8-2005

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Published in final edited form as:
J Pediatr Psychol. 2006 July ; 31(6): 608–618.

Pediatric Head Trauma: Parent, Parent-Child and Family Functioning 2 Weeks after Hospital Discharge

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Abstract

Objective—Investigate effects of pediatric head trauma on parent mental health, parent-child relationship and family functioning 2 weeks post-discharge.

Methods—97 mothers and 37 fathers of 106 preschool children hospitalized with head injury completed Mental Health Inventory (MHI), Parenting Stress Index, FACES II, and Multidimensional Scale of Perceived Social Support 2 weeks post-discharge and perceived injury severity, Parental Concerns Scale, Parental Stressor Scale: PICU, and MHI 24–48 hours after hospital admission.

Results—Mental health post-discharge was related to social support and baseline mental health. Mothers' parental distress was related to perceived injury severity and social support. Greater family cohesion was related to baseline mental health, social support, and being in a 2-parent family for mothers, and to social support for fathers.

Conclusions—Parents' mental health and social support were important for parent mental health and family cohesion post-discharge. Perceived injury severity and parent reactions to hospitalization also played a role.

Keywords

head injury; family functioning; parent mental health; preschool children

Accidental injury is the leading cause of death and disability in children (Guyer *et al.*, 1999). Many children with head injuries are left with residual impairments, including seizures, speech and gait problems, hearing or vision changes, and memory or attention problems (Anderson *et al*., 1997; Anderson *et al*., 2001). Children who suffer head injuries in the preschool years are at substantially greater risk for subsequent behavior disorders that interfere with school performance (Michaud, Rivara, Jaffe, Fay, & Dailey, 1993). McKinlay, Dalrymple-Alford, Horwood, and Fergusson (2002) found that children whose mild head injury, severe enough to be hospitalized, occurred before they were 5 years old were more likely to display hyperactivity/inattentiveness and conduct disorder when they reached 10–13 years old. Even in preschoolers with mild head injury not severe enough for hospitalization, Wrightson, McGinn, and Gronwall (1995) found deficits in solving visual puzzles by 6 months post-injury and lower reading ability by 6.5 years.

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Citation: Youngblut, J.M., & Brooten, D. (2006). Pediatric head trauma: Parent, parent-child and family functioning 2 weeks after hospital discharge. Journal of Pediatric Psychology, 31, 608-618.

These residual effects of traumatic brain injury (TBI) suggest that parents often must adjust to a "new" child after the injury. However, there are few studies that examine the effects of a preschool child's head injury for the parent and the family, even though caregivers of adults after a TBI suffer significant mental health problems (Mintz, van Horn, & Levine, 1995). Indeed, parents of preschoolers may have more difficulty coping with the injury because of the preschooler's greater dependence and need for adult supervision than older children. The purpose of this study is to investigate the effects of the severity of the preschool child's head trauma, parents' early reactions, and parent resources (social support and baseline mental health) on parent mental health, the parent-child relationship, and family functioning at 2 weeks after the child's hospital discharge.

Parent Mental Health

Few studies have examined the effects of a child's TBI on parent mental health after the child's hospital discharge, none with preschoolers. Wade, Taylor, Drotar, Stancin and Yeates (1998) found an effect for type of injury on parent reports of psychological symptoms. In that study, parents of school-age children with severe TBI reported more psychological symptoms than parents of children with orthopedic injuries, but parents in the severe TBI and the moderate TBI groups did not differ significantly. A greater proportion of parents in the severe TBI group (40%) had clinically severe psychological symptoms at 12 months post-injury than parents in the orthopedic group (22%). The rate for parents in the moderate TBI group was 29%. With this same sample, Yeates, Taylor, Woodrome, Wade, Stancin, and Drotar (2002) found a moderating effect for race. Psychological symptoms reported by parents of white children and black children with TBI did not differ. At 6 and 12 months post-injury, parents of black children with orthopedic injuries reported fewer psychological symptoms than parents of black children with TBI and parents of white children with either TBI or orthopedic injuries.

