Maternal Stress and Anxiety in the Pediatric Cardiac Intensive Care Unit

By Amy Jo Lisanti, RN, PhD, CCNS, CCRN-K, Lois Ryan Allen, RN, PhD, Lynn Kelly, RN, PhD, and Barbara Medoff-Cooper, RN, PhD

**Background** Mothers whose infants are born with complex congenital heart disease (CCHD) experience stress during their infant’s hospitalization in a pediatric cardiac intensive care unit (PCICU).

**Objectives** This study addressed 2 research questions: (1) What are the parental stressors for mothers whose infants with CCHD are in the PCICU? And (2) What are the relationships of trait anxiety and 3 parental stressors to the parental stress response of state anxiety in mothers whose infants with CCHD are in the PCICU?

**Methods** This descriptive correlational study included 62 biological mothers of infants admitted to a PCICU within 1 month of birth who had undergone cardiac surgery for CCHD. Maternal and infant demographics and responses to the Parental Stressor Scale: Infant Hospitalization and the State-Trait Anxiety Inventory were collected at 3 major PCICUs across the United States.

**Results** Mothers’ scores revealed that infant appearance and behavior was the greatest stressor, followed by parental role alteration, then sights and sounds. The combination of trait anxiety and parental role alteration explained 26% of the variance in maternal state anxiety. Mothers with other children at home had significantly higher state anxiety than did mothers with only the hospitalized infant.

**Conclusions** Results from this study revealed factors that contribute to the stress of mothers whose infants are born with CCHD and are hospitalized in a PCICU. Nurses are in a critical position to provide education and influence care to reduce maternal stressors in the PCICU, enhance mothers’ parental role, and mitigate maternal state anxiety. (American Journal of Critical Care. 2017;26:118-125)
Congenital heart disease (CHD) is the most common birth defect, with a rate of 8 per 1000 live births. When infants are born with complex congenital heart disease (CCHD), they require surgery during the early weeks of life with inpatient care provided in a pediatric cardiac intensive care unit (PCICU). Parents experience stress as a result of their infants’ diagnosis and hospitalization. The parental stress associated with this very serious and acute period surrounding open heart surgery is often overwhelming.

Parental stress in neonatal intensive care units (NICUs) and pediatric intensive care units (PICUs) has been well described throughout the past 3 decades. Past research on parental stress has been largely focused on parents of premature infants or on older children in the PICU, but little work has been done to explore the stress of parents who have newborns undergoing cardiac surgery soon after birth. These studies provide a foundation for understanding parental stress in the PCICU, but are insufficient to describe the unique experience for parents of infants undergoing neonatal open heart surgery.

With the improvements in survival after neonatal cardiac surgery, the needs of these medically fragile infants have become more complex. The cardiac diagnoses of many of these infants are made in utero at approximately 20 weeks’ gestation. Therefore, parents begin to experience stress even before the infant is born and admitted to a PCICU. In addition, the postoperative recovery is often a nonlinear process, requiring multidisciplinary care to manage comorbid conditions and complications, including prolonged intubation, chylothorax, bleeding, infection, cardiac arrest, seizures, failure to thrive, and feeding difficulties. Because infants often experience some of these complications, parental stress is further exacerbated. Moreover, parents of children with CHD report higher amounts of stress than parents of healthy children or parents of children with other diseases.

The source of stress appears to emanate from the infant, parent, and environment. Depending on the severity of CCHD, infants may need to be immediately separated from their parents at birth for resuscitation and intervention in the PCICU. The physical separation of parent and child can cause significant stress for parents. In the PCICU, infants may appear blue or in respiratory distress. They often require various technologies, tubes, medications, and wires for care and monitoring. The appearance and behavior of the infant creates stress for parents in addition to the sights and sounds of the critical care environment.

Parents are unable to provide for their infants’ basic needs, such as clothing, feeding, and comforting, altering their sense of parental role with the infant. Mothers experience greater stress and anxiety than fathers do when their infant/child is in the critical care environment. This stress is often accompanied by a myriad of postpartum issues, such as physical discomfort, fatigue, hormonal changes, and the challenge of initiating lactation through mechanical breast pumping. Therefore, when examining stress, mothers and fathers must be examined separately.

