

1-2009

# Parents' Reactions at 24–48 Hours after a Preschool Child's Head Injury

JoAnne M. Youngblut

*Nicole Wertheim College of Nursing and Health Sciences, Florida International University, youngblu@fiu.edu*

Dorothy Brooten

*Nicole Wertheim College of Nursing and Health Sciences, Florida International University, brooten@fiu.edu*

John Kuluz

*University of Miami*

Follow this and additional works at: [https://digitalcommons.fiu.edu/cnhs\\_fac](https://digitalcommons.fiu.edu/cnhs_fac)



Part of the [Medicine and Health Sciences Commons](#)

---

## Recommended Citation

Youngblut, JoAnne M.; Brooten, Dorothy; and Kuluz, John, "Parents' Reactions at 24–48 Hours after a Preschool Child's Head Injury" (2009). *Nicole Wertheim College of Nursing and Health Sciences*. 22.

[https://digitalcommons.fiu.edu/cnhs\\_fac/22](https://digitalcommons.fiu.edu/cnhs_fac/22)

This work is brought to you for free and open access by the Nicole Wertheim College of Nursing and Health Sciences at FIU Digital Commons. It has been accepted for inclusion in Nicole Wertheim College of Nursing and Health Sciences by an authorized administrator of FIU Digital Commons. For more information, please contact [dcc@fiu.edu](mailto:dcc@fiu.edu).



Published in final edited form as:

*Pediatr Crit Care Med.* 2005 September ; 6(5): 550–556.

## Parents' Reactions at 24–48 Hours after a Preschool Child's Head Injury

**JoAnne M. Youngblut, PhD, RN, FAAN,**

*Professor & Coordinator of Research, School of Nursing, Florida International University, youngblu@fiu.edu*

**Dorothy Brooten, PhD, RN, FAAN, and**

*Professor of Nursing, School of Nursing, Florida International University, brooten@fiu.edu*

**John Kuluz, MD**

*Associate Professor of Clinical Pediatrics, Department of Pediatrics, School of Medicine, University of Miami, jkuluz@med.miami.edu*

### Abstract

**Objectives**—1) Compare mothers' and fathers' early reactions (stressors, concerns) to the preschool child's head injury, their perceptions of the child's injury severity, their social support and mental health; 2) compare families with a child in the pediatric intensive care unit (PICU) vs. general care unit (GCU) on these variables; 3) describe the relationships between parents' early reactions and perceived and objective injury severity, their social support and mental health.

**Design**—Analysis of data collected in the hospital 24–48 hours after the child's admission as part of a longitudinal study of parent and family functioning after a preschool child's head injury.

**Setting**—7 tertiary care centers – 3 free-standing children's hospitals, 4 comprehensive hospitals.

**Participants**—182 mothers and 64 fathers of 183 preschool children (ages 3–6) hospitalized for head injury, half in a PICU.

**Measurements and Main Results**—Outcome variable – parent early reactions (stressors, concerns), influenced by parent mental health, social support, objective and perceived injury severity. Mothers reported more stress than fathers regarding the child's behavior and emotions, communication with staff, and their parental role. Mothers in the PICU group reported more concern about the child's future and more stress regarding the child's appearance, sights and sounds of the unit, and procedures done to the child than mothers in the GCU group. Fathers in the PICU and GCU groups reported similar levels of stress and concern. Mothers' reactions were influenced by objective and perceived injury severity, social support, and psychological distress. Fathers' reactions were influenced by objective injury severity and psychological distress.

**Conclusions**—Although mother-father couples rated their child's injury severity similarly, mothers experienced more stress than fathers. Social support decreased the stress for mothers but not for fathers. The experience of pediatric head trauma was more stressful for mothers of children in the PICU than mothers of children in the GCU.

---

Parents' Reactions at 24–48 Hours after a Preschool Child's Head Injury Accidental injury is the leading cause of death and disability in children<sup>1</sup>, resulting in 13,000 deaths each year<sup>2</sup>.

Health care costs for accidental injuries total \$10 billion each year<sup>3</sup>, and injuries account for 25% of children's hospitalizations<sup>4</sup>. Almost 1/3 of the children admitted to a pediatric intensive care unit (PICU) for accidental injury require rehabilitation services, and 29% are left with functional deficits after rehabilitation<sup>5</sup>. Motor vehicle crashes and falls account for most of the unintentional injury to children under 14 years old<sup>6</sup>. The unexpected nature of unintentional injury means that parents are generally ill-prepared for the sudden change in their child's condition.

Although pivotal to the child's recovery, research on parents' concerns and stressors during a child's hospitalization for head injury is limited. Research has identified parental stressors and, to a lesser degree, parental concerns when a child is admitted to the PICU<sup>7</sup>. Most of these studies include children with a variety of illnesses – some with significant negative sequelae after their PICU stays and some whose PICU stays improve their physical health – and with both planned and emergent admissions in their samples, ignoring possible differences across illnesses. Few studies have identified factors that may affect parents' reactions to a child's PICU hospitalization<sup>8–13</sup>, but the findings are conflicting, and it is not known whether these parents' reactions differ in focus or intensity from the reactions of parents whose child is admitted to a general care unit (GCU). Reactions of mother-father couples are rarely compared. In addition, effects of objective severity of illness and parents' perceived severity of illness are rarely considered. Research on the effects of parents' social support and mental health at the time of admission also is limited. Thus, the aims of this study are to: 1) compare mothers' and fathers' reactions (stressors, concerns), perceptions of the child's injury severity, parent social support, and mental health at 24 to 48 hours after the preschool child's head injury and hospitalization; 2) compare families with a child in the PICU vs. the GCU on these variables; and 3) describe the relationships between parents' reactions and perceived and objective injury severity, parent social support and mental health.

