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Post-Traumatic Stress Disorder (PPTSD) in the Perinatal Period: A Concept Analysis

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Abstract

Aims and objectives—To report an analysis of the concept of perinatal posttraumatic stress disorder (PPTSD).

Background—Prevalence of PPTSD is rising in the United States, with 9% of the U.S. perinatal population diagnosed with the disorder and an additional 18% being at risk for the condition. Left untreated, adverse maternal-child outcomes result in increased morbidity, mortality, and healthcare costs.

Design—Concept analysis via Walker and Avant's approach.

Methods—The databases Cumulative Index to Nursing and Allied Health Literature (CINAHL), Medline, Academic Search Premier, and PsychINFO were searched for articles, written in English, published between 2006 and 2015, containing the terms perinatal and PTSD.

Results—PPTSD owns unique attributes, antecedents, and outcomes when compared to PTSD in other contexts, and may be defined as a disorder arising after a traumatic experience; diagnosed any time from conception to 6 months postpartum; lasting longer than 1 month; leading to specific negative maternal symptoms, and poor maternal-infant outcomes. Attributes include a diagnostic time frame (conception to 6 months postpartum), harmful prior or current trauma, and specific diagnostic symptomatology defined in the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition. Antecedents were identified as trauma (perinatal complications and abuse),

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postpartum depression, and previous psychiatric history. Consequences comprised adverse maternal-infant outcomes.

Conclusions—Further research on PPTSD antecedents, attributes and outcomes in ethnically diverse populations may provide clinicians a more comprehensive framework for identifying and treating PPTSD.

Relevance to clinical practice—Nurses are encouraged to increase their awareness of PPTSD for early assessment and intervention, and prevention of adverse maternal-infant outcomes.

Keywords

Perinatal; PTSD; concept analysis; integrated perinatal health framework; nurses; midwives; nursing

INTRODUCTION AND AIMS

The 2012 Bulletin of the World Health Organization (WHO) identifies maternal mental health as a global health priority. Ten percent of pregnant women and 13% of postpartum women experiencing an undiagnosed mental health disorder (WHO 2012). In developing countries, maternal mental health prevalence may be as high as 15.6% and 19.8% respectively (WHO 2014). One understudied perinatal mental health disorder is posttraumatic stress disorder (PTSD; Vesel & Nickasch 2015). Perinatal posttraumatic stress disorder (PPTSD), occurs in women during the perinatal period, not just postpartum, and is a phenomenon with unique characteristics when contrasted with PTSD occurring in adults in other contexts. Nine percent of the women giving birth in the United States are diagnosed with PPTSD and an additional 18% are documented as at risk (Beck *et al.* 2011, Grekin & O'Hara 2014). In other countries, the incidence may be as high as 21.5% (Schwab *et al.* 2012). PPTSD constitutes an important health issue placing women diagnosed with it at risk for such negative outcomes as depression, poor prenatal care, prematurity, decreased maternal-infant attachment, lack of breastfeeding postpartum, and psychological symptoms later in life (Rogal *et al.* 2007, Weinreb 2012).

PPTSD remains an understudied phenomenon with lack of conceptual clarity and diverse population samples to guide future research in this area (Seng *et al.* 2010, Seng *et al.* 2011b, Schwab *et al.* 2012, Grekin & O'Hara 2014, Vesel & Nickasch 2015). Without enhanced conceptual clarity, the development of research models to examine the relationships between its characteristics and negative health outcomes remains difficult. The purpose of this article is to fill the current gap in conceptual clarity regarding PPTSD and establish a clear identification of its antecedents and consequences as a basis for future theory development. Specifically, this article seeks to: (a) examine current perinatal and mental health literature to analyze and critique current conceptualizations of PPTSD as a basis for concept analysis; (b) utilize the Walker and Avant (2011) methodology of concept analysis to develop clear identification of the antecedents and consequences of PPTSD; and (c) propose future directions in theory development and research based upon this analysis.

Definitions of PTSD and PPTSD

PTSD has been an increasingly studied phenomenon with extant research focused on military veterans and survivors of disasters. It is defined as a serious psychological condition that occurs following exposure to a traumatic event (American Psychiatric Association [APA] 2013). Its characteristics include such symptoms as reliving the traumatic event, emotional numbing, hyperarousal, and avoidance of thoughts, places, or persons associated with the event (Foa *et al.* 2009). Wortmann *et al.* (2016) point out, widely used assessment instruments such as the PTSD Checklist-5 (PCL-5) have demonstrated reliability, validity, and diagnostic utility for PTSD screening.