Although limited, studies of parent mental health following a child's pediatric intensive care unit (PICU) hospitalization may be applicable because children with more severe head trauma may be admitted to the PICU. Tomlinson, Harbaugh, Kotchevar and Swanson (1995) found decreases in mental health scores for all mothers' between 3–7 days after admission and 9 weeks later. Mothers whose children's illnesses had greater potential to leave them with a chronic condition demonstrated significantly greater declines in mental health scores. In another study of parents with a child in the PICU, greater anxiety was associated with an unexpected admission, greater perceived illness severity, and greater stress about parental role alteration, child behavior, and child appearance (Miles, Carter, Hennessey, Eberly, & Riddle, 1989). Berenbaum and Hatcher (1992) found that mothers of children in the PICU were significantly more anxious than mothers with children on the general care unit (GCU) and mothers with children seen in the outpatient clinic for minor acute illnesses. Higher anxiety was related to greater perceived illness severity.

Parent-Child and Family Functioning

Research on the effects of a child's TBI on the parent-child relationship (regardless of the child's age) and on family functioning after preschool head injury has not been reported. The limited research on family functioning after TBI in school-aged children indicates that poor pre-injury family functioning and parental psychological disorder are the best predictors of poor post-injury family functioning (Wade, Drotar, Taylor, & Stancin, 1995). In a subsequent study assessing factors predictive of family functioning in the first 2 years after TBI in school-aged children, Max and colleagues (1998) found that the strongest influences on post-injury family functioning were pre-injury family functioning (measured "as soon as possible" post-injury), development of a never-before-present (novel) psychiatric disorder in the child, and pre-injury family life events or stressors.

In a study of school-aged children with TBI or orthopedic injuries, Wade et al. (1998) found that 25% of the families in the severe TBI group – compared to 11% of the families in the moderate TBI group and 7% of the families in the orthopedic group – had significant family dysfunction at 6 months post-event. However, differences across groups were not significant at 12 months post-event. The group-by-time interaction effect was not significant. With the same sample, Yeates, Taylor, Woodrome, et al. (2002) reported that higher socioeconomic status, but not race, was associated with better family functioning at the 6- and 12-month follow-up.

In a longitudinal study, Rivara and colleagues compared families with a school-aged child with severe TBI and those with a school-aged child with mild or moderate TBI on parents' ratings of family functioning with the Family Environment Scale (FES) and interviewer ratings of global family functioning. From 3 to 12 months post-injury, there was a slight decrease in interviewer ratings of global family functioning for families with severely injured children and non-significant changes in scores on the FES (Rivara, Fay, Jaffe, Polissar, Shurtleff, & Martin, 1992). At 3 years post-injury, Rivara, Jaffe, Polissar, Fay, Liao, and Martin (1996) found the greatest deterioration in family functioning in families where the child had suffered a severe TBI. As in previous research, pre-injury functioning was the best predictor of family outcomes at 3 years post TBI.

In a study of families after a child's critical illness, Youngblut and Shaio (1993) found mothers' perceptions of family cohesion decreased significantly from 24–48 hours after PICU admission to 2 weeks post-discharge. Mothers' perceptions of family cohesion and satisfaction after discharge were negatively related to a visible sign of illness severity (length of time the child was on a ventilator) but not to risk of mortality (PRISM scores). At an average of 80 weeks post-discharge, Youngblut and Lauzon (1995) found that parents' perceptions of family functioning were not significantly different for families with a child hospitalized in the PICU and families with a child hospitalized on a GCU, controlling for length of time since discharge. Length of hospital stay and PRISM score were significant negative predictors of fathers' perceptions of family cohesion. Unit where hospitalized (PICU *vs.* GCU) and PRISM score were negatively related to mothers' perceptions of family adaptability.

In summary, little is known about parent mental health, parent-injured child relationship, and family functioning after TBI in preschool children. Parent mental health after a school-aged child's TBI may be associated with the severity of the injury. Parent mental health after a child's hospitalization in a PICU has been associated with both objective and perceived illness severity and the parent's reaction to the critical illness. Family functioning at 6 months to 3 years post-injury is most often related to pre-injury family functioning. However, by necessity, the pre-injury measures are gathered after the child's injury by asking parents to rate their family's pre-injury functioning. In addition, family structure (single- or 2-parent family, number of children) has not been considered. Research on parent mental health and parent-child and family functioning in the early post-discharge period and with families where the injured child is a preschooler has not been reported. The aim of this study is to investigate the effects of perceived and objective injury severity, T1 parent mental health, T1 parent reactions and T2 social support on parent mental health, parent-child relationship, and family functioning at 2 weeks post-discharge using data collected at 24 – 48 hours after hospital admission (T1) and 2 weeks post-discharge (T2) from a longitudinal study of families with a preschool child with TBI.

