month of life. Twenty-five (8.8%) reported a “moderate degree of feeding challenges,” such as poor sucking or digestive problems and nine (3.2%) reported a “high degree of challenges,” such as the need for a feeding tube and/or intravenous fluid therapy. “I don’t know” was reported by 27 (9.5%) of the nurses.

Obstetrical Interventions. Perhaps the most intriguing yet cumbersome item on the BHS inquired about obstetrical interventions and medical events during the nurse’s birth and/or newborn period. This survey item contained 16 events theorized to be potentially traumatic to infants. Nearly half of the nurses (134 or 47.3%) reported that they experienced one or more of these events while the remaining 149 (52.7%) either selected “I don’t know,” wrote “none” in the margin, or left the item blank. A summary of these responses is provided in Table 2.

Table 2 *Obstetrical Interventions and Medical Events (n = 283)*

	<u>FREQUENCY</u>	<u>%</u>
Heelsticks	63	22.3
Forceps Extraction	29	10.2
Precipitous Delivery	20	7.1
“Other” Obstetrical Emergency or Challenge	20	7.1
Jaundice that Required Phototherapy	16	5.7
Induction/Augmentation with Drugs	13	4.6
Vigorous Suction and/or Additional Neonatal Resuscitation	12	4.2
Breech/Transverse Presentation	12	4.2
Electronic Fetal Monitoring	11	3.9
Maternal Hemorrhage	8	2.8
Nuchal Cord	6	2.1
Shoulder Dystocia	2	0.7
Loss of Twin/Multiple	1	0.4
Vacuum Extraction	1	0.4
Circumcision	1*	0.4*
Fetal Scalp Monitor	0	0.0
Prolapsed Cord	0	0.0
“I Don’t Know,” Blank, “N/A or “None”	149	52.7

**Only 4/283 participants were male*

Traumatic Birth History as a Predictor for Burnout

Birth method, gestational age, adoption, maternal loss, parents wanted a child of the opposite sex, maternal drugs (for analgesia) during labor, nutritional substance and characteristics, and all birth interventions—with the exception of heelsticks and precipitous delivery—failed to account significantly on any of the three subscales. It should be noted, however, that several variables received a high rate of “I don’t know” or blank responses.

The remaining BHS variables were identified as significant predictors for burnout: NICU Hospitalization (PA, $p = <.01$), Heelsticks (DP, $p = <.05$), and Precipitous Delivery (DP, $p = <.05$). Additionally, the demographics of Younger Age (DP, $p = <.01$ and PA, $p = <.001$), and Absence of Religious Affiliation (EE, $p = <.05$) were also shown to predict burnout. In contrast, Feeling “Called” to work in the NICU was positively correlated with lower burnout (PA, $p = <.05$). A summary of variance in burnout on each of the subscales is presented in Table 3.

Table 3 Predicting Burnout, as Defined by Emotional Exhaustion, Depersonalization and Personal Accomplishment (n = 283)

Model	EE				DP				PA			
	1	2	3	4	1	2	3	4	1	2	3	4
BHS Variable	β	β	β	β	β	β	β	β	β	β	β	β
NICU Hospitalization	.077	-	-	.067	.075	-	-	.016	-.152*	-	-	-.182**
Heelsticks	-	.037	-	.019	-	.156*	.154*	.154*	-	.064	-	.092
Precipitous Delivery	-	-	.50	.039	-	-	.165*	.159*	-	-	.042	.068
Feeling Called	-.035	-.027	-.036	-.035	-.056	-.032	-.068	-.044	.143*	.145*	.134*	.152*
Age	-.050	-.065	-.075	-.048	-.170*	-.142*	-.184**	-.145*	.220***	.242***	.227***	.235***
Religious Affiliation	-.145*	-.162*	-.158*	-.144*	-.740	-.076	-.063	-.068	.001	.009	.013	.001
Model p	.084	.075	.067	.197	.032	.004	.003	.002	.000	.002	.002	.000
r^2	.037	.037	.038	.038	.047	.065	.069	.091	.093	.072	.070	.105
Adjusted r^2	.019	.020	.021	.012	.029	.048	.052	.066	.076	.056	.054	.080

* $p < .05$, ** $p < .01$, *** $p < .001$

Discussion

Levels of Burnout

The participants scored a moderate level of burnout on both the EE and PA subscales, and low burnout on the DP subscale. Although an overall moderate level of burnout may seem somewhat benign, any presence of burnout remains emotionally costly for nurses, fiscally costly for employers, and ultimately detrimental for NICU patients and families. Furthermore, no amount of burnout should be normalized within any profession.

