

Combat-Injured Service Members and Their Families: The Relationship of Child Distress and Spouse-Perceived Family Distress and Disruption

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Combat injury in military service members affects both child and family functioning. This preliminary study examined the relationship of child distress postinjury to preinjury deployment-related family distress, injury severity, and family disruption postinjury. Child distress postinjury was assessed by reports from 41 spouses of combat-injured service members who had been hospitalized at two military tertiary care treatment centers. Families with high preinjury deployment-related family distress and high family disruption postinjury were more likely to report high child distress postinjury. Spouse-reported injury severity was unrelated to child distress. Findings suggest that early identification and intervention with combat-injured families experiencing distress and disruption may be warranted to support family and child health, regardless of injury severity.

Nearly 34,000 soldiers, sailors, Marines, and airmen have been injured in Operations Iraqi Freedom and Enduring Freedom (Department of Defense, 2009). Many of these injuries have been serious, resulting in amputation, severe soft tissue and orthopedic injury, traumatic brain injury (TBI), and burns (Grieger et al., 2006). As nearly half of service members are married, many of the injured return to families with children of various ages. The disruption to families and children after a parent has been injured can be substantial (Cozza, Chun, & Miller, in press; Cozza, Chun, & Polo, 2005).

Children in families of injured service members experience sudden changes in living arrangements, schedules, parenting practices, and the amount of time spent with their parents. Clinicians have observed that many children appear anxious, saddened, or troubled

(Cozza et al., in press), reflecting greater child distress. Although these phenomena have been described and are being addressed in several clinical treatment centers, no empirical studies have systematically examined the impact of combat injury on children and families.

Research on civilian parental illness and disability suggests reason for concern in combat-injured families. One large-scale study suggested that children of disabled parents are at greater risk for behavior problems (LeClere & Kowalewski, 1994). In another study, children of parents with a TBI displayed increased acting out behavior and emotional problems following the injury (Pessar, Coad, Linn, & Willer, 2003). Among families with a disabled parent, child functioning is negatively correlated with compromised parenting, parental depression in either parent, poor family

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functioning, and preexisting mental health concerns (Diareme et al., 2006; Visser-Meily et al. 2005). Based on these findings, children of combat-injured parents are likely to be at risk for increased distress and symptomatology, especially in families with preexisting concerns and disrupted parenting following the injury.

This pilot study is the first to our knowledge to examine the early impact of combat injury on children and families. We examined the relationship of injury severity and family disruption postinjury to child distress in families of combat-injured service members. In addition, we examined preinjury deployment-related family distress as an indicator of preexisting family risk to the development of child distress following the injury.

METHOD

Participants and Procedure

Information on family, parent, and child functioning and distress was obtained from 41 spouses of combat-injured service members hospitalized at two tertiary care military medical centers from June 2006 to May 2008. As part of routine clinical evaluation, semistructured interviews (Parent Guidance Assessment–Combat Injured; Cozza et al., in press) were conducted between 1 and 12 weeks postinjury with a sample of spouses of injured service members with children. Spouses who were available and agreed to participate were recruited by clinical teams providing support to injured families within the hospital setting. Data from the interviews were systematically recorded in clinical case records. All injured service member cases were men. Over half ($n = 27$, 66%) of the injured service members and their spouses were under 30 years of age (service member $M = 29.9$, $SD = 8.5$, range 18–54; spouse $M = 29.6$, $SD = 7.7$, range 19–45), and 63% had been married 5 years or less. Participant families had between 1 and 4 children ($M = 2.1$, $SD = 0.9$) aged between <1 to 16 years old ($M = 5.3$, $SD = 4.6$), and about half (51%) were boys. The majority of service members in the sample were injured during deployment to Iraq ($n = 36$, 92%) or Afghanistan ($n = 3$, 8%), were mostly active duty ($n = 33$, 89%), and the most common types of injuries were multitrauma ($n = 32$, 78%), amputation ($n = 13$, 32%), and traumatic brain injury ($n = 10$, 24%). Almost all injuries ($n = 37$, 92.5%) were described as moderate to severe.

Measures

This study used spouse responses to clinician-directed semistructured interviews to measure spouse perceptions of child distress postinjury, preinjury deployment-related family distress, injury severity, and family disruption postinjury. Seven items relevant to our research questions were selected from the interview for analysis: (1) child emotional difficulty related to the injury, (2) child behavior change postinjury, (3) preinjury deployment-related fam-

ily difficulty, (4) injury severity, (5) disruption to child and family schedules, (6) impact of injury on parental discipline, and (7) impact on the amount of time the noninjured parent spent with her children.

