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Web-based parenting skills to reduce behavior problems following abusive head trauma: A pilot study☆

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ABSTRACT

Pediatric abusive head trauma causes significant cognitive and behavioral morbidity, yet very few post-acute interventions exist to facilitate long-term recovery. To meet the needs of this vulnerable population, we piloted a web-based intervention with live coaching designed to improve positive parenting and child behavior. The efficacy of this parenting skills intervention was compared with access to Internet resources on brain injury. Participants included seven families (four randomized to the parenting intervention and three randomized to receive Internet resources). Parenting skills were observed and child behavior was rated at baseline and intervention completion. At completion, parents who received the parenting skills intervention showed significantly more positive parenting behaviors and fewer undesirable behaviors during play than parents who received access to Internet resources. Additionally, during play, children in the parenting skills intervention group were more compliant following parent commands than children in the Internet resources group. Lastly, parents who received the parenting intervention reported less intense oppositional and conduct behavior problems in their children post-intervention than did parents in the Internet resources group. These findings provide preliminary evidence for the use of this web-based positive parenting skills intervention to improve parenting skills and child behavior following abusive head trauma.

Abusive head trauma (AHT) is responsible for the majority of traumatic brain injuries (TBIs) in children less than one year old. Although the incidence of AHT remains an epidemiological challenge, Keenan et al. (2003) found 60% of significant TBI in infancy to be caused by AHT, and Billmire and Myers (1985) estimated it to be 95%. Although the overall incidence of head trauma has fallen over the last decade, the incidence of AHT has risen (Huang et al., 2011). This finding suggests that economic recession (and the stress associated with it) may contribute to AHT (Berger et al., 2011).

Over 25% of babies who experience AHT die, and the majority of babies that survive endure significant health consequences (Carbaugh, 2004). Infants are especially vulnerable to long-term deficits following a head injury, as early brain injury can

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impair the ability for children to meet developmental milestones and develop skills critical for later development (e.g., speech and language, motor skills, academic abilities, executive functions; Duhaime, Christian, Moss, & Seidl, 2008). Moreover, in the case of AHT, the abuser is typically someone within or close to the family (often the child's father or mother's boyfriend), and this can lead to additional family stress and conflict, as well as disruptions in the home environment (Starling & Holden, 2000). Across all children, social environmental factors, including positive parenting interactions, have been linked with cognitive and social development. In children with AHT, the pre- and post-injury family environment may exert a particularly strong influence on aspects of development (Keenan et al., 2003).

The cognitive and behavioral sequelae resulting from AHT are significant and may persist long-term. For example, academic achievement scores are significantly lower for children with moderate or severe traumatic brain injury (TBI) compared to their peers in almost all areas evaluated. These areas include reading, mathematics, oral language, and written language, and the deficits appear to be lasting, as there is no evidence of the performance gap lessening over time (Ewing-Cobbs et al., 2006). Furthermore, young children who have suffered severe head trauma tend to be less responsive in social interactions, as evidenced by less favorable caregiver ratings of communication and social behavior (Ewing-Cobbs, Prasad, Mendez, Barnes, & Swank, 2013).

Given the long-term difficulties that can emerge in children with AHT, specialized long-term care after the injury is vital for many families. Children with AHT are often treated acutely at their nearest pediatric trauma center. Some families, though, live in communities where psychosocial and specialty follow-up is scarce and difficult to access. Increasingly, web-based interventions are being used to support mental and physical health needs of individuals who have difficulty accessing care through traditional routes (Glueckauf, 2011). Given the scarcity of specialized follow-up care for AHT in many communities, the Internet may have the potential to reduce physical and psychological barriers to support and link families with state-of-the-art psychosocial care (Ekeland, Bowes, & Flottorp, 2010).

Despite the high risk of long-term disability, to our knowledge, there are no existing randomized controlled trials focused on improving behavioral and social functioning in children with AHT. A 2008 Cochrane review of interventions for physically-abusive parents, identified seven randomized clinical trials (RCT) with partial support for the efficacy of parenting skills interventions to improve parent–child interactions and some child mental health outcomes (Barlow, Johnston, Kendrick, Polnay, & Stewart-Brown, 2006). However, the child participants were not well defined, and it is unclear if any had experienced brain damage as a consequence of their abuse. The research outlined above provides compelling evidence of the high risk for long-term disability following AHT and the paucity of programs to address the long-term recovery of these children. Given the centrality of the caregiver–child relationship in recovery following pediatric brain injury, interventions to improve parenting skills may be particularly beneficial in improving child behavioral outcomes.

To address the unmet needs of children who have experienced AHT, we examined the efficacy of a web-based intervention with live coaching designed to improve parenting skills and everyday child functioning. We hypothesized that parents receiving the parenting skills program would demonstrate more positive parenting behaviors and fewer negative parenting behaviors following intervention than parents in the control group, who received access to Internet resources regarding brain injury. Additionally, we hypothesized that parents in the parenting skills group would report significant decreases in child behavior problems following intervention relative to parents in the Internet resources group.

Method

Participants

Participants in the current study constitute a subset of participants from a larger study examining the efficacy of a web-based positive parenting skills intervention (I-InTERACT; Internet-based Interacting Together Everyday: Recovery After Childhood TBI) with families of children with acquired brain injuries (traumatic brain injury, tumors, and abusive head trauma). The larger study was approved by the Institutional Review Board and is included on the national clinical trials website (clinicaltrials.gov; NCT01056146). All participants in the study had an acquired brain injury that resulted in a lowest recorded Glasgow Coma Scale (GCS) score of 12 or less, or there was evidence of brain injury visible on computerized tomography (CT) or magnetic resonance imaging (MRI). Families also had to meet all of the following criteria to participate: (a) the child participant had a history of head trauma requiring hospitalization; (b) the injury occurred at any point since birth; (c) the child was between 3 and 9 years old at study enrollment; (d) the child participant had finished inpatient rehabilitation (if needed); and (e) the child participant resided with his/her parent(s) or legal guardian throughout the duration of the study. In addition, all families were required to speak English as the primary language in their homes. Families were excluded if either the parent or child participant had a history of hospitalization due to psychiatric diagnosis or had significant intellectual impairment or developmental disability not caused by the injury.

Head trauma for all participants in the current study had been determined to be abusive by the hospital's multidisciplinary child abuse team. Families of children with AHT were identified through a specialty clinic devoted to providing follow-up evaluation and services to families of children with a history of AHT. Families of children who met basic study criteria (age, diagnosis, and severity) were sent an introduction letter by the clinic that described the goals and procedures of the study. After the letter had been sent, a project coordinator contacted the families by telephone to describe the study and discuss its potential risks and benefits. Families who agreed to participate provided consent and were then randomized to the I-InTERACT program group or to the Internet Resource Comparison (IRC) group.

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