The number of stressors faced by parents influences their stress response. Anxiety is the predominant manifestation of stress at the bedside and is the most referred to in published reports as a stress response. Two types of anxiety exist: trait anxiety and state anxiety. Trait anxiety is an individual’s tendency to perceive a stressful situation as threatening and respond with elevated levels of state anxiety. State anxiety is the amount of anxiety experienced at a specific moment in time. This study focused on state anxiety as a stress response of mothers in the PCICU during the first few weeks after the infant’s surgery for CCHD.

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Little research has explored the stress of parents who have newborns undergoing cardiac surgery soon after birth.
Purposes of the Study

The primary purpose of this study was to explore the stressors and stress response of mothers whose infants with CCHD were being cared for in the PCICU. This study addressed 2 research questions: (1) What are the parental stressors for mothers whose infants with CCHD are in the PCICU? and (2) What are the relationships of trait anxiety and 3 parental stressors to the parental stress response of state anxiety in mothers whose infants with CCHD are in the PCICU?

Theoretical Framework

This study used the PCICU Parental Stress Model, which was based on a synthesis of the literature, revisions from prior stress theories developed by Miles and colleagues, and adjustments to fit research in the PCICU environment (see Figure). The PCICU Parental Stress Model posits that stress is an overarching concept encompassing a stress stimulus, or stressor, that elicits a reaction, or stress response. The model describes parental stress in the critical care setting as emanating from personal factors, such as trait anxiety, and 3 categories of parental stressors: infant, parent, and environment. These sources of stress combine to contribute to parental stress response.

Methods

This study used a descriptive correlational design to identify the relationships among parental stressors and stress response.

Setting

Data collection occurred at 3 major PCICUs at children’s hospitals across the United States, 2 in the northeast mid-Atlantic region and 1 in the west. Approval was obtained from the institutional review board at each hospital.

Sample

Mothers who were at least 18 years of age, English speaking, with full-term infants who had undergone cardiac surgery for CCHD were approached for participation in this study. Mothers were excluded if their infants had other genetic or congenital abnormalities diagnosed or if the infant was undergoing end-of-life care. Informed consent was obtained from each study participant before data collection.

Research Instruments

Study participants completed the Parental Stressor Scale: Infant Hospitalization (PSS:IH) and the State-Trait Anxiety Inventory (STAI). The PSS:IH is designed to measure parents’ perception of stressors related to the hospitalization of an infant being cared for in any type of hospital unit. PSS:IH has 3 subscales: infant appearance and behavior, parental role alteration, and sights and sounds. The STAI has established validity and reliability. Mothers rated each item on a scale from 1 to 5. A total mean score was computed for each mother. The internal consistency reliability (Cronbach’s $\alpha$) was 0.91. Reliability for each subscale was as follows: 0.83 for infant appearance and behavior, parental role alteration, and sights and sounds. The STAI has established validity and reliability. Mothers rated each item on a scale from 1 to 5. A total mean score was computed for each mother. The internal consistency reliability (Cronbach’s $\alpha$) was 0.91. Reliability for each subscale was as follows: 0.83 for infant appearance and behavior, parental role alteration, and sights and sounds. The STAI has established validity and reliability. Mothers rated each item on a scale from 1 to 5. A total mean score was computed for each mother. The internal consistency reliability (Cronbach’s $\alpha$) was 0.91. Reliability for each subscale was as follows: 0.83 for infant appearance and behavior, parental role alteration, and sights and sounds.

The STAI is a well-established research instrument that has been used by researchers for more than 30 years. The STAI has two 20-item subscales: one for state anxiety and one for trait anxiety. The state anxiety scale measures how persons feel at this current moment. The trait anxiety scale measures a person’s tendency toward anxiety by asking people how they generally feel. Mothers rated each item on a scale from 1 to 5. A total mean score was computed for each mother. The internal consistency reliability (Cronbach’s $\alpha$) was 0.91. Reliability for each subscale was as follows: 0.83 for infant appearance and behavior, parental role alteration, and sights and sounds.
a scale from 1 to 4. A total score was computed for each mother participating in the study. The internal consistency reliability (Cronbach’s α) was 0.95 for the state anxiety scale and 0.91 for the trait anxiety scale.