## Materials & Method

### Setting and Procedure

Families were recruited from 7 tertiary care centers – 4 in northeastern Ohio and 3 in southern Florida. Three are free-standing children's hospitals. Admission to the PICU vs. GCU was decided by the admitting physicians and hospital policy. All 7 facilities allow 24-hour visiting for the child's family. Institutional Review Board approvals were obtained from the universities and hospitals.

At 24 – 48 hours after the child's hospital admission, a data collector approached the parents to explain the study, ascertain eligibility, answer questions, and obtain written consent. Data for this study were collected in the hospital at the time of consent as part of a longitudinal study of parent and family functioning after a preschool child's head injury. Demographic data were collected by interview (with both parents together in two-parent families). All other parent data were collected with self-administered questionnaires. For parents who could not read, the data collector read the items to the parent in private.

Parents of preschool children (ages 36 through 83 months) hospitalized after sustaining a head injury were eligible to participate. Head injury was defined as an injury where head trauma was possible with at least one physical finding suggesting head trauma, including: symptoms of head injury (vomiting, drowsiness, seizures, neurologic deficits, cerebrospinal fluid or bloody discharge from the ears or nose), loss of consciousness no matter how brief, or a positive CT scan or x-ray. Other inclusion criteria for the injured child were: living with at least one biologic or adoptive parent before the injury, free from chronic illnesses other than asthma, and no previous hospitalization other than at birth. Parents had to understand spoken English. Exclusion criteria were: severe cognitive deficits prior to the current injury, injury suspected

to be due to child abuse, child meeting or being evaluated with brain death criteria, parent(s) hospitalized concurrently with major injury, or death of parent(s) in injury event.

## Instruments

**Parent Reactions** (concerns, stressors) were measured with the Parental Concerns Scale (PCS)<sup>14</sup> and the Parental Stressors Scale: PICU (PSS:PICU)<sup>15</sup>. The PCS contains four subscales: concerns about the child's experience, concerns about the child's future, parenting concerns, and financial concerns. Parents rate each of the 20 items on a 5-point scale. Higher summative scores indicate greater concerns. Internal consistency reliabilities (coefficient alpha) in the current study for mothers and fathers, respectively, are .76 and .84 for child's experience, .74 and .82 for child's future, .67 and .67 for parenting concerns, and .66 and .49 for financial concerns.

The PSS:PICU contains seven subscales: child's appearance, sights and sounds of the unit, procedures done to the child, child's behavioral and emotional responses, professional staff behavior, professional staff communication, and alterations in parental role. Parents rate each of the 39 items on a 5-point scale. Items not experienced receive a "0." Higher scores indicate greater stress. Subscale alphas in the current study for mothers and fathers, respectively, are .76 and .84 for child's appearance, .86 and .88 for sights and sounds, .77 and .83 for procedures, .84 and .88 for child's behavior and emotions, .75 and .71 for staff behavior, .88 and .84 for staff communication, and .86 and .86 for parental role.

**Parent Mental Health** was measured with the Mental Health Inventory<sup>16</sup>. It has two domains: psychological well-being and psychological distress. Parents rate each of the 32 items on 5-point scales. Higher summative scores mean greater well-being and distress. Alphas in the current study were .90 for well-being and .94 for distress for mothers and .83 for well-being and .93 for distress for fathers.

**Social Support** from friends, family, and significant others was measured with the Multidimensional Scale of Perceived Social Support<sup>17</sup>. Parents rate each of the 12 items on a 7-point Likert scale. Higher summative scores represent greater support. Alphas in the current study for mothers and fathers, respectively, were .97 and .95 for the friends subscale, .94 and .88 for the family subscale, .95 and .93 for the significant others subscale and .96 and .95 for the total scale for mothers.

**Objective Injury Severity** was measured by the unit where the child was hospitalized initially (PICU vs. GCU) and the Injury Severity Scale (ISS). The ISS, derived from the Abbreviated Injury Scale<sup>18</sup>, classifies severity of individual injuries by body region and does not change over time. The ISS total score is calculated by summing the squares of the highest AIS code in the three body regions with the most severe injury. Scores range from 1 to 75.

**Perceived Injury Severity** was measured with two single items: "How sick would you say your child is right now?" and "How would you rate your child's chances of living through this injury?" Parents were told to rate these two items based on how serious they thought their child's injury was, using 5-point scales, from 1 "not very sick" to 5 "the most sick possible" and from 1 "very unlikely" to 5 "very likely" to survive.

## Data analysis

Comparisons between mothers and fathers in the same family were conducted with paired t-tests. Comparisons of the PICU and GCU groups were done with two-sample t-tests. Multiple linear regression was used to examine the ability of perceived and objective injury severity, social support, and mental health to explain the parents' concerns and stressors. Significance level was set at  $p = .05$ .

