

The postpartum period is identified as a time of complex changes that take place in a woman's physiology and immunology; these changes are affected by the interplay among a myriad of biological, psychosocial, and behavioral factors (Suplee et al., 2014). In the *Listening to Mothers Survey* (Declercq, Sakala, Corry, Applebaum, & Herrlich, 2013), when asked about their postbirth experiences, women described having inadequate support and being unsure of how to navigate fluctuating hormones, disrupted sleep, recovery from birth, and newborn care and feeding. Women reported they needed more guidance on common postpartum health concerns (Declercq et al.). These findings may suggest that there is an information gap; women may not be able to determine if the symptoms they notice after birth are normal and expected, or abnormal requiring urgent or emergency medical attention.

Approximately 61% of maternal deaths occur during the postpartum period (Creanga et al., 2015). Maternal mortality rates have increased in the United States from 7.2/100,000 in 1987 to a rate of 17.3/100,000 live births in 2013 (Centers for Disease Control and Prevention, 2017). Other researchers have estimated the 2014 maternal mortality rate is considerably higher and calculated the rate to be 23.8/100,000 live births (MacDorman, Declercq, Cabral, & Morton, 2016).

The majority of pregnancy-related deaths occur less than 42 days after women gave birth; thus, strategies to reduce maternal morbidity and mortality during this time period are needed. There is consensus from national organizations such as the Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN), the American College of Obstetricians and Gynecologists, and United States Department of Health and Human Services (USDHHS) that efforts are needed to improve how women are cared for during postpartum (Kleppel, Suplee, Stuebe, & Bingham, 2016). One of the AWHONN recommendations is to improve education about postbirth warning signs that registered nurses (RNs) provide to women prior to discharge from the hospital after childbirth. The rationale of providing all women who gave birth with this information is that clinicians cannot predict with certainty which women will experience postbirth complications or death. Nurses who provide postpartum pre-discharge education are well positioned to provide women with evidence-based education on postbirth warning signs.

A review of research in PubMed and CINHAL using search terms that included postpartum education, discharge teaching of postpartum complications, and consistency of postpartum teaching led to identification of a

limited amount of research on these topics. In a qualitative study using focus groups with a sample of 52 nurses who worked in six different hospitals, we found most nurses reported they taught women about the postbirth warning signs (Suplee, Kleppel, & Bingham, 2016). However, content of what nurses taught was inconsistent in its delivery, and at times inaccurate. This study also showed that some of these nurses were unaware of the most common causes of maternal morbidity and mortality. When the literature search was expanded to include nurse discharge education and patient outcomes as search terms, a handful of relevant studies were found. In a recent study focusing on nursing discharge education, when nurses

had a better understanding of safe practices of prescription opioids, patients had a better understanding of safe use (Costello, Thompson, Aurelien, & Luc, 2016). Koelling, Johnson, Cody, and Aaronson (2005) assessed discharge education received by patients with chronic heart failure and found that focused patient education by nurse educators improved clinical outcomes, including significant cost reductions from re-hospitalization. Results of studies discharging patients with asymptomatic chronic

diseases suggest face-to-face patient education by well-informed healthcare providers, including nurses, provide the most benefit in improving health behaviors such as compliance (Gold & McClung, 2006).

More research is needed to determine best methods and timing for providing education on postbirth warning signs because women have described the first few days after giving birth as exhausting, emotionally charged, and physiologically draining (Declercq et al., 2013). Given these learning conditions, the postpartum discharge education RNs provide to women must be clear, concise, and accurate. Obstetric nurses are well positioned to improve maternal outcomes when armed with accurate knowledge, enhanced teaching skills, and adequate time to communicate the message. The purpose of this study was to measure postpartum nurses' knowledge of maternal morbidity and mortality, and to explore the content of nurses' teaching about postbirth warning signs. Institutional review board approval was obtained from Rutgers University.

Study Design and Methods

This is a cross sectional study of 372 postpartum or mother/baby nurses across the United States who were AWHONN members and completed a 25-item electronic survey via Survey Monkey®. The survey was designed by the research team based on results of a previous study on this topic using nurse focus groups (Suplee et al., 2016).

It is difficult for women to determine if the symptoms they notice after birth are normal and expected, or abnormal, requiring urgent or emergency medical attention.