Spouse rating responses to items 1 through 7 (above) were used to define study variables. For items 1 through 6, variables were dichotomized using median splits of 5-point Likert ratings resulting in the following recodes: *low child emotional difficulty* (scores 1–2) versus *high difficulty* (scores 3–5); child behavior change: *no changes* (score 1) versus *changes observed* (scores 2–5); preinjury deployment-related family difficulty: *low distress* (scores 1–2) versus *high distress* (scores 3–5); *low injury severity* (scores 1–4) versus *high injury severity* (score 5); disruption to child/family schedule: *low disruption* (scores 1–4) versus *high disruption* (score 5); and impact of injury on parental discipline: *low impact* (scores 1–2) versus *high impact* (scores 3–5). Impact on time spent with children (item 7) was recoded into low impact (*slightly less, the same, or more time spent with children*; Likert scores 1–4) versus high impact (*much less time spent with children*; score 5).

Two composite variables were created to reflect degree of family disruption and evidence of child distress. The family disruption composite variable was constructed based on three component variables: disruption to child/family schedules, impact of injury on parental discipline, and impact on time spent with children. Cases with high impact/disruption on 0 or 1 component variable were coded as low on family disruption whereas cases with high impact/disruption on 2 or 3 component variables were coded as high on family disruption. The child distress composite variable was constructed based on two component variables: child behavior change and child emotional difficulty. Cases with both no child behavior change and low child emotional difficulty were coded as low child distress whereas cases with either child behavior change present or high child emotional difficulty were coded as high child distress. The Kuder-Richardson coefficient was calculated to evaluate the internal consistency of the scales. Not surprisingly, the value for family disruption (.19) was low, given the small number of items and the assessment of distinct constructs. However, the value for child distress was markedly higher (.60).

Data Analysis

After testing for associations with demographic variables, chi-square and Fisher's exact tests were used to examine the relationships of preinjury deployment-related family distress, injury severity, and family disruption postinjury to child distress postinjury. Two multivariate exact logistic regression analyses were used given the small sample size and unbalanced data (Mehta & Patel, 1995) to determine the relationships of family disruption postinjury and injury severity to child distress controlling for deployment-related family distress. Interaction effects among the two predictor variables were also evaluated.

RESULTS

Based on the spouse report, 63% ($n = 25$) of families experienced high deployment-related family distress prior to the combat injury. Following the combat injury, 48% ($n = 19$) of spouses reported high family disruption, 44% ($n = 17$) perceived injuries as very serious, and 68% ($n = 27$) reported high child distress. No significant relationships were found between these variables and demographics (parent age, number of years married, and number of children in the family); therefore, demographics were excluded from further analyses.

Families with high preinjury deployment-related family distress (vs. low) were more likely to report high child distress postinjury (84%, $n = 21$ vs. 40%, $n = 6$, $p < .01$). Families with high family disruption postinjury were also more likely to report high child distress (95%, $n = 18$ vs. 43%, $n = 9$, $p < .001$; see Table 1). Injury severity was not significantly related to child distress.

To examine the simultaneous effects of preinjury deployment-related family distress and family disruption postinjury on child distress, we used exact logistic regression analysis. After the non-significant interaction term was dropped, those spouses reporting high preinjury deployment-related family distress were more likely to report high child distress postinjury ($N = 40$, OR = 8.11, 95% CI = 1.09–105.03, $p < .05$). Further, those with high family disruption were more likely to report high child distress ($N = 39$, OR = 21.25, 95% CI = 2.14–1160.38, $p < .01$), after controlling for preinjury deployment-related family distress prior to the injury. In the second exact logistic regression analysis, injury severity was not associated with high child distress after adjusting for preinjury deployment-related family distress.

DISCUSSION

In the present study, both preinjury and postinjury factors were related to child distress, both individually and when adjusted for each other. As expected, spouses who reported high deployment-related family distress prior to the injury also reported high child distress postinjury, suggesting that these families may be more vulnerable in the face of added stressors. In addition, families experiencing high disruption following the injury were also more likely to report high child distress, even when controlling for deployment-related distress. It is possible that the additional burden of disrupted schedules, separation from parents, altered living arrangements, and changes in parenting behavior all compound the stress of parental injury to heighten distress.

Importantly, injury severity was not associated with child distress. This unexpected negative finding may be because injury severity ratings were reported by spouses and may not have been accurate representations of true medical severity, or it may be due to the small variance in spouse-reported injury severity, as most service member cases involved moderate to severe injury.