The term *PTSD* appears in a variety of contexts in the health care literature, including its application with women during the perinatal period (referred to as *perinatal posttraumatic stress disorder* or *PPTSD*). Yet, the specific nature of PPTSD is relatively understudied. Presently, no documentation exists supporting the assumption that the attributes of PTSD are identical across such diverse contexts as the military combat and pregnancy/childbirth experience. The concept that PPTSD may constitute a specific and unique phenomenon in contrast to PTSD occurring in the non-pregnant adult population is an important but unexplored phenomenon.

PPTSD is typically defined as PTSD occurring around childbirth and usually postpartum in the context of a traumatic birth. In particular, midwifery literature uses the term PTSD to describe traumatic birthing if the mother is unsupported, depersonalized, and prodded without acknowledgement of her feelings (Vesel & Nickasch 2015). Women may feel they are being raped through traumatic birthing interventions they cannot control (Griebenow 2006). For example, a birth may be considered “normal” with an amniotomy performed to speed up labor; yet, it may cause PTSD if the woman perceives it as an undesired and unconsented medical intervention (Kitzinger 2006). Congruent with this view, Beck (2004) documented childbirth practices in hospitals defined as normal are traumatic if women felt powerless, uncared for, and experienced poor provider communication.

A more complex conceptualization of PPTSD emerges when researchers expand the definition of perinatal to comprise the entire period of pregnancy, childbirth, and postnatal, not just the postpartum period related to a traumatic birth. Researchers examining the physiologic changes occurring in pregnancy include women throughout the pregnancy-postnatal continuum. These researchers have found physiological alternations during pregnancy may increase PPTSD symptoms by increasing the frequency and intensity of traumatic memories through changes in the woman’s mood, motivation, social cognition, sleep, and concentration (Seng *et al.* 2005, Seng *et al.* 2010). Furthermore, these researchers have theorized the physiologic consequences of pregnancy, including alternations in the hypothalamic-pituitary-ovarian (HPO) axis and the hypothalamic-pituitary-adrenal (HPA) axis, are factors contributing to the occurrence of PPTSD. Other researchers have documented PPTSD symptoms may also spike a few weeks prior to birth (Onoye *et al.* 2013). The spike in symptoms may be related to the upcoming delivery, with birth perceived as being traumatic or a psychological stress test (Leight *et al.* 2010). Conversely, other researchers assert pregnancy in some manner attenuates symptoms of PTSD (Smith *et al.* 2006), explaining why reports of antenatal PTSD are not prevalent. This paucity of PPTSD

reporting during pregnancy, whether due to maternal underreporting or lack of agreement among researchers regarding its occurrence during the antenatal period, currently remains unaddressed.

Research into PTSD in the postnatal period, while more prevalent than its examination in the antenatal period, is often characterized by a conflation of *postpartum depression* and PPTSD (Grekin & O'Hara 2014). These two terms constitute separate diagnostic and conceptual entities, with PTSD classified as a trauma and stress-related disorder, and postpartum depression as a mood disorder (APA 2013). Consequently, the current lack of conceptual clarity in reports of women who experience depression and/or PTSD in the perinatal period precludes the construction of testable theories to increase the understanding of these phenomena.

PPTSD in Diverse Populations

There are limited studies of PTSD among ethnically diverse perinatal populations. A study of the prevalence of PTSD in the Latina perinatal population did not obtain significant results due to an inadequate sample size (Paul 2008). Another study by Onoye *et al.* (2009), evaluating changes in PTSD symptomatology and mental health during pregnancy and postpartum in the Asian and Pacific Islander populations, did not obtain significant statistical results for similar reasons. Such studies illustrate research into PPTSD in diverse populations remains a challenge. Despite the challenges, one study identified perinatal depression, low social support, and intimate partner violence (IPV) as antecedents or risk factors for PTSD in low-income Latina women during pregnancy and postpartum (Sumner *et al.* 2012). Another study, using existing data from a larger perinatal sample ($N = 1,577$), found PTSD was four times higher in African-American women ($n = 709$) than other women, primarily due to higher rates of trauma exposure (Seng *et al.* 2011a). These data, while preliminary, suggest a need for enhanced investigations into PPTSD in minority populations.