## Results

### Sample

The sample consists of 182 mothers and 64 fathers of 183 preschool children. There were 104 (57%) boys and 79 (43%) girls. Average age was 59.8 months (SD = 14.79). Half (n = 91, 50%) were hospitalized initially in the PICU. Causes of head injury were falls (n = 89, 49%), pedestrian versus motor vehicle (n = 31, 17%), motor vehicle crashes (n = 26, 14%), bicycle crashes (n = 16, 9%), and other events (n = 21, 11%). Almost one third (n = 58) of the children also sustained other injuries, including other fractures (n = 48) and injuries to the spleen (n = 6), liver (n = 6), kidney (n = 4), heart (n = 2), lung (n = 12), GI tract (n = 4) and spinal cord (n = 1).

Parent mean age was 31.3 (SD = 7.16) for mothers and 33.2 (SD = 6.88) for fathers. Self-reported race/ethnicity was 56% white, 30% black, 13% Hispanic, and 1% Asian for mothers and 56% white, 31% black, 12% Hispanic, and 1% Asian for fathers. Most of the families were two-parent families (53% married, 20% living together); 17% had never been married and 10% were divorced, separated, or widowed. Total family incomes were: under \$20,000 (29%), between \$20,000 and \$50,000 (36%), and \$50,000 and above (35%).

### Mother-father differences in reactions, perceived injury severity, social support, and mental health

Mothers' and fathers' ratings of parental concerns were not significantly different (Table 1). Top concerns were about the child's experience and parenting. Six concern items for both mothers and fathers had mean ratings  $\geq 3.0$ . Five of these were the same for mothers and fathers: 1) What can I do now for my child? 2) Is my child in pain? 3) What could I have done to prevent this? 4) Does my child understand what is happening to him/her? and 5) What will my child remember about the hospital? In addition, mothers were concerned about how long the child would be in the hospital, where fathers were concerned about the mothers' reactions to the situation.

Mothers scored significantly higher than fathers on 3 of the 7 parental stressors subscales – child's behavior & emotions, staff communication, and parental role revision (Table 1). Top stressor was child's behavior and emotions for mothers and sights and sounds of the unit for fathers. Seven of the mothers' parental stressor items and two of the fathers' items had means  $\geq 2.5$ . The two higher-scoring items that mothers and fathers shared were: 1) child acting or looking as if in pain and 2) bruises, cuts, incisions on my child. The other 5 high-scoring items for mothers were: 1) putting needles in my child for fluids, procedures, or tests, 2) not knowing how best to help my child during this crisis, 3) child's fright, 4) child's crying or whining, and 5) child's restlessness.

Mothers' and fathers' perceptions of their child's injury severity and chance of survival at 24 – 48 hours after hospital admission did not differ statistically (Table 1). Although half of the children were admitted to the PICU, only about a quarter of the parents (21.3% mothers, 25.4% fathers) rated their child as "very sick" or the "most sick possible." More than half of the mothers (65.8%) and fathers (55.5%) rated their child as "a little sick" or "somewhat sick." In addition, very few parents – 4 (2.4%) mothers and 3 (4.8%) fathers – rated their child's chance of survival as 50% or less.

Mothers' and fathers' ratings of their psychological wellbeing and distress were not significantly different. Mothers and fathers reported similar amounts of support from family and significant other, but mothers reported significantly more support from friends than fathers did (Table 1).

## PICU-GCU differences in reactions, perceived injury severity, parent social support, and mental health

Parents with a child in the PICU and parents with a child in the GCU were compared on their reactions, perceived injury severity, social support and mental health (Table 2). Mothers in the PICU group reported more concern about the child's future than mothers in the GCU group; scores on the other three concerns subscales were not significantly different. Mothers in the PICU group reported more stress on 3 of the 7 PSS:PICU subscales – child's appearance, sights and sounds of the unit, procedures done to the child – than mothers in the GCU group. Fathers in the PICU and the GCU groups reported similar levels of concerns and stressors.

Parental concern items with means  $\geq 3.0$  and parental stressor items with means  $\geq 2.5$  for mothers and fathers in the PICU and GCU groups are listed in Table 3. Five of the high-scoring concerns were the same for mothers in the PICU and GCU groups. Mothers in the PICU group had 12 high-scoring stressor items compared to 5 such items for mothers in the GCU group. Fathers in the PICU group had 8 high-scoring concern items compared to 5 such items for fathers in the GCU group. Fathers in the PICU group had 6 high-scoring stressor items, but fathers in the GCU group had no such items.

As expected, injuries of the children in the PICU were significantly more serious than the injuries of the children in the GCU, with mean ISS scores of 16.0 ( $SD = 11.54$ ) for the PICU group and 7.9 ( $SD = 8.57$ ) for the GCU group,  $t = 5.37$ ,  $p < .01$ . Mothers and fathers in the PICU group perceived their child as significantly sicker than mothers and fathers in the GCU group (Table 2), but their perceptions of the child's chance of survival at 24–48 hours after admission were not significantly different between the PICU and GCU groups.