Methods

Sample

The sample consists of 97 mothers and 37 fathers (N = 106 families) with a preschool child (3 – 6 years old) who was hospitalized with a head injury. All children sustained an injury where head trauma was possible and had at least one physical finding consistent with head trauma, including: loss of consciousness (no matter how brief), a positive CT scan or x-ray, or symptoms of head injury in children (vomiting, drowsiness, seizures, neurologic deficits, cerebrospinal fluid or bloody discharge from the ears or nose). Other inclusion criteria for the injured child were: living with at least one biologic or adoptive parent prior to the injury, previously healthy (free from chronic illness other than asthma), and no previous hospitalization. Parents had to understand spoken English. Exclusion criteria were: cognitive deficits prior to the current injury severe enough to limit daily functioning such as the diagnosis of severe mental retardation, 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.

Description of the sample is in Table 1. About half of the parents reported their race/ethnicity as white. Most of the families were two-parent families. The injured child was the only child in 13% of the families. Almost half of the injured children were hospitalized initially in the PICU. The most common cause of the head injury was falls, followed by involvement with a motor vehicle or bicycle. Most children sustained only the head injury (69%). About 39% (n = 37) of the children experienced a loss of consciousness at the scene, and 4 (4%) had a period of coma after their injuries. The other injuries, sustained by 31% of the children, included other fractures (n = 21) and injuries to the spleen (n = 3), liver (n = 4), kidney (n = 1), lung (n = 7), GI tract (n = 4) and spinal cord (n = 1).

Instruments

Coefficient alphas for all measures are in Table 2. **Family Functioning** was measured at T2 with the FACES II (Olson, Portner, & Bell, 1983). The FACES II has two subscales: family cohesion and family adaptability. Parents rate each of the 30 items on a 5-point scale from 1 “almost never” to 5 “almost always.” Validity is supported by the scales’ ability to distinguish between clinical and nonclinical families (Olson, 1989) and by significant correlations with other measures of family functioning (Thomas & Barnard, 1986). Higher summative scores indicate greater cohesion and adaptability.

Parent-Child Relationship was measured at T2 with the Parenting Stress Index (PSI; Abidin, 1990). The PSI-Short Form measures the degree of strain in the parent-child relationship. It contains 3 subscales (parental distress, dysfunctional parent-child relationship, difficult child). Parents rated each of the 36 items on a 5-point Likert scale from 1, “strongly agree” to 5, “strongly disagree.” Construct validity is supported by significant correlations between PSI scores and parental anxiety and by group differences between parents of children with and without disabilities (McKinney & Peterson, 1984). Higher summative scores indicate higher levels of stress or dysfunction.

Parent Mental Health was measured at T1 (baseline) and T2 with the two domains – psychological well-being and psychological distress – of the Mental Health Inventory (MHI; Viet & Ware, 1983). Psychological well-being measures general positive affect and sense of belonging. Psychological distress measures anxiety, depression, and loss of behavioral/ emotional control. Parents rate each of the 32 items on 5-point scales. Higher summative scores mean greater well-being and distress. Psychological distress scores at baseline and T2 were not significantly different for mothers, paired t = .39, p = NS, and fathers, paired t = .22, p =

NS. However, mothers and fathers reported significantly lower psychological wellbeing at T2 compared to baseline, paired t = 2.53, p = .01 and paired t = 2.27, p = .04, respectively.

Parental Reactions were measured at T1 with two instruments: theParental Concerns Scale (Youngblut, 1983) and the Parental Stressors Scale: PICU (Carter & Miles, 1983). The Parental Concerns Scale (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, ranging from 1 "not at all" to 5 "a lot". Validity is supported by findings that higher PCS scores were related to higher illness severity and less favorable prognosis (Youngblut & Jay, 1991; Youngblut & Shaio, 1992, 1993). Higher summative scores indicate greater concerns.

The Parental Stressors Scale: PICU (PSS:PICU; Carter & Miles, 1983) contains seven subscales: child's appearance, sights & sounds of the unit, procedures done to the child, child's behavioral and emotional responses, professional staff behavior, professional staff communication, and parental role revision. Parents rate each of the 39 items on a 5-point scale, ranging from 1 "not stressful" to 5 "extremely stressful." Items not experienced by the parents receive a "0." Subscale scores were calculated by adding the parent's ratings and dividing by the number of items in the subscale.Validity is supported by the finding that higher PSS:PICU scores are related to higher anxiety scores (Carter & Miles, 1989). Higher PSS:PICU scores indicate greater stress.