Based on these studies, it can be hypothesized female veterans, women who have experienced sexual abuse, IPV, and/or childhood abuse may experience a higher frequency of PTSD in the antenatal, intrapartum, and postpartum periods. Yet, these potential PPTSD antecedents remain relatively limited to anecdotal reports and a paucity of studies focusing on the entire perinatal period, not just postpartum. Recent meta-analyses are postpartum PTSD focused (Ayers *et al.* 2009, Grekin & O'Hara 2014, Ayers *et al.* 2016). A conceptually precise analysis of PPTSD including its antecedents and consequences that views this phenomenon as encompassing experiences across the lifespan is needed to build future research; congruent in its conceptualization, theory development, and testing.

METHODS

Walker and Avant's (2011) method of concept analysis was used in the current concept analysis of PPTSD. The Walker and Avant (2011) concept analysis consists of eight steps: concept selection; determination of analysis aims; identification of concept uses; definition of concept attributes; construction of a model case; construction of additional cases (borderline, related, and contrary); identification of antecedents and consequences; and

definition of empirical referents. While various methods of conceptual analysis exist in the health care literature, the method developed by Walker and Avant (2011) is particularly appropriate to an analysis of PPTSD. This method provides a structured, rigorous process that allows its users to obtain conceptual clarity by the identification of antecedents and consequences. This feature makes it especially useful for analysis of the PPTSD concept, presently being applied with lack of congruence with regards to its timing (only applied to the intrapartum period or across the entire perinatal spectrum). In addition, the conceptual conflation of postpartum depression with PPTSD (Grekin & O'Hara 2014), renders the identification of specific antecedents and consequences an important step in theory development.

Identification of Concept Uses

In order to identify the concept uses of PPTSD in the extant health care literature, the Cumulative Index of Nursing and Allied Health (CINAHL), Medline, Academic Search Premier, and PsychINFO databases were systematically searched using the keywords: perinatal, pregnancy, antenatal, posttraumatic stress disorder, and perinatal posttraumatic stress disorder. Inclusion criteria: articles written in English, published between 2006 and 2016, and sample size greater than 25 participants. Since Ross and McLean (2006) had published a thorough systematic review in 2006, articles prior to 2006 were not included in the scientific literature. Four systematic reviews, two meta-analyses, and eleven articles (not included in the systematic reviews or meta-analysis) were evaluated. All articles were reviewed by the framework for conducting scoping studies (Levac *et al.* 2010). The eleven articles were specifically reviewed for attributes, as Grekin and O'Hara's (2014) meta-analysis had identified attributes were not usually addressed in the health care literature. Table 1 summarizes the concept uses of PPTSD in the health care literature.

RESULTS

Definition of Concept Uses

Perinatal—PPTSD possesses varied definitions and uses. The first concept, perinatal is described in the Merriam-Webster's online dictionary (Perinatal 2013) as "occurring in, concerned with, or being in the period around the time of birth." In contrast, Leigh *et al.* (2010) used perinatal to refer to the antenatal, intrapartum, and postpartum time period, indicating they are periods of profound physical, mental, and societal role changes influenced by past experiences, and with the potential to influence future child development. The Merriam-Webster definition of perinatal is therefore very limited, given that perinatal mental health is multifaceted, and influenced by more than changes in pregnancy and postpartum.

Unique to PPTSD are the physiologic consequences of pregnancy consisting of alternations in the HPO axis that increases plasma concentrations of progesterone and estrogen (Seng *et al.* 2005). The HPO axis not only ensures proper development of the fetus but also contributes to mood and cognition changes in the mother. A second mechanism, HPA axis, increases the corticotrophin-releasing hormone, a stress hormone that affects memory, salience, social cognition, negative mood, alertness, and sleep. Animal studies reveal long-

term exposure to elevated stress hormone levels lead to enhanced fear with anxiety and depressive type symptoms, as well as retard fetal brain development (Leight *et al.* 2010). Both the HPO and HPA axes may possibly contribute to PTSD; however, additional human studies are needed to determine the hormonal interactions, effects, and timing of PTSD in the perinatal period.

PTSD—PTSD is defined as a serious psychological condition that occurs following exposure to a traumatic event (APA 2013). It is classified as a trauma and stress-related disorder, which persons as young as the first year of their life acquire after seeing or living through a perilous event. PTSD was first identified in the APA Diagnostic and Statistical Manual of Mental Disorders (DSM) as a result of war experiences (U.S. Department of Veterans Affairs [USDVA] 2013). In 1994, the fourth edition of the DSM (DSM-IV) expanded the definition of trauma to include "direct personal experience of an event that involves actual or threatened death or serious injury, or a threat to the physical integrity of self or others" (APA 2000, Paul 2008). In May 2013, the APA published the fifth edition of the DSM (DSM-5), and categorized PTSD in the trauma and stress-related disorders section, as exposure to a traumatic event is a must for diagnosis. The APA (2013) does acknowledge the variability in clinical symptoms and stress as a result of the distressing experience.