Birth History as a Predictor for Burnout

NICU Hospitalization. Participants who were hospitalized in a NICU as infants scored higher on all three subscales, reaching significance on PA. Twenty-two (75.9%) reported the highest possible frequencies (few times per week or every day) of “I can easily understand how my recipients feel about things,” suggesting they may have a higher degree of empathy with their patients and are, therefore, perhaps at higher risk for countertransference stress. Similarly, they reported the following only once a week: “I feel very energetic,” “I can easily create a relaxed atmosphere with my recipients,” “I feel exhilarated after working closely with my recipients,” and, “In my work, I deal with emotional problems very calmly.” Because the NICU environment typically bombards the infant’s delicate nervous system (Verny & Weintraub, 2002), they may later have more difficulty with nervous system self-regulation, including feelings of calm, relaxation, and *appropriate* energy and exhilaration (Schore, 2003a, 2003b).

Heelsticks. Participants who reported having undergone heelsticks had higher EE and DP, with DP scores reaching significance. If physical and/or environmental stressors are overwhelming to the autonomic nervous system (ANS), one’s inherent survival strategy of dissociation may be deployed as an attempt to cope with the overwhelming threat (Levine, 1997). Dissociation has been defined as the compartmentalization of one’s conscious awareness (Rothschild, 2000) and can manifest as a split between a) one’s consciousness and body, (b), one part of the body from the rest of the body, c) one’s Self from one’s emotions, thoughts or sensations, or d) one’s Self from the memory of the traumatic event (Levine, 1997). Trauma survivors are likely to utilize this dissociation strategy when present-time circumstances are similar to the original traumatic situation, even when the present reality is not actually threatening. It is plausible that a painful intervention (such as heelsticks) causes sufficient pain and subsequent ANS stress to trigger a dissociation response; nurses

who endured heelsticks as neonates, therefore, might continue to dissociate in present time because the constant exposure to the NICU environment “triggers” their bodies’ memory of pain and the ANS stress. Furthermore, such dissociation from their thoughts/emotions may prevent these nurses from connecting emotionally with their patients, hence the high level of depersonalization.

Precipitous Delivery. Participants who reported precipitous delivery had higher EE and DP burnout, with DP scores reaching significance. Survivors of trauma often report “everything happened so fast;” the person’s ANS is overwhelmed and, due to the dissociation mechanism, is literally unable to integrate all the pieces of that experience. This often presents later as numbness, dissociation, and/or amnesia (Levine, 1997; Rothschild, 2000). During precipitous birth, therefore, it is theorized that the infant’s nervous system is overwhelmed by the speed of birth and is thus unable to integrate all of the bodily sensations and transitions that occur. The speed of the traumatic event is reflected in the body by arousal of the sympathetic nervous system (SNS). In the author’s experience of attending precipitous (and other high-risk) deliveries, this same SNS arousal is usually present in every person in the room—healthcare providers included, no matter how skilled or experienced. This type of delivery is stressful for all involved and, according to PPN Psychology, stress in the birthing environment is not only contagious among adult birth-attendants, but also further amplifies the stress response in the infant (Castellino, 2005). Because NICU nurses are exposed to the stress of high-risk births on often a daily basis, and because this may mirror their own histories, this stress is theorized to trigger a countertransference stress response that may contribute to their present-day Depersonalization.

Contrary to EE and DP, Heelsticks and Precipitous Delivery seemed to buffer against PA burnout. Although these effects were small and insignificant, this contrast suggests that nurses who experienced traumatic birth events exhibit one of two outcomes: The first is EE and DP (NICU Hospitalization, Heelsticks, or Precipitous Delivery) as described above. The second is a sense of identification with and empathy for their NICU patients (in the case of Heelsticks and Precipitous Delivery) and thus an *increased* sense of Personal Accomplishment.