Parental Resources were measured with the Mental Health Inventory (Viet & Ware, 1983) at baseline and the Multidimensional Scale of Perceived Social Support (MSPSS) at 2 weeks post-discharge. The MSPSS (Zimet, Dahlem, Zimet & Farley, 1988) is a 12-item instrument that measures amount of support received from friends, family, and significant others. Parents rate each of the items on a 7-point Likert scale from 1 "very strongly disagree" to 7 "very strongly agree." Construct validity is supported by a moderate correlation (r = −.35) between MSPSS scores and depression scores for subjects reporting high life stress but no correlation (r = .02) for subjects reporting low life stress (Zimet et al). Higher summative scores represent greater support.

Illness severity was measured with a subjective measure (parents' perceived severity) and an objective anatomical measure (the Injury Severity Scale [ISS]). Although Glasgow Coma Scores were collected, in many cases, a valid score could not be calculated because of insufficient information recorded in the child's chart by the health care provider prior to intubation, sedation, or anesthesia for surgery. In addition, since it is a physiologic scale, Glasgow Coma Scores change over time. Parents' perceived severity was measured with a single item, "How sick would you say your child is right now?" which parents rated on a 5-point scale from 1 "not very sick" to 5 "the most sick possible" at 24 – 48 hours after their child's hospital admission.

The ISS is derived from the Abbreviated Injury Scale (AIS; Association for Advancement of Automotive Medicine, 1990). The AIS was designed to classify individual injuries by body region on a 6-point severity scale: 1 (minor), 2 (moderate), 3 (serious), 4 (severe), 5 (critical), and 6 (maximum), using a dictionary with extensive lists of anatomical injuries and delineated coding rules. Since the AIS does not use physiologic variables in its score, the child's AIS score is determined by the severity of the child's injury and does not change over time. The AIS is scored based on information from the child's chart. 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. Possible range for the ISS is 1 to 75. Construct validity is supported by finding that the AIS is significantly correlated with pediatric outcome categories at 5 to 7 years post-injury (Massagli, Michaud, & Rivara, 1996) and verbal and performance IQ, memory, and motor

performance at 1 year post-injury (Massagli, Jaffe, Polissar, Liao, & Rivara, 1996). Total ISS scores ranged from 1 to 50. In the current study, AIS head injury codes ranged from 1 to 5: 18 (17%) mild, 37 (36%) moderate, 22 (21%) serious, 23 (22%) severe, and 4 (4%) critical.

Procedure

Families were recruited from the GCUs and PICUs from 7 hospitals in two metropolitan areas. IRB approvals were obtained from the universities and the seven hospitals. At 24 – 48 hours after the child's admission to the hospital, a data collector approached the parents to explain the study, ascertain eligibility, answer their questions, and obtain consent to participate in the study. Of the families approached, 17% declined participation. Data for this study were collected in the hospital at the time of consent (T1) and at 2 weeks post-discharge (T2) as part of a longitudinal study of parent and family functioning after a preschool child's head injury.

Data analysis

Coefficient alpha was calculated for each of the scales and subscales (Table 2). Relationships between the independent variables and each dependent variable were examined first with bivariate correlations for mothers (Table 3) and fathers (Table 4). Race/ethnicity was dichotomized as 1 "white," 0 "not white," and its relationships with the dependent variables were examined with bivariate correlations. The number of fathers ($N = 37$) prohibited use of regression analyses with father data. For the mother data, hierarchical multiple regression with three stages was used to examine the relationships between the dependent variables and the independent variables controlling for the other independent variables (Table 5). In the first stage of the regression analyses, the independent variables – entered as a group with forced entry – included perceived (how sick is your child right now?) and objective (ISS total score) severity, total T2 social support, baseline mental health (psychological distress, except baseline psychological wellbeing was substituted when T2 psychological wellbeing was the dependent variable), and number of children and parents in the family. Because of the large number of subscales (11) for the PCS and PSS:PICU compared to the number of mothers ($N = 97$), variables in the second and third stages were entered using stepwise selection. The 4 parent concerns subscales were entered in the second stage and the 7 parental stressor subscales were entered in the third stage. This procedure allowed consideration of all the parent reaction variables within the sample size constraints.