In addition to the exposure to a traumatic event, the presence of a specific number of symptoms within four distinct categories is required for PTSD diagnosis; intrusion (one symptom), avoidance (one symptom), negative alterations in cognitions and mood (two symptoms), and alterations in arousal and reactivity (two symptoms). Additional criteria requires the presence of symptoms for more than 1 month; cause significant symptom-related distress or functional impairment; and are not caused by other disorders (APA 2013). Despite the detailed diagnostic criteria for PTSD, the DSM-5 does not make use of the term *peripartum* as an onset for the diagnosis of PTSD with its unique antecedents and consequences, as it does with the diagnostic criteria for perinatal depression (APA 2013). Further clarification of perinatal and PPTSD is needed to refine concepts, and inform diagnosis and treatment.

The definition of PTSD includes variability in the disorder based upon the distressing experience (Callahan *et al.* 2006). The variability in the definition of PTSD also requires a further explanation of trauma to assist in understanding the concept. The Substance Abuse and Mental Health Services Administration (SAMHSA) at the U.S. Department of Health and Human Services (HHS), defines trauma as resulting "from an event, series of events, or sets of circumstances experienced by an individual as physically or emotionally harmful or threatening and has lasting adverse effects on the individual's functioning and physical, social, emotional, or spiritual well-being" (HHS 2014). Therefore, trauma may be defined as an event or stress perceived by the person as harmful. Congruent with this definition, Slade (2006) noted situations outside of an individual's experience, such as a birth, could potentially contribute to trauma and ultimately PPTSD.

Prior lifetime experiences of trauma that may contribute to PPTSD include: childhood abuse, IPV, sexual abuse, low social support, lower socioeconomic status, history of mental illness, drug use, illness, prematurity, and prior miscarriage or pregnancy losses (Vesel & Nickasch

2015). However, a recent meta-analysis of the postpartum period indicated the lack of quantitative studies able to identify PPTSD prevalence and risk factors (Grekin & O'Hara 2014). Another recent meta-analysis of 50 studies using a diathesis-stress model identified correlations of postpartum PTSD with pre-birth vulnerability factors contributing to PTSD postpartum: depression in pregnancy, fear of childbirth, poor health or pregnancy complications, prior history of PTSD and/or abuse, and counseling for pregnancy or birth. The identification of these factors and the identification of PPTSD occurring in pregnancy lends to extending the term of perinatal, not postpartum, PTSD (Ayers *et al.* 2016). Since these studies were primarily correlational in nature, additional longitudinal studies are required to examine the relationships between the predictors and length of time symptoms appear (König *et al.* 2016).

PPTSD may be operationally defined as the subjective view of a traumatic experience by the mother that occurred any time before conception to six months postpartum; leading to specific negative symptoms (intrusion, avoidance, negative alterations in cognitions and mood, and alterations in arousal and reactivity); lasting longer than 1 month; and contributing to poor maternal-infant outcomes (impaired attachment, and low birth weight) (APA 2013). Of importance, the diagnosis must occur during the perinatal period (defined as the period between conception and 6 months postpartum), and may be elicited by trauma occurring prior to conception, hormonal shifts in pregnancy, invasive perinatal procedures, e.g. sterile vaginal examinations, and traumatic birthing experiences. Superimposed PPTSD may occur if the woman was diagnosed with PTSD prior to conception. This definition differentiates PPTSD from other perinatal mental health disorders such as depression. However, the high comorbidity of postpartum PTSD with perinatal depression (Grekin & O'Hara 2014, Ayers *et al.* 2016), underscores the need for further research to examine these conditions longitudinally.

Definition of Concept Attributes

Core attributes are concept characteristics that repeatedly occur and assist in defining the phenomenon (Walker & Avant 2011). PPTSD attributes include the time frame for diagnosis, from conception to 6 months postpartum; influences in perinatal physiology; and specific DSM-5 PTSD symptomatology (intrusion, avoidance, negative alterations in cognitions and mood, and alterations in arousal and reactivity) for longer than 1 month causing adverse maternal-infant outcomes (Furuta *et al.* 2012, APA 2013). Unfortunately, the paucity of literature excludes further identification of attributes until additional research is completed on the entire perinatal period and longitudinally (Grekin & O'Hara 2014, Ayers *et al.* 2016).