Mothers in the PICU group reported significantly more support from family than mothers in the GCU group (Table 2); however, their ratings of mental health did not differ. Fathers' reports of social support and mental health were not significantly different between groups.

### Factors related to parent reactions

In preparation for the multiple linear regression analyses, correlations among the independent variables were examined (Table 4). Because of the size of the father sample, the number of independent variables was limited to four, one measure for each concept. The measure chosen to represent perceived injury severity was the parent's perception of how sick the child was. Perceived chance of survival had little variability and, as a less direct measure of perceived severity, was only weakly related to the outcome variables. Total ISS score was selected as the measure of objective severity because it is a more sensitive measure than the unit where the child was hospitalized. Correlations among the social support subscales were high, so a total summative score was used to represent social support. Psychological distress and wellbeing were highly correlated and demonstrated similar relationships (with opposite signs) with the outcome variables. Psychological distress was chosen as it more closely represents the concept of interest.

Four of the multiple linear regressions explaining the mothers' concerns and stressors were significant (Table 5). Mothers' concerns about the child's experience and mothers' stress from procedures done to the child were influenced by greater objective injury severity, and the mothers' perception of greater injury severity and her own psychological distress. Concerns about the child's future were influenced by the mothers' perception of greater injury severity and greater psychological distress. Stress from the child's appearance was influenced by mothers' perceptions of greater injury severity and less social support.

Three of the multiple linear regressions explaining the fathers' concerns and stressors were significant (Table 5). Fathers' stress from the child's appearance was influenced only by the

fathers' perceptions of greater injury severity. Stress from both sights and sounds in the unit and staff communication was influenced by the father's psychological distress.

## Discussion

Study results indicate that parents' top concerns and stressors focused on the child's experience, especially whether the child was in pain, whether the child understood what was happening, and what the child would remember. Other aspects of the child's experience that were stressful to mothers included the child's being afraid, crying or whining, and being restless. These findings are consistent with those of Johnson, Nelson, and Brunnequell<sup>19</sup> who found children's behavior and emotions to be most stressful for parents. Parents in the present study also were concerned about their role in the child's injury and hospitalization – what they could have done to prevent it and what they could do for the child during the hospitalization. In contrast, Youngblut and Jay<sup>20</sup> found that parents of children in the PICU were most concerned about the child's survival and chance of mental or physical impairment. Other studies have found alteration in the parent's caretaking role to be the most stressful<sup>13, 21–29</sup>.

Differences in the top concerns and stressors between our study and previous studies may be related to differences in the composition of the samples. Samples in previous studies included children regardless of diagnosis, where the current study restricted the child's diagnosis to head injury. Knowing how parents' reactions differ by diagnosis provides more direction for clinicians in appropriately addressing parents' concerns and stressors. Differences also could reflect the mixed PICU/GCU sample in the current study vs. the exclusively PICU samples in previous studies. Indeed, mothers' reactions differed between the PICU and GCU groups in four areas. However, concerns about the child's future and stress from changes in the parent's caretaking role did not have the highest means for either the PICU or the GCU group in this study. The differences also may be the result of changes in hospitals since the 1980s and early 1990s when the bulk of this work was done, with more open parent visitation policies in the PICU and shortened lengths of hospital stay.

Knowing the most common concerns and stressors for parents soon after their child is admitted to the hospital following a head injury allows clinicians to address these concerns routinely and to correct any misconceptions uncovered. Parents need guidance in identifying what they can do to help their child during the hospital stay. They may need to talk about the part they think they played in their child's injury and their feelings about not being able to protect and comfort their child. Parent reactions to the child's pain, restlessness, and crying may indicate that the child's pain is not being adequately treated. Adjusting the pain medication or explaining to the parents why the child cannot receive more pain medication may help to address this stressor.

Research on parents' reactions that compares PICU and GCU groups has not been reported. The present study's results suggest that a child's head injury and admission to the hospital is stressful for parents, and admission to a PICU may present additional stressors, at least for mothers. Although top concerns and stressors for parents with a child in the PICU and parents with a child in the GCU were very similar, parents in the PICU group had more highly-rated stressors. Compared to mothers in the GCU group, mothers in the PICU group were more concerned about their child's future (survival, physical or mental impairment) and more stressed by the child's appearance, sights and sounds of the unit, and procedures done to their child. However, fathers in the two groups rated the concerns and stressors similarly. Differences on the child's future and appearance subscales may reflect the greater objective injury severity of the PICU group and the parents' perception of greater injury severity. Three of the 4 items in the sights and sounds subscale refer to the monitors and alarms, so it is not surprising that the PICU group rated this subscale as significantly more stressful. However, the items on the

procedures subscale, except for one about the child's being on a ventilator, are experienced by children in both units. This difference may indicate the greater frequency with which PICU children experience these items or that mothers of PICU children attach greater meaning to them.

Parents may need more information and reassurance about the monitors, equipment, and alarms, especially in the PICU. Parents with a child in the PICU were worried about the child's future. Broaching this subject with the parents may alleviate some of their anxiety and uncover misconceptions that clinicians can correct. The greater stress that parents experience when their child is in the PICU should be considered when deciding whether to admit to the PICU or GCU.