Results

Parent Mental Health

Mothers' T2 psychological distress was correlated with greater baseline psychological distress and lower baseline psychological wellbeing, greater perceived injury severity and stress about procedures done to the child, and lower total T2 social support. In the hierarchical multiple regression, only greater baseline psychological distress and lower T2 social support remained as significant predictors of greater psychological distress.

Mothers' T2 psychological wellbeing was correlated with greater baseline psychological wellbeing and T2 total social support, lower perceived injury severity, lower stress about the child's appearance, and lower concerns about the child's experiences, the child's future, and finances. In the hierarchical multiple regression, significant predictors of mothers' greater T2 psychological wellbeing were greater baseline psychological wellbeing, greater total T2 social support, greater stress about the sights & sounds of the unit, and lower stress about the child's appearance. Mothers' race/ethnicity was not related to psychological wellbeing and distress, $r = .04$ and $-.13$, p = NS, respectively.

Fathers' T2 psychological distress was correlated with greater baseline psychological distress and greater stress regarding the child's appearance, child's behavioral and emotional responses, and sights & sounds of the unit. Fathers' T2 psychological wellbeing was correlated with greater baseline psychological wellbeing and total T2 social support. Fathers' race/ethnicity was related to psychological distress, r = −.48, p = .02, but not to wellbeing, r = .24, p = NS.

Parent-Child Relationship

Mothers' parental distress was correlated with greater baseline psychological distress and lower baseline psychological wellbeing, greater perceived injury severity, greater concerns about the child's future, and lower total T2 social support. In the regression analysis, greater parental distress was related to greater perceived injury severity and less total T2 social support.

Mothers' perceptions of greater dysfunction in the mother-child relationship were correlated with greater baseline psychological distress and lower baseline psychological wellbeing. Mothers' perceptions of the child as difficult were correlated with greater baseline psychological distress, lower baseline psychological wellbeing, and lower total T2 social support. When examined with multiple regression, none of these relationships remained significant.

Fathers' parental distress, perceptions of a dysfunctional father-child relationship and the child as difficult were not correlated with perceived and objective severity of injury, baseline mental health, T2 social support, parental concerns or parental stressors. Parents' race/ethnicity was not related to any of the parent-child measures.

Family Functioning

Mothers' ratings of greater family cohesion were correlated with greater baseline psychological wellbeing and lower baseline psychological distress, greater total T2 social support, lower concerns about the child's future, and less stress about the child's behavior & emotions. In the regression, lower baseline psychological distress, greater T2 social support and being in a two-parent family were the only significant predictors of the mothers' perceptions of her family as more cohesive.

Mothers' ratings of greater family adaptability were correlated with greater baseline psychological wellbeing, lower baseline psychological distress, and greater total T2 social support. In the regression, having a greater number of children, greater financial concerns at baseline, and greater stress about the hospital staff's behavior were significant predictors of the mothers' perceptions of her family as more adaptable.

Fathers' ratings of greater family cohesion were correlated with greater T2 social support. Fathers' ratings of family adaptability were not correlated with perceived and objective injury severity, baseline mental health, T2 social support, parental concerns or stressors. Parents' race/ethnicity was not related to measures of family functioning.

Discussion

For families with a child with TBI, transition from the hospital through the first few weeks at home can bring challenges of continuing physical care for the child, coping with a "new" child, and incorporating that new child into the family. Research on longer-term outcomes for children who sustained even a mild head injury in the preschool years finds a greater likelihood of these children developing reading problems, hyperactivity/inattentiveness, and conduct disorders (McKinlay et al., 2002; Wrightson et al., 1995). Although not visible, these problems affect school performance and may present difficulties in parenting. Such challenges have potential longer term effects on parents' mental health, their relationship with the child and

functioning of the family. Results from this study suggest factors that help parents through the transition period.

Factors affecting parent's mental health 2 weeks after the child's discharge were parent's mental health early in the child's hospitalization and social support after the child's discharge. In addition, fathers' psychological distress at 2 weeks was related to his greater stress from the child's appearance, behavior, and emotions and the sights and sounds of the unit. Minority fathers had more psychological distress than white fathers. Mothers' psychological wellbeing at 2 weeks post-discharge was related to lower stress from her child's appearance and greater stress from the sights and sounds of the unit. This latter relationship may reflect the great difference in environmental stimuli from the hospital to home. That is, mothers who are greatly stressed by the noises, machines, and alarms in the hospital may respond to the absence of these stimuli in the quieter home environment with more peace of mind. Although perceived injury severity and reactions during hospitalization were important to parent mental health in previous studies (Berenbaum & Hatcher, 1992, Miles et al., 1989), in this study, they were not significant after controlling for the effects of other factors.