Results

Participants included 62 biological mothers of infants admitted to the PCICU within 1 month of birth. The sample size was sufficient for a power of 80% with a moderate effect size. The overall majority of the mothers were white, non-Hispanic (n = 47), married, well-educated, with 1 or 2 children (Table 1). Almost three-quarters of the mothers (n = 45) received a prenatal diagnosis on their infants’ CHD. Infants were nearly evenly distributed between males (n = 29) and females (n = 32) and univentricular (n = 33) and biventricular (n = 28) CHD. Infants had a variety of cardiac defects and surgeries. At birth, infants were full-term with appropriate birth weight for gestational age. At the time of data collection, infants were a mean age of 16.79 days old and had undergone cardiac surgery just more than 1 week earlier (Table 2).

The parental stressors for mothers were identified on the PSS:IH. The mean score for the total PSS:IH was 3.52 (SD, 0.72), with scores ranging from 1.70 to 4.81. Infant appearance and behavior had the highest subscale score (mean, 4.03; SD, 0.86). The second highest mean score was for the parental role alteration subscale (mean, 3.77; SD, 0.81). The sights and sounds subscale had the lowest mean score (mean, 2.52; SD, 0.85). Rank order by means for all 22 items on the PSS:IH revealed that the 5 strongest stressors, with mean scores from 4.05 to 4.56, referred to mothers’ not being able to parent or comfort their baby or protect their baby from pain. These items included, in rank order beginning with the highest: “seeing your child in pain,” “not being able to protect your baby from pain and painful procedures,” “when your child looks afraid, upset, or cries a lot,” “not being able to comfort or help your baby,” and “being separated from your baby.” Descriptive statistics for the STAI revealed that mothers’ state anxiety scores (mean, 44.18; SD, 13.30) were significantly higher (t = 6.74, df = 61, P < .001) than their trait anxiety scores (mean, 33.79; SD, 8.92).

Stepwise multiple regression was computed to determine the relationships among the 4 predictor variables (maternal trait anxiety, parental role alteration, infant appearance and behavior, and sights and sounds) and maternal state anxiety. Although maternal trait anxiety (r = 0.46), parental role alteration (r = 0.32), and sights and sounds (r = 0.37) were significantly correlated with state anxiety (P ≤ .006), only maternal trait anxiety and parental role alteration entered into the regression (Table 3). Maternal trait anxiety and parental role alteration were not significantly related (r = 0.20, P = .06). Sights and sounds failed to enter the equation because of multicollinearity.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Category</th>
<th>No. (%)a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal race</td>
<td>American Indian/Alaskan Native</td>
<td>1 (2)</td>
</tr>
<tr>
<td></td>
<td>Black/African American</td>
<td>6 (10)</td>
</tr>
<tr>
<td></td>
<td>White</td>
<td>48 (77)</td>
</tr>
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<td></td>
<td>Unknown/other</td>
<td>7 (11)</td>
</tr>
<tr>
<td>Marital status</td>
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<tr>
<td></td>
<td>Married</td>
<td>37 (60)</td>
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<tr>
<td></td>
<td>Divorced</td>
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<tr>
<td></td>
<td>Partnered</td>
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<tr>
<td></td>
<td>Graduated high school</td>
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<td></td>
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<td></td>
<td>College graduate</td>
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<td></td>
<td>Master’s degree</td>
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<td></td>
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<td></td>
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<tr>
<td></td>
<td>Ventricular septal defect</td>
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<tr>
<td></td>
<td>Pulmonary stenosis (valvular and subvalvular)</td>
<td>9 (15)</td>
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<tr>
<td></td>
<td>Coarctation of the aorta</td>
<td>8 (13)</td>
</tr>
<tr>
<td></td>
<td>Atriointervascular canal</td>
<td>6 (10)</td>
</tr>
<tr>
<td></td>
<td>Double-outlet right ventricle</td>
<td>4 (6)</td>
</tr>
<tr>
<td></td>
<td>Tetralogy of Fallot</td>
<td>4 (6)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>40 (65)</td>
</tr>
<tr>
<td>Surgery</td>
<td>Norwood procedure</td>
<td>13 (21)</td>
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<tr>
<td></td>
<td>Aortic arch repair</td>
<td>6 (10)</td>
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<tr>
<td></td>
<td>Arterial switch operation</td>
<td>6 (10)</td>
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<tr>
<td></td>
<td>Atrial septal defect closure</td>
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</tr>
<tr>
<td></td>
<td>Coarctation end to end</td>
<td>3 (5)</td>
</tr>
<tr>
<td></td>
<td>Tetralogy of Fallot repair</td>
<td>3 (5)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>32 (52)</td>
</tr>
</tbody>
</table>