As all of the findings were based on spouse-reported data, it is likely that the findings represent a picture of interrelated family distress. That is, spouses who viewed deployment and the aftermath of the injury as particularly difficult were more likely to perceive their children as exhibiting distress. Whether this represents an accurate assessment of the children or reflects the spouses' own distress is unclear. Studies generally find only modest agreement between parent and child symptom reports for trauma symptoms and it has been suggested that parents may over- or underreport child symptoms based on their own level of distress (Kassam-Adams,

Table 1. Relationship of Deployment-Related Family Distress, Family Disruption Postinjury, and Injury Severity to Child Distress

	Total sample ($N = 40$)		High child distress ($n = 27$)		Low child distress ($n = 13$)		Test
	n	%	n	%	n	%	
Preinjury deployment-related family distress							
High	25	63	21	84	4	16	Fisher's Exact*
Low	15	38	6	40	9	60	
Family disruption postinjury							
High	19	48	18	95	1	5	$\chi^2(1, N = 40) = 12.24^{**}$
Low	21	53	9	43	12	57	
Injury severity							
High	17	44	11	65	6	35	$\chi^2(1, N = 39) < 1$
Low	22	56	16	73	6	27	

* $p < .01$. ** $p < .001$.

García-España, Miller & Winston, 2006). However, nondisabled parent distress has been shown to be related to child- and parent-reported child distress in the disability literature (Visser-Meily et al., 2005), and distress in the family system is likely to create distress in children.

Clinically, identifying and intervening with families at risk for greater distress may prevent a stressful life event from becoming an event that disrupts child development. These preliminary findings suggest that combat-injured families that experience higher levels of preinjury distress or ongoing disruption may be at greater risk for poorer child outcomes and could benefit from early identification and support to minimize child distress postinjury, regardless of injury severity. Reducing family disruption postinjury or providing additional support through the disruption could also help reduce or prevent child distress.

In addition to reliance on spouse report, this study has several limitations. This sample of spouses was not systematically recruited and varied in time since injury, limiting the generalizability of our results. The small sample size results in large confidence intervals around calculated odds ratios, requiring confirmation of these preliminary findings. In addition, sample size and limited variability of responses restricts the types of questions that can be addressed by these data. Finally, the data was derived from a clinical interview that has not been psychometrically evaluated. Future studies should use standardized instruments from multiple sources (to include direct child measures) and examine the longitudinal impact of combat injury on child, parent, and family emotional and behavioral response, as well as individual and family functioning in larger samples.

Combat injury affects not only injured service members, but also their families and children. Spouse-reported child distress in this study was associated with preinjury family distress and

postinjury family disruption, rather than injury severity. Greater understanding of combat injury impact and recovery trajectory of the family is required to better inform effective prevention approaches.

REFERENCES

- Cozza, S. J., Chun, R. S., & Miller, C. (in press). Children and families of combat injured service members. In E. C. Ritchie (Ed.), *Combat and operational behavioral health*. Washington, DC: Borden Institute.
- Cozza, S. J., Chun, R. S., & Polo, J. A. (2005). Military families and children during Operation Iraqi Freedom. *Psychiatric Quarterly*, *76*, 317–328.
- Department of Defense. (2009). Casualty update. Retrieved April 20, 2009, from <http://www.defenselink.mil/news/>
- Diareme, S., Tsiantis, J., Kolaitis, G., Ferentinos, S., Tsalamaniotis, E., Paliokosta, E., et al. (2006). Emotional and behavioural difficulties in children of parents with multiple sclerosis: A controlled study in Greece. *European Journal of Child and Adolescent Psychiatry*, *15*, 309–318.
- Grieger, T. A., Cozza, S. J., Ursano, R. J., Engel, C. C., Hoge, C., Martinez, P. E., et al. (2006). Posttraumatic stress disorder and depression in battle-injured soldiers. *American Journal of Psychiatry*, *163*, 1777–1783.
- Kassam-Adams, N., García-España, J. F., Miller, V. A., & Winston, F. (2006). Parent–child agreement regarding children’s acute stress: The role of parent acute stress reactions. *Journal of the American Academy of Child and Adolescent Psychiatry*, *45*, 1485–1493.
- LeClere, F. B., & Kowalewski, B. M. (1994). Disability in the family: The effects on children’s well-being. *Journal of Marriage and the Family*, *56*, 457–468.
- Mehta, C. R., & Patel, N. R. (1995). Exact logistic regression: Theory and examples. *Statistics in Medicine*, *14*, 2143–2160.
- Pessar, L. F., Coad, M. L., Linn, R. T., & Willer, B. S. (1993). The effects of parental traumatic brain injury on the behaviour of parents and children. *Brain Injury*, *7*, 231–240.
- Visser-Meily, A., Post, M., Meijer, A. M., Maas, C., Ketelaar, M., & Lindeman, E. (2005). Children’s adjustment to a parent’s stroke: Determinants of status and psychological problems, and the role of support from the rehabilitation team. *Journal of Rehabilitation Medicine*, *37*, 236–241.