Throughout the child's hospitalization, clinicians can support parent's mental health by helping parents to understand the extent of the child's injury, the child's appearance and behaviors, and the potential future effects of the injury. Encouraging parents to talk about their fears and experiences may help them to deal with what they see and hear in the hospital unit. This would also help in identifying parents in need of additional psychosocial services. Helping parents marshal their social support network during the child's hospitalization is extremely important for the post discharge transition and support of the parents when they are no longer surrounded by hospital staff to provide the child's care, and when they are now incorporating what may be a "new child" into the family unit.

Few study factors were related to measures of the parent-child relationship at 2 weeks post discharge. Mother's distress about parenting increased with greater perceived injury severity but decreased with social support. Fathers' parenting distress was not related to these independent variables. Since research on the effects of a child's TBI for the parent-child relationship has not been reported, interpretation of these findings is tentative at best. The lack of significant relationships for fathers may be due to the small number of fathers who participated. However, 2 weeks post-discharge may be too early to see potential effects of the child's injury on the parent-child relationship. Since some of the children had continuing physical demands of the injury, including casts and crutches, parents may view difficulties in their relationship with the injured child as transient due to these demands and the effects of being in the hospital. Parents also may be feeling relieved that the child is home and protective toward the child against further injury.

Family functioning at 2 weeks post discharge was examined with measures of family cohesion and family adaptability. Greater family cohesion was related to social support at two weeks post-discharge for fathers and to baseline mental health, social support at two weeks post-discharge, and being in a 2-parent family for mothers. Fathers' perceptions of their family's adaptability were not related to any of the independent variables. Mothers' perceptions of greater family adaptability (more chaotic, less rigid) at two weeks post-discharge were related to more children in the family, her greater financial concerns, and greater stress about hospital staff behavior. Perhaps this latter finding reflects a spill-over of the sometimes chaotic hospital environment to the home.

Again, lack of research with families of injured preschoolers limits the interpretation of these findings. Research with families of injured school-aged children has consistently found that family functioning pre-injury is the best predictor of post-injury functioning (Max et al.,

1998; Rivara et al., 1996; Wade et al., 1995). However, in these studies, the measures of pre-injury functioning were obtained retrospectively about a month after the injury. Although asked to rate their families as they were prior to the injury, post-injury perceptions in combination with the many events occurring in the interim may color the families' reports of pre-injury family functioning. Indeed, findings from this study and an earlier study (Youngblut & Shaio, 1993) show that the experience of having a child hospitalized with a head injury may already be having an effect on perceptions of family at two weeks after hospital discharge. While screening families soon after admission may be ideal, many families are not capable of or willing to provide this type of information at this difficult time.

This study's results are limited by the relatively small number of fathers (n = 37) who participated. Although this is a common occurrence in family research, it limits the generalizability of the study's results and provides less guidance for health care providers in working with fathers of head injured preschool children. Because of the sudden, unplanned nature of accidental injury, obtaining a true pre-injury baseline for parent-child and family functioning is not feasible. Comparison between a group of families with healthy children chosen at random and the study's families with injured children would help in identifying whether the level of parent-child and family functioning is "normal" or not.

In summary, parents' personal resources of mental health and social support had important effects for parent mental health and family cohesion at two weeks after hospital discharge. Perhaps these resources provide the lens through which parents view themselves and their families, or they enable the parents to deal with the difficulties they experience when their child has a head injury. Perceived injury severity and social support played a role in parent distress for mothers but not fathers. There were few effects of parents' reactions (stressors and concerns) in the hospital on parent mental health, parent-child relationship, and family functioning at 2 weeks post hospital discharge. Parents would benefit from help in mobilizing or augmenting their social networks early in the child's hospitalization. This study provides baseline data from which to examine later parent, parent-child, and family outcomes to provide more insight into the parents' and families' process of adapting to a "new" child after head injury.

Acknowledgements

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

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Table 1

Description of the sample.