Construction of Model Cases

Constructed cases provide examples of the concept utilizing all the concept's attributes in a model case, most of the attributes in a borderline case, and none of the attributes in a contrary case (Walker & Avant 2011). Cases were created from clinical experiences and literature synthesis.

Model case—A 21-year-old Hispanic female working a minimum wage job just found out she and her boyfriend are pregnant with her first baby. Previously experiencing sexual abuse as a child, she immediately wondered if she could survive the birth. As the pregnancy progresses into the third trimester, insomnia, poor concentration (negative alterations in arousal and reactivity), memories of the sexual assault (intrusion), and social issues at work and school occur (Followthelove 2012). Alienating herself from others and breaking up from her boyfriend, the patient reports not caring about anything (negative alterations in cognition and mood) and being overwhelmed and panicked (hyperarousal), especially if anything changed unexpectedly. Although she does seek antenatal care, she does not want to talk to the healthcare providers (avoidance) about her past sexual abuse. During her 36-week gestational age checkup, her provider requests to check her cervix for dilation based upon some contractions she reported experiencing. After the appointment is completed, the patient appears anxious and runs out of the obstetric clinic (alterations in arousal and reactivity). During her delivery, the electronic fetal monitoring, vital sign equipment, and frequent vaginal exams contribute to the patient feeling powerless and violated. At the 6-week postpartum check-up, the infant is noted to have low birth weight with the mother not appropriately responding to the infant's cues for feeding, diaper changes, and comfort (adverse maternal-infant outcomes). The mother reports insomnia due to nightmares.

This high-risk case is a model case as it contains all of the core attributes of PPTSD to include: diagnosis occurring during the perinatal period (from conception to 6 months postpartum), prior trauma (sexual abuse) and/or current (traumatic birth) the woman perceives as harmful, and specific symptomatology (intrusion, avoidance, negative alterations in cognitions and mood, and alterations in arousal and reactivity) from the DSM-5 for longer than 1 month that causes adverse maternal-infant outcomes.

Borderline case—A borderline case contains most of the PPTSD symptoms but not all. The borderline case is a woman with a normal birth by medical standards. The woman is excited about the baby and her new family. Intrapartum, she felt a tremendous loss of control and panicked at the well-being of the baby, as the baby's heart rate kept going down, and being rushed for an emergency cesarean section without her consent (traumatic experience). At the 6-week postpartum doctor's visit, she reported having symptoms of replaying the birth experience in her head again and again, insomnia, and poor concentration (alterations in arousal and reactivity). The baby's birth weight is low and the mother is not responding to the baby's cues for feeding and comfort (adverse maternal-infant outcomes).

This case is a borderline case as it contains most of the PPTSD attributes to include being pregnant, experiencing trauma during the birth (current, not prior), and adverse maternal infant outcomes. In this example, the patient only experienced some of the PPTSD specific symptoms of intrusion and alterations in arousal and reactivity that lasted longer than 1 month. However, she did not demonstrate avoidance or negative alterations in cognition and mood such as alienation and negativity.

Contrary case—A contrary case, such as a healthy pregnant woman with a healthy delivery denying a history of trauma or mental health disorder, is not considered PPTSD. The woman in this example experiences control during labor as her requests for pain

management and her birth plan is respected. The healthy woman views the birth as positive and is excited about having a healthy baby. She receives encouraging support from family and healthcare providers during the labor and postpartum (Ford & Ayers 2011). While her family cares for the baby, she is able to obtain some needed sleep. The baby gains weight after birth as noted in the 6-week postpartum check-up, and the mother responds appropriately to the baby's cues for feeding and comfort. Cleary, this case does not exhibit characteristics of PPTSD.

Identification of Antecedents and Consequences

Antecedents—According to Walker and Avant (2011), antecedents are the events that must occur prior to and in order for the concept to occur. PPTSD antecedents are challenging to define as they are limited in the literature and may overlap with current perinatal symptoms such as insomnia. One framework that assists with antecedent identification is the Integrated Perinatal Health Framework (IPHF) developed by Misra *et al.* (2003). An antecedent for PPTSD is the presence of trauma (prior or current) perceived by the woman as harmful. The meta-analysis, systematic reviews, and research currently under investigation identified perinatal complications, postpartum depression, and a previous psychiatric history as antecedents of PPTSD. Perinatal complications and abuse, to include IPV and history of childhood abuse, are frequently identified traumas specific to PPTSD (Seng *et al.* 2009, Seng *et al.* 2010, Onoye *et al.* 2013, Dodgson *et al.* 2014). Grekin and O'Hara (2014) found three or fewer studies explored variables, e.g. race and ethnicity, or reported effect sizes; preventing further evaluation of additional PTSD characteristics during the postpartum period.