* Percentages may not total 100% because of missing data, multiple diagnoses, or multiple surgeries.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gestational age at birth, weeks</td>
<td>38.92</td>
<td>0.93</td>
<td>37-41</td>
</tr>
<tr>
<td>Birth weight, g</td>
<td>3379.28</td>
<td>409.12</td>
<td>2530-4336</td>
</tr>
<tr>
<td>Infant’s age at the time of data collection, days</td>
<td>16.79</td>
<td>9.37</td>
<td>4-44</td>
</tr>
<tr>
<td>Length of time postoperatively at data collection, days</td>
<td>9.11</td>
<td>9.73</td>
<td>1-46</td>
</tr>
</tbody>
</table>
Independent *t* tests were used to explore differences between groups based on the class of the infant’s CCHD (univentricular vs biventricular physiology), the timing of the diagnosis (prenatal vs postnatal), the number of children (1 child vs more than 1 child), and the time of data collection (<1 week postoperatively vs ≥ 1 week postoperatively). No significant differences were found between univentricular and biventricular groups or between prenatal and postnatal timing of diagnosis on any of the stressor or anxiety measures. State anxiety scores were significantly higher (*t* = -2.26, *df* = 51, *P* = .03) for the 24 mothers with more than 1 child (mean, 48.07; SD, 13.33) than for the 28 mothers with only 1 child (mean, 40.21; SD, 11.97). In addition, state anxiety scores were significantly higher (*t* = 2.03, *df* = 40, *P* = .049) for mothers whose infants were less than 1 week postoperative (mean, 47.95; SD, 13.70) than for mothers whose infants were 1 week or more postoperative (mean, 40.24; SD, 10.77).

### Discussion

This study is the first to examine maternal stressors and stress response in a PCICU. The results of this study confirm that mothers experience stress while their infants are hospitalized in a PCICU. Mothers in this study perceived stressors from parental role alteration, infant appearance and behavior, and sights and sounds of the PCICU. The highest rated stressor in this study was infant appearance and behavior. Using a revised version of the PSS:IH, the PSS:CH, Franck and colleagues also reported that infant appearance and behavior was the highest rated stressor for both mothers and fathers across 5 separate time points throughout the PCICU hospitalization.

Parental role alteration was the second highest source of stress for mothers in this study. Items within this subscale reflect the mother’s ability to safeguard her baby from harm or discomfort as well as her ability to be close, care for, and hold her baby. Mothers perceived stress from not being able to perform basic parenting tasks for their babies. Mothering of an infant usually centers around clothing, feeding, diaper changing, and holding. Most, if not all, of these parenting functions are paused during the critical care admission, especially during the immediate postoperative period. Parental role alteration was also reported to be the highest stressor in other studies using the PSS:NICU. The complexity of care that postoperative infants require is often reflected by their critical appearance in a PCICU, which may have influenced why infant appearance and behavior was the highest rated stressor by mothers in this study.

The 2 highest rated items in the PSS:IH were on the infant appearance and behavior subscale and the parental role alteration subscale. These items both addressed infant pain from the mother’s perspective: seeing the infant in pain, and being unable to comfort or prevent pain. Parental worry about infant pain contributes to parental stress in the NICU.

The subscale sights and sounds was the lowest rated stressor in this study, consistent with other published reports; however, sights and sounds still contributed a moderate amount of perceived stress for mothers. Every patient in the PCICU is connected to a cardiopulmonary monitor that audibly alarms when the patient’s vital signs move outside set parameters. A mother can observe the monitor and often becomes very in tune with her infant’s vital signs. The physical layout of the PCICUs for most participants in this study was open, with bay-style rooms that allowed parents to see and hear the activity at another patient’s bedside. The results of this study suggest that these aspects of the PCICU environment create stress for mothers visiting their infants.