		Mothers (n = 97)	Fathers (n = 37)
Parent			
Age – M (SD)		31.4 (7.64)	36.0 (7.36)
Race – N (%)	White	47 (49%)	15 (40%)
	Black	32 (33%)	13 (35%)
	Hispanic	17 (18%)	8 (22%)
	Asian	1 (1%)	1 (3%)
Education – N (%)	< High School	19 (20%)	7 (19%)
	High School Graduate	24 (25%)	7 (19%)
	> High School	54 (55%)	23 (62%)
			Family (N = 106)
Family			
Marital Status – N (%)	Married		57 (56%)
	Living Together		18 (18%)
	Never Married		16 (16%)
	Divorced/widowed/separated		10 (10%)
Number of Children – N (%)	1		14 (13%)
	2		35 (33%)
	3		27 (26%)
	≥ 4		29 (28%)
Family Income – N (%)	< $20,000		19 (26%)
	$20,000 – $50,000		27 (37%)
	> $50,000		27 (37%)
Child			
Age – M (SD)	In Months		60.1 (14.57)
Gender – N (%)	Boys		58 (55.2%)
	Girls		47 (44.8%)
Unit Where Hospitalized Initially – N (%)	Pediatric Intensive Care Unit		51 (48.6%)
	General Care Unit		55 (51.4%)
Length of stay (days) – M (SD)	In Hospital		3.1 (4.07)
	In PICU (n = 51)		2.8 (3.70)
Cause of Injury – N (%)	Fall		55 (53.9%)
	Pedestrian vs. Car		16 (15.7%)
	Motor Vehicle Crash		15 (14.6%)
	Bicycle Crash		9 (8.9%)
	Other		7 (6.9%)

Table 2

Coefficient alphas for study measures.

Measure		In Hospital (T1)		2 Weeks Post-Discharge (T2)		Reported Reliability
		Mothers (n = 97)	Fathers (n = 37)	Mothers (n = 97)	Fathers (n = 37)	
FACES II[1]	Family Cohesion	-	-	.81	.66	.91
	Family Adaptability	-	-	.64	.71	.80
Parenting Stress Index[2]	Parental Distress	-	-	.86	.72	.70–.84
	Dysfunctional Parent-Child Relationship	-	-	.82	.86	
	Difficult Child	-	-	.85	.76	
Parent Mental Health[3]	Psychological Well-being	.90	.83	.91	.89	.92
	Psychological Distress	.94	.93	.94	.91	.94
Parental Concerns Scale[4]	Child's Experience	.76	.84	-	-	.63–.87
	Child's Future	.74	.82	-	-	(mothers)
	Parenting Concerns	.67	.67	-	-	.67–.91
	Financial Concerns	.66	.49	-	-	(fathers)
Parental Stressors Scale: PICU[5]	Child's Appearance	.76	.84	-	-	.72 – .99
	Sights & Sounds of the Unit	.86	.88	-	-	
	Procedures done to the Child	.77	.83	-	-	
	Child's Behavior and Emotions	.84	.88	-	-	
	Staff Behavior	.75	.71	-	-	
	Staff Communication	.88	.84	-	-	
	Alteration in Parental Role	.86	.86	-	-	
Multidimensional Scale of Perceived Social Support[6]		-	-	.95	.94	.91

[1] Olson, Portner & Bell, 1983

[2] Abidin, 1990

[3] Viet & Ware, 1983

[4] Youngblut & Jay, 1991; Youngblut & Shaio, 1992, 1993

[5] Carter & Miles, 1983

[6] Dahlem, Zimet, & Walker, 1991

Table 3

Correlations of mothers' mental health, mother-child relationship, and family functioning with injury severity, social support, baseline mental health, and parental concerns and stressors

	Mother's Mental Health		Mother-Child Relationship			Family Functioning	
	Psychological Distress (T2)	Psychological Wellbeing (T2)	Parent Distress	Parent-Child Dysfunctional Relationship	Difficult Child	Cohesion	Adaptability
Injury Severity							
How sick right now (T1)?	.23*	−.21*	.26*	.10	.12	−.12	−.10
ISS total score	.12	−.13	.03	.03	.02	.05	.04
Baseline Mental Health							
Psychological Distress	.59**	−.49**	.36**	.32**	.29**	−.39**	−.27**
Psychological Wellbeing	−.41**	.58**	−.39**	−.23*	−.26*	.34**	.29**
Total Social Support (T2)	−.27**	.33**	−.38**	−.14	−.22*	.43**	.23*
Parental Concerns							
Child's Experience	.15	−.22*	.18	.10	.14	−.16	−.02
Child's Future	.16	−.26*	.21*	.11	.17	−.23*	−.09
Parenting	.11	−.13	.14	.16	.13	−.11	.17
Financial	.13	−.22*	.17	.02	.06	.01	.16
Parental Stressors							
Child's Appearance	.21	−.23*	.02	−.005	.04	−.14	−.05
Child's Behavior & Emotions	.11	−.08	.07	−.08	.03	−.21*	−.05
Procedures done to Child	.26*	−.18	−.05	−.06	.10	−.12	−.03
Parental Role	.13	−.08	.03	.09	.08	−.16	−.06
Sights & Sounds of the Unit	.06	.06	.06	.06	.12	−.03	.007
Staff Communication	.07	.05	.11	.06	.18	−.07	.005
Staff Behavior	.07	−.001	−.01	.01	.12	−.05	.18