Consequences—Consequences occur as a result of the concept (Walker & Avant 2011). The consequences of untreated PPTSD may lead to maternal depression, poor prenatal care, prematurity, risky behaviors, excessive weight gain, lack of breastfeeding postpartum, impaired bonding, and adverse child cognitive development, resulting in increased healthcare costs (Rogal *et al.* 2007, Witt *et al.* 2011, Weinreb 2012). The popular literature further identifies low self-confidence parenting, significant other problems, feelings of failure, and avoidance of sex as additional consequences of untreated PPTSD (Hilpern 2003).

Definition of Empirical Referents

Empirical referents are actual categories of the phenomena that by their presence demonstrate the concept. Empirical referents link the theoretical concepts to measurable components in instruments (Walker & Avant 2011). Empirical referents according to the Perinatal PTSD Questionnaire involve intrusive recollections, hyperarousal, and behavioral avoidance leading to the consequences of maternal-infant attachment difficulties postpartum (Callahan *et al.* 2006). Prenatal stress may contribute to PTSD encompassing additional empirical referents of anxiety, depression, daily hassles, aspects of psychological symptoms (other than anxiety or depression), life events, specific socio-environmental stressors and stress related to pregnancy and parenting (Rogal *et al.* 2007, Nast *et al.* 2013). The Veteran's Administration utilizes empirical referents such as stress, flashbacks, trauma, and social issues to help quantify the subjective phenomenon of PTSD (USDVA 2013). Thus, a

combination of antecedents, consequences, and empirical referents would be required to truly identify PPTSD in the perinatal period.

Summary of Major Findings

The major findings of this analysis are PPTSD possesses unique attributes, antecedents and outcomes when compared to PTSD in other contexts. From this analysis, PPTSD can be defined as a disorder arising after a traumatic experience, diagnosed any time from conception to 6 months postpartum, lasting longer than 1 month, leading to specific negative maternal symptoms and poor maternal-infant outcomes. Specific attributes for PPTSD included the diagnostic time frame from conception to 6 months postpartum, harmful prior or current trauma, and specific diagnostic symptomatology as defined in the DSM-5. Three antecedents of PPTSD were identified: trauma (specifically perinatal complications and abuse); postpartum depression; and a previous psychiatric history. The consequences of PPTSD included significant adverse maternal-infant outcomes, including maternal depression, prematurity, and low birth weight. However, the lack of racially/ethnically diverse population samples are missing in the literature.

DISCUSSION

Based on the analysis of the literature, the concept of PPTSD now is expanded to include the unique attributes, antecedents, and outcomes of women from and contributing to their lifespan. The American Psychiatric Association (2013) notes it may take up to 6 months after the trauma for symptoms to appear. Although PPTSD may occur up to one year postpartum, few studies identify symptoms of PTSD for that time period (König *et al.* 2016). This conceptualization of PPTSD, extending beyond the intrapartum period to any event in a woman's life which could place her at risk for PPTSD, is congruent with contemporary conceptualizations of women's perinatal health, including the IPHF published by Misra *et al.* (2003) as adapted for perinatal mental health issues by Leight *et al.* (2010). The IPHF asserts pregnancy outcomes are influenced by powerful social, psychological, behavioral, environmental, and biological forces—some of which may occur before the pregnancy begins (antecedents). The IPHF divides a woman's life into a preconception phase (childhood until pregnancy or menopause); childbearing period or intraconceptual phase (prenatal, intrapartum, and postpartum); and an interconception or between pregnancy period. Others also indicate socioeconomic, environmental, psychological, behavioral, and biological forces contribute to PPTSD as possible determinates (Vesel & Nickasch 2015). Thus, the results of this concept analysis demonstrate PPTSD is a multi-determinant, lifespan health issue; reflecting a more current modeling of women's health issues, and providing a more nuanced approach to the understanding of PPTSD.