Porges’ Polyvagal Theory (Porges, 2009) provides theoretical support for this two-tailed outcome. Porges posits that the human nervous system is actually comprised of three branches; the commonly known parasympathetic and sympathetic branches, as well as a newly discovered third branch called the *social* nervous system. He explains that each is organized via an evolutionary hierarchy such that a mammal’s activation of the social nervous system is the most adaptive response to stress. If social nervous system responses, such as communication, love, and

empathy are ineffective at returning the body to homeostasis (via a secure attachment relationship, for example), the next, more primitive ANS branch in the hierarchy (i.e., the sympathetic or “fight or flight” system) will be activated. If the sympathetic branch is also unsuccessful at mediating stress, the parasympathetic response (i.e., immobilization, dissociation, or “freeze”) will be activated.

Porges (2009) states that both the attachment relationship and the person’s visceral states play an important role in determining which branch of the nervous system will be called upon. In trauma or insecure attachment relationships, a propensity towards the more primitive branches may develop. Likewise, a secure attachment relationship can mitigate the experience of trauma, thereby strengthening the tendency towards the “higher” social nervous system activation. Because of their varied individual ANS responses and attachment relationships, it makes sense that the participants showed two-tailed burnout outcomes in the case of Heelsticks and Precipitous Delivery. This reflects the difficulty in predicting the degree of trauma inherent within each birth intervention/event. As commonly known in traumatology, it is not *what* happens, rather, it is how each individual makes sense of what happens (Levine, 1997).

Feeling “Called.” Feeling called to work in the NICU correlated with lower burnout on all three subscales and reached significance for PA. These findings are supported by the current literature. Frenkel (2004) notes that a nurse’s early experiences coincide with her “sense of calling” to the work and that caring for a sick child enables the nurse to feel her own inherent goodness, thereby alleviating her own anxieties: “The job situation closely resembles early life situations with which the worker may still unconsciously be dealing with, and which have therefore drawn her to this type of work.” Similarly, Pines (2005) states that “career choices are influenced by unconscious forces that propel (people) to re-enact and overcome challenging childhood experiences” (p. 591); when they fail to heal these wounds, they burn out. As NICU Hospitalization was a more significant predictor of burnout than feeling called, this finding suggests that nurses who were in the NICU as infants were unable to heal their early wounds and thus had higher burnout.

Prematurity. Although gestational age was not shown to account for burnout in this sample, their rate of prematurity warrants discussion. Based on their mean age (birth year circa 1963), the sample had a prematurity rate of 12.0%, which is nearly double that of the national average of 6.8% at the time (U.S. Department of Health, Education and Welfare, 1963). This finding alone raises the question of whether nurses with traumatic birth histories are perhaps drawn to their profession as a result of their early experiences

Limitations

The most significant limitation of this study is its inability to show a direct cause-and-effect relationship between birth history and burnout. There exists some risk that the hypothesis was supported due to reasons other than those specified. For example, it was not possible within this design to assess/control for characteristics within the participants' family systems that may have predisposed the sample towards burnout. Perhaps the participants' traumatic birth events resulted in their parents feeling more ambivalent towards caring for them; this may have led to insecure attachments which would ultimately affect how the participants grew up to relate to others, including their NICU patients. For example, it has been demonstrated that infants next-born after a stillbirth have a significant increase in disorganized attachment patterns to their mothers (Hughes, Turton, Hopper, McGauley, & Fonagy, 2001).

Similarly, the BHS did not capture the parental experience of participants—that is, any potential trauma resulting from participants' experiences with pregnancy, labor/delivery etc. may have been a confounding factor. A plethora of literature notes the presence of anxiety, depression, PTSD, and psychological distress in parents of NICU infants (Lotterman, Lorenz, & Bonanno, 2019) or simply from the birth experience itself (Grekin & O'Hara, 2014), and this study was unable to capture whether parental stress may have accounted for some of the variance in burnout in this sample.