Research that compares mothers' and fathers' reactions is minimal<sup>7</sup> and the results are conflicting. Miles and colleagues<sup>26</sup> found no differences in degree of stress between mothers and fathers; however, Heuer<sup>30</sup> found that fathers reported greater stress overall than mothers. Johnson et al.<sup>19</sup> found that fathers were more stressed by the sights and sounds of the unit than mothers. In Malaysia, Nizam and Norzila<sup>28</sup> found fathers to be more stressed by staff communication than mothers. Although mothers rated parental role stress highest, fathers in these same studies found procedures<sup>30</sup> and staff communication<sup>31</sup> to be most stressful.

In our study, mothers found the child's behavior and emotions, staff communication, and parental role revision subscales (subscales tapping relationships) to be more stressful than fathers. Because mothers are usually the main caretakers of the children, they may be more stressed by the child's distress and limits to their caretaking role in the hospital than fathers. Mothers' greater stress about staff communication may reflect a greater need for information and to talk about the experience. Alternately, this pattern may reflect a difference in reporting by mothers and fathers, rather than a real difference in amount of stress. That is, perhaps fathers under-report their stress to portray strength in line with societal expectations of men<sup>32</sup>.

Research on the contribution of the child's illness severity, parent mental health and social support to parental reactions also is limited. Objective measures of illness severity – measured as the unit where health care is given, length of time intubated, and the Pediatric Risk of Mortality (PRISM) scale – often are related to parents' reactions. Berenbaum and Hatcher<sup>8</sup> found that mothers of children in the PICU experienced significantly more emotional distress (confusion, anger, depression, anxiety) than mothers of children hospitalized in a GCU and mothers of children not hospitalized. Youngblut and Shao<sup>9</sup> found that length of time intubated was not related to parents' stress; however, higher PRISM scores were related to greater concerns with parenting and the child's experience for fathers. In the only study to measure the parent's perception of the seriousness of the child's illness, Berenbaum and Hatcher<sup>8</sup> found perceptions of greater severity were related to greater distress. In qualitative studies, parents often identify social support as an important coping strategy<sup>10,11,13</sup>. However, in a study<sup>12</sup> of mothers with children in the PICU, social support was not as important when the child's illness severity and cohesiveness of the family unit were controlled.

Mothers' reactions regarding her child's experience (including procedures), appearance, and future were influenced by her perception of the severity of the child's injuries. Objective severity was related only to her reactions about the child's experience (including procedures) perhaps because children with more severe injuries often require more invasive and distressing experiences. Social support helped decrease the mother's reactions to her child's appearance, but had no effect on her reactions to what was happening to her child. Greater psychological distress was related to greater concerns about her child's experience and future.

Discussing mothers' perceptions of her child's injury severity will allow the mother to voice her fears for the child, reveal misconceptions she holds, and provide the opportunity for clinicians to address these issues. Encouraging mothers to access their support systems may

ease their reactions. The effect of the mother's own psychological distress may reflect her ability to cope with the child's injury. Assessing what mothers are doing to cope with the child's injury allows clinicians to support adaptive coping mechanisms or suggest other ways of coping that may be more effective.

Analyses with the fathers' data provided a different picture. Fathers' stress from the child's appearance was related only to his perception of the child's injury severity. However, fathers' psychological distress and their reactions to the environment (sights & sounds of the unit and staff communication) were closely linked. More research is needed to understand what factors affect fathers' stress after their child's head injury.

## Conclusion

In summary, at 24–48 hours after admission, mothers and fathers were concerned about the child's experience (pain, child's understanding and memories about the experience) and their parental role (prevention of the injury and helping their child during hospitalization). Parents experienced stress primarily from aspects of the child's experience (pain, emotions, invasive procedures). Parents with a child in the PICU reported stress about not knowing how to help their child and the sights and sounds of the unit. The experience of pediatric head trauma was more stressful for mothers of children in the PICU than for mothers of children in the GCU. Although mother-father couples rated their child's injury severity similarly, mothers experienced more stress than fathers. Social support decreased the stress for mothers but not for fathers. These findings provide direction for health care providers in supporting parents soon after their child's hospitalization.

## Acknowledgements

Supported by a grant from the National Institute of Nursing Research, National Institutes of Health, #R01 NR04430.

## References

1. Guyer B, Hoyert DL, Martin JA, et al. Annual summary of statistics: 1998. *Pediatr* 1999;104:1229–1246.
2. Rivara FP. Pediatric injury control in 1999: Where do we go from here? *Pediatr* 1999;103(Supplement): 883–888.
3. Miller TR, Lestina DC. Patterns in US medical expenditures and utilization for injury, 1987. *Am J Public Health* 1996;86:89–93. [PubMed: 8561252]
4. www.mchb.hrsa.gov/chusa02. Accessed August 16, 2004.
5. Hackbarth RM, Rzeszutko KM, Sturm G, Donders J, Kuldaneck AS, Sanfilippo DJ. Survival and functional outcome in pediatric traumatic brain injury: A retrospective review and analysis of predictive factors. *Crit Care Med* 2002;30:1630–1635. [PubMed: 12130990]
6. Thurman, DJ.; Alverson, C.; Browne, D.; Dunn, KA.; Guerrero, J.; Johnson, R.; Johnson, V.; Langlois, J.; Pilkey, D.; Sniezek, JE.; Toal, S. CDC – Traumatic brain injury in the United States: A report to Congress; National Center for Injury Prevention and Control, Centers for Disease Control and Prevention. 1999.
7. Board R, Ryan-Wenger N. State of the science on parental stress and family functioning in pediatric intensive care units. *Am J Crit Care* 2000;9:106–124. [PubMed: 10705424]
8. Berenbaum J, Hatcher J. Emotional distress of mothers of hospitalized children. *J Pediatr Psychol* 1992;17:359–372. [PubMed: 1640318]
9. Youngblut JM, Shiao S-YP. Characteristics of a child's critical illness and parents' reactions: Preliminary report of a pilot study. *Am J Crit Care* 1992;1:80–85. [PubMed: 1307910][Corrected Table 2 printed in 2(1), 101 (1993)].
10. Carnevale FA. A description of stressors and coping strategies among parents of critically ill children: A preliminary study. *Intensive Care Nurse* 1989;6:4–11.