Implications for Future Theory Development and Research

This concept analysis adds to the scientific understanding of the concept of PPTSD by reducing current theoretical and conceptual ambiguities. Mental health disorders pervade all aspects of nursing including childbirth. The identification of antecedents and consequences of PPTSD provides a structure to create mid-range theories regarding the interaction of these factors in a more defined way. Results from this conceptual analysis suggest the definition of

PSTD in the perinatal period may be advanced beyond a traumatic birth to include the antenatal period or even traumatic events occurring prior to conception. Enhanced conceptual clarity of PPTSD should assist in the development of testable theories to advance research in this area.

While this analysis constitutes an initial step in the development of theory and research surrounding PPTSD, these data suggest education on the antecedents and attributes of PPTSD should be considered for patients and healthcare providers so they may provide early identification and treatment to prevent adverse maternal and fetal outcomes (Nayback 2009). Nurses need to be acutely aware, show care, and actively assess women's feelings and any symptoms of stress and negative reactions to procedures during pregnancy and childbirth. For high-risk and ethnically diverse populations including veterans, an advanced practice psychiatric nurse may need to routinely screen high risk women (Sorenson & Tschetter 2010). Initial reports indicate racially/ethnically diverse populations may have the highest prevalence of PPTSD. The use of a clarified conceptualization of the phenomenon that includes lifespan events would be a valuable starting place in developing models for studying determinants which contribute to PPTSD across diverse populations.

In usual care, nurses should utilize routine mental health screens during antenatal, intrapartum, and postpartum care (Seng *et al.* 2010, Connelly *et al.* 2013). Notably, the United States Patient Protection and Affordable Care Act (PPACA) passed in 2010 identified perinatal mental health as a significant healthcare issue and encourages screening. The PPACA incorporated section 2713, advocating for new health plans to include women's preventative care and screening for postpartum depression (PPACA 2010). Incorporated into the PPACA legislation, the Melanie Blocker Stokes Mom's Opportunity to Access Health, Education, Research, and Support (MOTHERS) Act, was funded with $3 million given annually to support a national campaign on postpartum mental health, along with research for maternal mental health disorders, postpartum depression, and the benefits of postpartum depression screening. The MOTHERS Act is designed to increase heath care access for mothers, as well as provide greater education, research, and treatment in the form of voluntary programs related to mothers with perinatal mood disorders. However, in a consumerist healthcare society, monetary and legal regulations such as Medicaid reimbursement are required to ensure effective health policy recommendations will be followed (Kozhimannil *et al.* 2011). Further research into PPTSD is vital to informing health policy to improve clinical practice and prevent adverse outcomes in ethnically diverse maternal-infant/child populations.

Longitudinal research strategies to test models of care most effective for women at risk for PPTSD are a desirable goal. However, trauma cannot usually be predicted. Initial qualitative research is needed to understand the woman's unique perspective, as well as minority populations and veterans exposed to combat PTSD prior to pregnancy (Myors *et al.* 2013). Through qualitative research, researchers may gain understanding of specific triggers causing trauma and symptoms of trauma that occur from what a health care provider may view as a routine procedure. Research examining timing of traumatic events and PPTSD is needed to further understanding of the phenomenon in a lifespan perspective (Rogal *et al.* 2007). Additional research focusing on the development of effective methods for early

diagnosis and treatment of PPTSD could then build upon these data to improve outcomes for both mothers and children.

Limitations

This concept analysis is limited by the paucity, sample size, and diversity of current literature (Grekin & O'Hara 2014, Vesel & Nickasch 2015). The current extant health care literature is focused mainly on PPTSD in the postpartum period, not antenatally, thus, this analysis is limited by a current lack of documentation of the phenomenon. Most studies also included self-selected participants and included high risk pregnancies (Muzik *et al.* 2013, Vesel & Nickasch 2015). Most studies are correlational in nature as trauma is not usually predicted highlighting the need for additional longitudinal designs (König *et al.* 2016). However, the congruence of the analytic findings with such current perinatal health models as the IPHF (Misra *et al.* 2003) renders these findings a viable option on which to build future research.

CONCLUSION

Given the severity of negative outcomes for both mothers experiencing PPTSD and their infants, this concept analysis provides a valuable starting place for future theory and research. Further exploration of the relationships between PPTSD antecedents and outcomes is suggested in ethnically/racially diverse samples. The implementation of PPTSD as a conceptually clear, nuanced concept within a theoretical framework may aid future researchers in designing and testing more effective strategies for its reduction.