Although infant appearance and behavior was the highest rated stressor, only trait anxiety and parental role alteration entered into the multiple regression to predict state anxiety scores. Research has documented the link between parental role alteration and stress response in other ICU settings. Shaw and colleagues reported that parental role alteration was the most strongly correlated variable to stress response, as measured by acute stress disorder, in 40 parents of infants hospitalized in a NICU. In the classic study by Miles and colleagues, trait anxiety and parental role alteration influenced stress response, as measured by state anxiety. The mean trait anxiety scores of mothers in our study fell within the 50th percentile of normative mean published values for working women aged 19 to 49 years, which is an expected finding as this study’s sample was a group of healthy young women. In contrast, the mean state anxiety scores

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**Table 3**

Stepwise regression predicting maternal state anxiety

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R²</th>
<th>R²Δ</th>
<th>F</th>
<th>df</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Trait anxiety</td>
<td>0.46</td>
<td>0.21</td>
<td>0.21</td>
<td>16.03</td>
<td>1</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>2. Parental role alteration</td>
<td>0.51</td>
<td>0.26</td>
<td>0.05</td>
<td>4.27</td>
<td>1</td>
<td>.04</td>
</tr>
</tbody>
</table>

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Infant appearance and behavior was the highest stressor for mothers.
of mothers in our study were high, around the 83rd percentile. State anxiety scores were significantly higher than trait anxiety scores in our sample. State anxiety in 119 mothers of hospitalized NICU infants was reported with mean scores of 51.53 (SD, 14.96) by Shields-Poe and Pinelli22 and 51.25 (SD, 14.10) by Franck and colleagues. Although these means are higher than those of mothers in our study, trait anxiety scores published by Shields-Poe and Pinelli (mean, 39.2; SD, 11.02) and Franck et al (mean, 41.61; SD, 11.02) were also higher than the means reported in our study. State anxiety in pregnant women who had an infant with a prenatal diagnosis of CCHD was also high (mean, 44.14; SD, 14.69). Trait anxiety scores for these pregnant women were also higher than normative mean published values, potentially influencing state anxiety scores. Although trait anxiety is a nonmodifiable factor affecting state anxiety, it can be screened for and identified early so that psychosocial supports and interventions can be provided to mediate maternal state anxiety.

The results of this study also showed that mothers with more than 1 child experienced higher stress response than did mothers with only the hospitalized infant. Mothers who have other children may need additional support to cope with the hospitalization as they manage competing responsibilities of caring for children at home and watching over their infant in the PCICU. Finally, maternal state anxiety was significantly higher less than 1 week postoperatively when compared with maternal state anxiety scores obtained 1 week postoperatively or more. Franck and colleagues reported that parental stress was reduced in the PCICU when measured on postoperative day 8, in comparison with stress scores measured preoperatively, on postoperative day 3, and on postoperative day 5. This study adds to growing evidence that the first week postoperatively is a period of extreme stress for mothers. Additional psychosocial supports should be offered to help mothers cope during the immediate postoperative period.

**Limitations**

This study had a relatively homogeneous sample, which decreases generalizability to the greater population. Maternal perception of stressors and stress response was measured at only 1 point in time after the infant had surgery. Mothers’ perception of stressors and stress response may change throughout the infant’s hospitalization. In this study, only one type of stress response, state anxiety, was measured. Mothers may experience a variety of stress responses. The relationships between stressors and multiple stress responses need to be explored. Finally, this study relied on self-reported measures to examine perception of stressors and stress response. Objective data were not gathered for these variables.

**Conclusions and Implications**

This study was the first to explore the stressors and stress response of mothers whose infants with CCHD were being cared for in a PCICU. The results of this study confirm that these mothers perceive stressors from their infants’ appearance and behavior, parental role alteration, and the sights and sounds of the PCICU. Mothers also experienced a heightened stress response of state anxiety. Trait anxiety and parental role alteration were the best predictors of state anxiety for mothers in the PCICU. Additional research is needed to build on this leading study.

Nurses are in a critical position to provide education and influence care to reduce maternal perception of stressors, enhance mothers’ parental role, and mitigate mothers’ state anxiety. Nurses can support mothers through this stressful time. Mothers may also benefit from increased education on interpreting their infants’ behavioral cues and signs of pain as well as how to respond to those cues in the setting of the PCICU. Nurses can facilitate the enhancement of parental role for mothers as their infant recovers from cardiac surgery by allowing holding and participation in feeding, changing, or clothing the infant as appropriate. Finally, nurses can screen mothers for high trait anxiety and identify mothers at risk for heightened stress response. Interventions can be created to assist mothers in coping with their anxiety, such as the use of mindful meditation or cognitive behavioral therapy. The results of this study can guide continuing education on parental stress and prompt cultural change within PCICUs to provide additional psychological support to mothers.