* $p < .05$

** $p < .01$

Table 4

Correlations of fathers' mental health, father-child relationship, and family functioning with injury severity, social support, baseline mental health, and parental concerns and stressors.

	Father's Mental Health		Father-Child Relationship			Family Functioning	
	Psychological Distress (T2)	Psychological Wellbeing (T2)	Parent Distress	Parent-Child Dysfunctional Relationship	Difficult Child	Cohesion	Adaptability
Injury Severity							
How sick right now (T1)?	−.09	−.17	−.12	−.09	.19	−.22	−.21
ISS total score	.04	−.06	.15	.33	−.04	−.10	.16
Baseline Mental Health							
Psychological Distress	.59*	−.06	.27	−.06	.06	.02	.05
Psychological Wellbeing	−.32	.67*	.006	.19	.06	.24	.19
Total Social Support (T2)	−.11	.49*	.02	−.33	.29	.43*	.21
Parental Concerns							
Child's Experience	.02	.11	.16	.23	.27	.02	.07
Child's Future	−.12	.05	−.08	.36	.19	−.19	−.29
Parenting	.18	.02	.31	.22	.23	.23	.30
Financial	.03	−.24	.03	.18	.24	−.03	.06
Parental Stressors							
Child's Appearance	.62**	−.31	.45	.22	.31	−.12	.04
Child's Behavior & Emotions	.63**	−.40	.40	−.08	.42	.12	.17
Procedures done to Child	.44	−.45	.35	−.01	.21	−.05	.08
Parental Role	.44	−.33	.37	.07	.16	.04	.20
Sights & Sounds of the Unit	.51*	−.36	.39	−.11	-.04	.25	.33
Staff Communication	.21	.15	.19	−.19	.03	−.19	.02
Staff Behavior	.21	−.12	.22	−.26	.03	.10	.25

* $p < .05$

** $p < .01$

Table 5

Regressions for mothers

	Mother's Mental Health (T2)			Mother-Child Relationship		Family Functioning	
	Psychological Distress	Psychological Wellbeing	Parent Distress	Parent-Child Dysfunctional Relationship	Difficult Child	Cohesion	Adaptability
Independent Variables	**β**	**β**	**β**	**β**	**β**	**β**	**β**
Stage 1							
Baseline Mental Health[a]	.43**	.36**	.17	.21	.19	−.27*	−.22
How sick right now (T1)?	.10	.009	.30*	.16	.11	.02	.11
ISS total score	.05	−.13	−.19	−.21	−.04	−.07	−.16
T2 total social support	−.23*	.27*	−.30*	−.02	−.16	.28*	.19
Number of children	.08	−.19	.10	.24	−.04	.07	.26*
Number of parents (1 *vs.* 2)	.11	−.08	.07	−.02	.07	.31*	.008
Stage 2 – Parental Concerns	-	-	-	-	-	-	
Child's Experience							-
Child's Future							-
Parenting							-
Financial							.27**
Stage 3 – Parental Stressors	-		-	-	-	-	
Child's Appearance		−.26*					-
Child's Behavior & Emotions		-					-
Procedures done to Child		-					-
Parental Role		-					-
Sights & Sounds of the Unit		.32**					-
Staff Communication		-					-
Staff Behavior		-					.33*
F	4.55**	4.12**	3.25**	1.70	.86	4.41**	2.48*
Total Adjusted R^2	.25	.34	.18	.07	.00	.25	.16

* $p < .05$

** $p < .01$

[a] The measure of baseline mental health was T1 psychological distress for all dependent variables, except when the dependent variable was T2 psychological wellbeing. In that regression, T1 psychological wellbeing was used to indicate baseline mental health.