11. Farrell MF, Frost C. The most important needs of parents of critically ill children: Parents' perceptions. *Critical Care Nurse* 1992;8:130–139.
12. Tomlinson PS, Kirschbaum M, Harbaugh B, Anderson KH. The influence of illness severity and family resources of maternal uncertainty during critical pediatric hospitalization. *Am J Crit Care* 1996;5:140–146. [PubMed: 8653165]
13. LaMontagne LL, Pawlak R. Stress and coping of parents of children in a pediatric intensive care unit. *Heart Lung* 1990;19:416–421. [PubMed: 2098003]
14. Youngblut, JM. Emergency admission to a Pediatric Intensive Care Unit: Parental concerns [masters thesis]. Ann Arbor: University of Michigan; 1983.
15. Carter, MC.; Miles, MS. Parental stressor scale: Pediatric intensive care unit. Kansas City: University of Kansas; 1983.
16. Veit CT, Ware JE Jr. The structure of psychological distress and well-being in general populations. *J Consult Clin Psychol* 1983;51:730–742. [PubMed: 6630688]
17. Zimet GD, Dahlem NW, Zimet SG, Farley GK. The Multidimensional Scale of Perceived Social Support. *Journal of Personality Assessment* 1988;52:30–41.
18. Abbreviated injury scale. Des Plaines, IL: Author; 1990. Association for Advancement of Automotive Medicine.
19. Johnson PA, Nelson GL, Brunnquell DJ. Parent and nurse perceptions of parent stressors in the pediatric intensive care unit. *Children's Health Care* 1988;17:98–105.
20. Youngblut JM, Jay SS. Emergency admission to the pediatric ICU: Parental concerns. *AACN Clin Issues in Crit Care Nurs* 1991;2:329–337.
21. Board, R. Parental care of their children in the PICU: Effects on parental physical and psychological symptoms [masters thesis]. Columbus: The Ohio State University; 1994.
22. Carter MC, Miles MS, Buford TH, Hassanein RS. Parental environmental stress in pediatric intensive care units. *Dimensions Crit Care Nurs* 1985;4:180–188.
23. Eberly TW, Miles MS, Carter MC, Hennessey J, Riddle I. Parental stress after the unexpected admission of a child to the intensive care unit. *Crit Care Q* 1985;8:57–65.
24. Miles MS, Carter MC, Hennessey J, Riddle II, Eberly TW. Testing a theoretical model: Correlates of parent stress responses in the PICU. *Matern Child Nurs J* 1989;18:207–219. [PubMed: 2491510]
25. Miles MS, Carter MC, Riddle II, Hennessey J, Eberly TW. The pediatric intensive care unit environment as a source of stress for parents. *Matern Child Nurs J* 1989;18:199–206. [PubMed: 2491509]
26. Miles MS, Carter MC, Spicher C, Hassanein RS. Maternal and paternal stress reactions when a child is hospitalized in a pediatric intensive care unit. *Issues Comprehensive Pediatr Nurs* 1984;7:333–342.
27. Seideman RY, Watson MA, Corff KE, Odle P, Haase J, Bowerman JL. Parent stress and coping in NICU and PICU. *J Pediatr Nurs* 1997;12:169–177. [PubMed: 9198340]
28. Nizam M, Norzila MZ. Stress among parents with acutely ill children. *Med J Malaysia* 2001;56:428–434. [PubMed: 12014761]
29. Curley MAQ, Wallace J. Effects of the nursing mutual participation model of care on parental stress in the pediatric intensive care unit: A replication. *J Pediatr Nurs* 1992;7:377–384. [PubMed: 1291673]
30. Heuer L. Parental stressors in a pediatric intensive care unit. *Pediatr Nurs* 1993;19:128–131. [PubMed: 8502494]
31. Riddle II, Hennessey J, Eberly TW, Carter MC, Miles MS. Stressors in the pediatric intensive care unit as perceived by mothers and fathers. *Matern Child Nurs J* 1989;18:221–233.
32. Cordell AS, Thomas N. Fathers and grieving: Coping with infant death. *J Perinatol* 1990;10:75–80. [PubMed: 2313398]

**Table 1**  
 Mother-father comparisons of early reactions, perceived injury severity, mental health, and social support.