The BHS did not collect information about participants' mental health status, nor the presence of psychotherapy or other measures taken in attempt to promote emotional health in the workplace. Thus, it remains unknown whether any birth history-related variance in burnout (or lack thereof) was mitigated by nurses' mental health care.

Another limitation is that the BHS relied upon self-report and has not been tested for validity nor reliability. It was expected that a great number of traumatic birth history variables would predict burnout; due to self-report and the large number of "unknown" responses for certain events, the author believes that the occurrence of such events was in actuality higher than what was reported and that there exists the possibility of a false null hypothesis. Future longitudinal investigation utilizing obstetric records is warranted, as is further development of the BHS for reliability and validity.

Lastly, burnout may also be correlated with a number of events that occurred during the participants' lives but, as this was a modest and preliminary exploration of a novel concept, it was not possible to speculate nor measure these within the current design. Further exploration of this theory is warranted, with considerations for participants' personality type, attachment style, parental experience and mental health status/care.

Implications for Burnout Theory

This study differentiates between job-related and intra-psychic factors that originate very early in development as contributors to burnout, which is a novel and important contribution to burnout theory. These findings provide new insight into who may be at risk for becoming burned out and thus call for a wider view of the myriad factors that contribute to its development. Additionally, this wider view may inform new treatment options, such as psychotherapy, in which health care professionals could identify countertransference stress issues that make them vulnerable to burnout. Further research is warranted, however.

Implications for Nursing Practice

Although the idea that medical personnel sometimes avoid the emotionality of their work is not new, the recommendation that they have the opportunity to undergo professional supervision (i.e., psychotherapy), as do mental health professionals, is. Although the holistic nursing framework promotes nurses' self-healing, perhaps nurses' psychological health—including *within the context of the neonatal population*—warrants greater attention. It is somewhat surprising that this type of self-exploration has not thus far become a standard practice within healthcare in general, let alone the neonatal setting. It is naïve to expect medical professionals to help patients understand and metabolize their difficult emotions while they have perhaps been unable to do so for themselves, first. This may be especially true in the NICU environment, which is often wrought with life and death crises, grief, and ethical debate. As psychologist Kraemer (2006) notes:

It is deeply distressing to watch doctors and nurses become stuck in the parents' states of emotional fragmentation...the staff have great difficulty seeing past the emotional disarray – not condemning the parents as totally incompetent when terrified, rejecting them as only hostile or undeserving when angry, or pathologizing them as helpless when they become immobilized. (p.161)

In her work with pediatric burn unit nurses, Frenkel (2004) notes they seemed to feel “triumph” as though they “survived” bearing witness to patients' traumas, and that given a culture of survival and stoicism, nurses need to be able to seek professional supervision without judgment or marginalization. The overarching implication is that the role nurses' psyches play, in both their own as well as their patients' health, be more explicitly acknowledged. Frenkel reminds us that nurses have the potential to either exacerbate a patient's traumatic experience or transform it via the healing relationship into an opportunity for repair;

nurses who fail to embark on their own self-reflective journey run the risk of perpetuating their infant patients' trauma. Frenkel (2004) states:

The nurse's experience of being mothered as a baby will affect how she relates to babies in her care. If her own primitive experiences as a baby were somehow not engaged with and processed, the nurse is more likely to respond to the (...) child's pain and suffering as an attack. She may then need to move away from it, or block it out, or 'put it back into' the child. (p. 154)

Conclusion

Although PPN Psychology theory is in its relative infancy and these findings will likely seem implausible to many, the hypothesis that a traumatic birth history may contribute to burnout received some support. The importance of honoring infants' consciousness cannot be overstated, and the plethora of burgeoning data from various "fetal programming" and other early-development fields all highlight the delicacy of this critical period—not just physiologically, but mentally/emotionally as well. The notion that NICU nurses (and perhaps all healthcare personnel) are vulnerable to countertransference stress stemming from early experiences is innovative and warrants further exploration. The intention of this research was to increase nurses' self-awareness, beginning with the understanding that one's personal health is inextricably linked to the health of their patients, no matter how young. Everyone knows it is important to "put the oxygen mask on yourself first"; perhaps it is time for NICU nurses to come out of our "psychological incubators" so we can enhance the care of our patients and our *selves* as healers.

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