RELEVANCE TO CLINICAL PRACTICE

Nurses are encouraged to increase their awareness of PPTSD for early assessment, intervention, and prevention of adverse maternal-infant outcomes especially across high risk populations that may include lower socioeconomic status and racially/ethnically diverse populations. Prevention may encompass positive encouraging support that empowers the woman before, during, and after the birth to promote the woman's mental well-being as well as referring for immediate treatment once a disorder is recognized (Vesel & Nickasch 2015). For high-risk and ethnically diverse populations including veterans, an advanced practice psychiatric nurse may need to routinely screen high risk women (Sorenson & Tschetter 2010). International models of healthcare that promote access and affordable care are paramount for treatment (Vesel & Nickasch 2015).

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SUMMARY BOX

What does this paper contribute to the wider global clinical community?

- When compared to PTSD, PPTSD possesses unique attributes (diagnosed during the perinatal period), antecedents (postpartum depression and psychiatric history), and adverse maternal-infant outcomes.
- These findings suggest education on attributes and antecedents of perinatal PTSD should be considered for clinicians so they may provide early identification and treatment to prevent adverse maternal-infant outcomes.
- A clear concept of PPTSD attributes, antecedents, and outcomes in racially/ethnically diverse populations that includes lifespan events may provide clinicians a more comprehensive framework for identifying and treating PPTSD.

Table 1

Concept Uses of PPTSD in the Health Care Literature

Study Citation	Design, Population, Sample Size	1	2	3	4	5	6	7	8
Andersen *et al.* (2012)	Systematic review on postpartum PTSD risk factors, 31 articles	+[a]	+	+	+	+		+	+
Ayers *et al.* (2016)	Meta-analysis of 50 international studies	++		+++					+
Choi and Sikkema (2016)	Systematic review on childhood maltreatment and perinatal mood/anxiety disorder, 7 of 35 articles	+	+				+		
Choi *et al.* (2015)	Cross-sectional, *n*= 26 with PTSD, South Africa	+					+		+
Dodgson *et al.* (2014)	Case-control, Native Hawaiian and/or Pacific Islander women, *N* = 55	+			+		+		
Grekin and O'Hara (2014)	Meta-analysis on postpartum PTSD prevalence, risk factors, 78 articles	+[a]	+	+				+	
Haagen *et al.* (2015)	Longitudinal, postpartum PTSD, *n* = 348	+	+						
Hoedjes *et al.* 2011	*n* = 149			+++[b]	+++[c]				
Howard *et al.* (2013)	Systematic review and meta-analysis on intimate partner violence and perinatal mental disorders, 4 of 67 articles; includes Andersen *et al.* 2012	+				+			
Mahenge *et al.* (2013)	Cross-sectional, Tanzania women, *n* = 150 with PTSD symptoms	+				+			
Modarres *et al.* (2012)	Cross-sectional, Iranian women, *n* = 80			+					
Porcel *et al.* (2012)	Cross-sectional, *n* = 457, *N* = 1076			+					
Ross and McLean (2006)	Systematic review on PPTSD, 1 article on new onset PPTSD and 11 on PPTSD (7 on traumatic birth)	+[a]		+	+	+	+		
Seng *et al.* (2010)	Cross-sectional, The Stacy Project, sum of traumas, *n* = 125	+							
Seng *et al.* (2011a)	Cross-sectional, The Stacy Project, 46.5% African-American women, *n* = 318	+[a]		+		+	+		
Seng *et al.* (2011b)	Prospective cohort, *n* = 255						+		
Stramrood *et al.* (2011)	Longitudinal, *n* = 29	+[a]		++[b]					
Sumner *et al.* (2012)	Longitudinal, low-income Latinas, 61% of interviews conducted in Spanish, *N* = 190	+[a]	+	+		+			

Note. 1 = Mental Health Diagnosis; 2 = Psychosocial Support; 3 = Perinatal Complications; 4 = Infant Complications; 5 = Intimate Partner Violence; 6 = Child Abuse; 7 = Staff Support; 8 = Decreased Coping. PTSD = Posttraumatic Stress Disorder; PPTSD = Perinatal Posttraumatic Stress Disorder.

[a]Depression;

[b]More than one maternal complication (e.g., preeclampsia, traumatic birth, perinatal death, cesarean section, prolonged rupture of membranes, etc.) identified;

[c]More than one infant complication (e.g., low birth weight, Neonatal Intensive Care Unit admission, prematurity, etc.) identified.

+ = 1 complication; ++ = 2 complications; +++ = 3 complications.