	Mother (n = 60) M (SD)	Father (n = 60) M (SD)	Paired t-test	p value
Parental Concerns				
Child's Experience	3.0 (.93)	2.9 (1.01)	.76	.45
Child's Future	2.7 (1.45)	2.5 (1.41)	.87	.39
Parenting Concerns	3.0 (.95)	2.8 (.93)	1.71	.09
Financial Concerns	2.0 (1.27)	1.9 (1.17)	.14	.89
Child's Appearance	2.0 (1.45)	1.7 (1.55)	1.00	.32
Sights & Sounds	2.0 (1.29)	1.8 (1.26)	1.46	.15
Procedures	2.0 (1.29)	1.7 (1.16)	1.47	.15
Child's Behavior & Emotions	2.2 (1.19)	1.6 (1.2)	2.94*	.005
Staff Behavior	1.2 (1.14)	0.9 (.90)	1.94	.06
Staff Communication	1.7 (1.49)	1.2 (1.18)	2.23*	.03
Parental Role	1.7 (1.39)	1.3 (1.27)	2.42*	.02
Perceived Injury Severity	2.7 (1.20)	2.7 (1.17)	.31	.76
Perceived Chance of Survival	4.8 (.41)	4.8 (.79)	.44	.66
Mental Health	46.4 (7.86)	46.1 (6.70)	.24	.81
Psychological Well-Being	44.8 (16.71)	41.9 (12.82)	1.17	.25
Friends	24.2 (4.98)	22.6 (4.50)	2.01*	.05
Family	25.1 (4.77)	24.4 (3.65)	.91	.37
Significant Other	26.0 (4.26)	25.3 (3.64)	1.05	.30

\* p < .05

Comparisons of early reactions, perceived injury severity, mental health, and social support for parents in the PICU and GCU groups.

Table 2

	Mothers			Fathers				
	PICU	GCU	t	p value	PICU	GCU	t	p value
<u>Parental Concerns</u>								
Child's Experience	3.1 (.94)	2.8 (.88)	1.48	.14	2.9 (.89)	2.8 (1.11)	.45	.65
Child's Future	2.7 (1.42)	2.2 (1.15)	2.12*	.04	2.6 (1.30)	2.4 (1.49)	.57	.57
Parenting Concerns	3.1 (.90)	3.0 (1.00)	.30	.77	2.9 (.91)	2.6 (.93)	1.43	.16
Financial Concerns	2.1 (1.22)	2.0 (1.24)	.56	.58	2.0 (1.24)	1.8 (1.07)	.69	.49
Child's Appearance	2.1 (1.42)	1.6 (1.54)	1.95*	.05	1.9 (1.40)	1.6 (1.69)	.72	.48
Sights & Sounds	2.3 (1.34)	1.5 (1.48)	3.90*	.0004	2.1 (1.08)	1.5 (1.51)	1.84	.07
Procedures	2.4 (1.15)	1.4 (1.01)	6.16*	.0004	2.0 (1.00)	1.5 (1.29)	1.86	.07
Child's Behavior & Emotions	2.2 (1.17)	2.0 (1.22)	1.19	.24	1.9 (1.02)	1.5 (1.39)	1.28	.21
Staff Behavior	1.1 (1.18)	1.0 (1.02)	.86	.39	1.1 (.96)	.7 (.87)	1.45	.15
Staff Communication	1.5 (1.44)	1.5 (1.38)	.006	.995	1.3 (1.10)	.9 (1.18)	1.34	.19
Parental Role	1.7 (1.47)	1.3 (1.39)	1.86*	.07	1.5 (1.18)	1.1 (1.28)	1.43	.16
Perceived Injury Severity	2.9 (1.20)	2.3 (.94)	3.72*	.0004	3.0 (1.11)	2.4 (1.11)	2.31*	.02
Perceived Chance of Survival	4.8 (.56)	4.9 (.51)	.69	.49	4.8 (.80)	4.8 (.73)	.46	.65
<u>Mental Health</u>								
Psychological Well-Being	44.1 (8.81)	45.6 (9.81)	1.03	.30	45.3 (6.84)	47.5 (6.13)	1.29	.20
Psychological Distress	49.0 (16.52)	45.9 (17.01)	1.15	.25	40.0 (11.47)	42.2 (13.71)	.69	.49
Friends	23.5 (5.43)	22.2 (6.60)	1.33*	.19	22.2 (4.98)	22.9 (3.95)	.59	.56
Family	24.2 (5.11)	21.8 (7.22)	2.34*	.02	24.4 (3.84)	24.4 (3.43)	.008	.99
Significant Other	25.0 (4.47)	23.3 (6.35)	1.90	.06	25.8 (3.12)	24.7 (4.04)	1.04	.31