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eLetters
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Evidence-Based Review and Discussion Points

By Ronald L. Hickman, RN, PhD, ACNP-BC

Evidence-Based Review (EBR) is the journal club feature in the American Journal of Critical Care. In a journal club, attendees review and critique published research articles: an important first step toward integrating evidence-based practice into patient care. General and specific questions such as those outlined in the “Discussion Points” box aid journal club participants in probing the quality of the research study, the appropriateness of the study design and methods, the validity of the conclusions, and the implications of the article for clinical practice. When critically appraising this issue’s EBR article, found on pp 118-125, consider the questions and discussion points outlined in the “Discussion Points” box.

Congenital heart disease is a commonly occurring birth defect that has significant impact on newborns and their families. Often a newborn’s diagnosis of congenital heart disease is made in utero. Consequently, newborns with this diagnosis often require complex care that includes cardiac surgery and prolonged stays in a neonatal or pediatric intensive care unit. Yet, the impact of congenital heart disease not only affects the newborn but extends to the entire family system.

Parents of newborns and infants with congenital heart disease experience antepartum and postpartum stress. There is foundational research that establishes an association between parental stress among mothers and fathers of premature infants and older children in a pediatric intensive care unit. However, there has been minimal investigation into the unique experiences of parents of newborns with congenital heart disease who underwent cardiac surgery.

To address a gap in the literature, the authors conducted a descriptive study to identify the parental stressors and establish the relationships among trait anxiety, parental stressors, and state anxiety in mothers of newborns with congenital heart disease. Among participants, newborn appearance and behavior was considered to be most distressing. Parental role alteration, the mothers’ perception of not being...
able to safeguard or provide care for their newborns, was the second highest source of parental stress and the third source of parental stress was associated with the sights and sounds of the pediatric intensive care unit. Additionally, the authors report that trait anxiety and parental role alteration scores predicted the intensity of anxiety among mothers of children with congenital heart disease. Based on their results, the authors recommend that critical care nurses examine practices to reduce maternal stressors and mitigate maternal state anxiety.

**Information From the Authors**

Amy Jo Lisanti, RN, PhD, CCNS, CCRN-K, lead author on this study provides additional information about the research. She says that the study grew out of her interactions with parents of infants with congenital heart disease, which revealed the parents’ concerns about engagement in care and the unique stress of parents of newborns undergoing cardiac surgery.

According to Lisanti, this study was not her initial remedy to address the needs of parents of infants with congenital heart disease. “As a new clinical nurse specialist, 1 of the initiatives I led was interdisciplinary developmental rounds” she says. She adds, “My intention was that the rounds would help provide point-of-care education to staff and families, create individualized developmental plans of care for infant patients, and drive the culture forward in the unit. What I did not expect was that the rounds also created a forum for parents to share their stories of their infant’s diagnosis with congenital heart disease, their infant’s birth, and the subsequent hospital experience.”

Influenced by the unintended consequences of the developmental care rounds, Lisanti identified the need to investigate the unique experiences of parents of newborns with congenital heart disease. She points out that parents discussed their stress and looked forward to rounds. “This sparked an interest for me to understand the unique stress that these parents experience while their newborn undergoes cardiac surgery,” she adds.

**Implications for Practice**

Lisanti encourages the readers of the *American Journal of Critical Care* to implement practices that enhance the parental role and reduce symptoms of stress and anxiety in mothers of newborns with congenital heart disease. “Nurses should be aware of the stressors and stress response experienced by mothers of newborns with congenital heart disease” she says. According to Lisanti, this study expands nursing knowledge on the need to educate mothers on their parental role while in the pediatric intensive care unit.

The author hopes that the findings of her study will promote higher quality care for newborns and their mothers. Committed to further developing a parental stress model for the pediatric intensive care unit, Lisanti looks forward to future studies examining the linkages among parental stress, anxiety, and postdischarge stress response. “My goal is to design and test interventions to reduce stress for parents of infants with congenital heart disease,” she says.

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**Discussion Points**

A. **Description of the Study**
- Why do the authors focus on mothers of newborns with congenital heart disease?
- What is the purpose of the study?

B. **Literature Evaluation**
- What is the difference between trait and state anxiety?
- How do the authors justify the need to conduct the study?

C. **Sample**
- Who was eligible to participate in this study?
- Who was excluded from this study and why?

D. **Methods and Design**
- Why do you suspect the authors used 3 pediatric intensive care units across 3 hospitals? How could this influence their results?
- Describe how data were collected for this study.

E. **Results**
- What were the major findings of this project?
- How can you use the findings of this project to positively impact the quality of nursing care at your hospital?