\* p < .05

**Table 3**Top parental concern<sup>1</sup> and stressor<sup>2</sup> items.

<b>PICU Group</b>	<b><u>Mothers' Concerns</u></b>	<b>GCU Group</b>
	<ul style="list-style-type: none"> <li>■ What can I do for my child now?</li> <li>■ Is my child in pain?</li> <li>■ What could I have done to prevent this?</li> <li>■ Does my child understand what is happening?</li> <li>■ How long will my child be in the hospital?</li> <li>■ What will my child remember?</li> </ul>	<ul style="list-style-type: none"> <li>■ What can I do for my child now?</li> <li>■ Is my child in pain?</li> <li>■ What could I have done to prevent this?</li> <li>■ Does my child understand what is happening?</li> <li>■ What will my child remember?</li> </ul>
<b>PICU Group</b>	<b><u>Mothers' Stressors</u></b>	<b>GCU Group</b>
	<ul style="list-style-type: none"> <li>■ Child acting or looking as if in pain</li> <li>■ Child's rebellious or uncooperative behavior</li> <li>■ Not knowing how best to help my child</li> <li>■ Putting needles in my child</li> <li>■ Bruises, cuts, incisions on my child</li> <li>■ Child's fright</li> <li>■ Child's crying or whining</li> <li>■ Puffiness of my child</li> <li>■ Sudden sounds of monitor alarms</li> <li>■ Child's confusion</li> <li>■ Injections/shots</li> <li>■ Sound of the monitors and equipment</li> </ul>	<ul style="list-style-type: none"> <li>■ Child acting or looking as if in pain</li> <li>■ Bruises, cuts, incisions on my child</li> <li>■ Putting needles in my child</li> <li>■ Child's restlessness</li> <li>■ Child's fright</li> </ul>
<b>PICU Group</b>	<b><u>Fathers' Concerns</u></b>	<b>GCU Group</b>
	<ul style="list-style-type: none"> <li>■ Is my child in pain?</li> <li>■ What can I do for my child now?</li> <li>■ What could I have done to prevent this?</li> <li>■ Does my child understand what is happening?</li> <li>■ How is/will my child's other parent react to this?</li> <li>■ How long will my child be in the hospital?</li> <li>■ How much should I tell my child about the injury in the future?</li> <li>■ What will my child remember?</li> </ul>	<ul style="list-style-type: none"> <li>■ Does my child understand what is happening?</li> <li>■ Is my child in pain?</li> <li>■ What can I do for my child now?</li> <li>■ What could I have done to prevent this?</li> <li>■ What will my child remember?</li> </ul>
<b>PICU Group</b>	<b><u>Fathers' Stressors</u></b>	<b>GCU Group</b>
	<ul style="list-style-type: none"> <li>■ Child acting or looking as if in pain</li> <li>■ Bruises, cuts, incisions on my child</li> <li>■ Tubes in my child</li> <li>■ Putting needles in my child</li> <li>■ Not knowing how best to help my child</li> <li>■ Sudden sounds of monitor alarms</li> </ul>	<ul style="list-style-type: none"> <li>■ No items with mean <math>\geq 2.5</math></li> </ul>

<sup>1</sup>Parental Concerns Scale items with a mean score  $\geq 3.0$

<sup>2</sup>Parental Stressors Scale items with a mean score  $\geq 2.5$

**Table 4**  
Correlations among measures of injury severity, parent social support and mental health<sup>1</sup>.

	ISS	Unit	Perceived Severity	Perceived Survival	Psych. Well-being	Psych Distress.	Support - Friends	Support - Family	Support - Significant Other
Injury Severity Scale (ISS)	-								
Unit <sup>2</sup>	.37**	.37**	.48**	-.17	-.14	-.03	-.21	-.18	-.11
Perceived severity	.37**		.28*	-.06	-.17	-.09	-.09	.001	.15
Perceived survival	.31**	.28**		-.15	-.04	-.05	-.21	-.20	-.06
Psychological Well-being	-.07	-.05	-.07		-.25	.22	-.004	.05	-.15
Psychological Distress	-.07	-.08	-.18*	-.01		-.56**	.49**	.57**	.58**
Support - Friends	.08	.09	.06	-.02	-.75**		-.08	-.31*	-.25
Support - Family	.15	.11	-.002	-.09	.32**	-.17**		.70**	.58**
Support - Significant Other	.17*	.19*	-.10	-.04	.38**	-.31**	.69**		.82**
Other	.18*	.15	-.04	-.01	.37**	-.16	.74**	.67**	

\* p < .05

\*\* p < .01

<sup>1</sup> Mothers' correlations in *italics*. Fathers' correlations in **bold**.

<sup>2</sup> GCU = 0, PICU = 1

**Table 5**  
Significant regressions of parents' concerns and stressors on injury severity, parent social support and mental health.

	Mothers' Reactions			Fathers' Reactions			
	Concern re: Child's Experience $\beta$	Concern re: Child's Future $\beta$	Stress re: Child's Appearance $\beta$	Stress re: Procedures done to Child $\beta$	Stress re: Child Appearance $\beta$	Stress re: Sights & Sounds $\beta$	Stress re: Staff Communication $\beta$
Injury Severity Scale (ISS) total score	.18*	.12	.02	.20*	.15	.14	-.03
How sick right now?	.28**	.31**	.22*	.23*	.34*	.20	.11
Total Social Support	-.03	.001	-.26**	.03	.12	.17	-.14
Psychological Distress	.17*	.18*	.03	.06	.29	.46**	.49**
F	6.76**	6.58**	4.35**	4.37**	2.66*	2.88*	4.03**
Adjusted R <sup>2</sup>	.15	.15	.10	.10	.13	.15	.22

\* p < .05

\*\* p < .01