

Practice Update: What Professionals Who Are Not Brain Injury Specialists Need to Know About Intimate Partner Violence–Related Traumatic Brain Injury

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Abstract:

There is growing recognition of the risk for traumatic brain injury (TBI) among victims and survivors of intimate partner violence (IPV). A wide range of physically abusive behaviors may lead to injuries to the head or neck and place an individual at risk for a TBI. The purpose of this article is to consolidate current research and present practical guidelines for professionals, who are not brain injury specialists, but work with clients who may have sustained a TBI in the context of IPV. Recommendations are provided for TBI risk screening, making appropriate referrals, and providing services in light of a potential TBI.

Keywords: traumatic brain injury | intimate partner violence | domestic violence | battering victimization

Article:

A small but growing body of literature suggests that intimate partner violence (IPV)—especially physical violence—places victims at a high risk for sustaining traumatic brain injuries (hereafter, TBIs). However, to date, there is minimal guidance to inform practice for nonbrain injury specialist working with victims of IPV (e.g., victim advocates, mental health professionals, shelter staff, and other relevant professional groups), yet professionals who are not brain injury specialists need to understand, screen, refer, and counsel clients who may have cognitive, physical, and/or emotional issues as a result of an IPV-related TBI. As such, the purpose of this article is to consolidate current research in order to present practical guidelines for those professionals outside of the brain injury field. We begin with an overview of the definition, symptoms, and consequences of TBI. Next, we review literature examining TBI risks among survivors of IPV. Finally, we conclude with a series of recommendations for a risk screening for TBI and follow-up interventions in the context of IPV. Throughout this article, the term *victim* refers to individuals with current experiences of IPV, and the term *survivor* refers to those who have past experiences of IPV but are no longer in an abusive relationship. This

distinction is important because the implications for recovery from TBI and potential for worsening and repeat occurrence of TBI is impacted by whether or not an individual remains in an abusive partnership.

TBI is one of the most common and financially devastating health problems in our society. About 1.75 million people are diagnosed with TBI annually in the United States (Faul, Xu, & Wald, 2010) and recent estimates suggest as many as 320,000 soldiers who have sustained a TBI (Tanielian & Jaycox, 2008) as well as thousands who do not seek medical attention are not included in the overall statistic. Thus, this number is a gross underestimate of the actual occurrence of TBI in the United States (Delaney, Abuzeyad, Correa, & Foxford, 2005). Survivors of IPV are another group that are at high risk for brain injury, yet the statistics on the number of individuals who sustain a TBI from an IPV-related event is unclear because the injury may not be reported or may not be readily apparent. IPV-related TBI is unique from TBIs in other populations at high risk for brain injury because individuals who live with an abusive partner may be subject to frequent unreported and untreated hits to the head. Repeated injuries are especially worrisome because cumulative TBIs are thought to result in a longer recovery time and have more serious consequences (Valera & Berenbaum, 2003).

According to the Brain Injury Association of America (BIAA), “TBI is defined as an alteration in brain function, or other evidence of brain pathology, caused by an external force.” This definition reflects the fact that there are two stages of events following a TBI: a primary event and a secondary event. The primary event entails the initial trauma caused by biomechanical forces directly associated with the injury (e.g., being hit on the head with an object), and the secondary event refers to the changes that occur gradually after the initial injury (minutes to weeks), involving an array of neurochemical and neurometabolic events. Typically, the primary force from trauma to the head subsequently leads to neuronal damage (Barkhoudarian, Hovda, & Giza, 2011) followed by a cascade of secondary events affecting the neurons and the neuronal systems. These secondary events have been reported to be more significant and more disruptive to the brain than the primary event. Secondary events may result in structural changes to the neurons, metabolic dysfunction, or cell death (Barkhoudarian et al., 2011; Giza & Hovda, 2001) and can occur hours to days after the primary event. As a result of these structural and functional changes, short- and/or long-term physical, cognitive, behavioral, and/or emotional symptoms emerge. These symptoms are identified through behavioral observation, standardized and nonstandardized assessment, and patient report. Based on the extent of the symptoms, immediately following the event, individuals are classified into a severity category: mild, moderate, or severe.

The Glasgow Coma Scale (GCS; Teasdale & Jennett, 1974) is the measurement tool most frequently used to measure the level of consciousness immediately following an injury. The GCS score is based on a 15-point behavioral observation scale, which grades behavioral responses into three categories (i.e., eye opening, motor response, and verbal response). A GCS score of 8 or less indicates a severe TBI, a score of 9–12 places an individual in the moderate severity group, and a score of 13–15 indicates a mild TBI (mTBI). The score is thought to reflect the structural and functional status of the central nervous system immediately following the injury.

Categorizing TBI into moderate and severe levels of deficit is fairly straightforward due to the severity of symptoms (e.g., length of unconsciousness), but mTBI is more problematic to diagnose because it is difficult to define and measure the symptoms with current technology and mTBI can be present with little or no loss of consciousness. In an attempt to better define the mTBI group, an interdisciplinary Special Interest Group of the American Congress of Rehabilitation Medicine (mTBI committee) published a definition of mTBI in 1993 that is still widely cited in the literature today (Ruff et al., 2009). According to this definition, mTBI is

any period of loss of consciousness; any loss of memory for events immediately before or after the accident; any alteration in mental state at the time of the accident (e.g., feeling dazed, disoriented or confused); and focal neurological deficit(s) that may or may not be transient; but where the severity of the injury does not exceed the following: posttraumatic amnesia not greater than 24 hours; after 30 minutes, an initial Glasgow Coma Scale (GCS) of 13–15; and loss of consciousness of approximately 30 minutes or less. (Mild Traumatic Brain Injury Committee, 1993, p. 86)

Most definitions of mTBI do not include a description of neuroradiological findings (e.g., computed tomography [CT] and magnetic resonance imaging [MRI] scans). Conventional neuroimaging scans, which are frequently used in health care settings, are not sensitive enough to detect the subtle changes in brain structure and function indicative of mTBI. In fact, structural changes are observed in neuroimaging in only a small number of individuals who sustained an mTBI using standard CTs or MRIs. Borg et al. (2004) report that only 5% of individuals with a GCS of 15 and approximately 30% of individuals with a GCS of 13 showed abnormal CT scans. This is problematic, as 85% of all TBIs are classified into the mTBI category (Bazarian et al., 2009). Thus, a medical report indicating no brain damage noted on the CT scan does not necessarily mean that an individual has not sustained a brain injury, only that it was not detected with this technology.

In cases of mTBI, changes to the brain occur at the cellular and vascular level due to dysfunction of the neurons and neuronal systems not destruction (Iverson, Lange, Gaetz, & Zasler, 2007). Animal studies and postmortem examination of injured brains have been most useful in substantiating the existence of these brain changes and providing descriptive information about both the primary and the secondary effects of mTBI. These studies suggest that the pathophysiology of an mTBI is quite complex (Blumbergs et al., 1994) and is still not fully understood. In addition, many individuals with mTBI may be misdiagnosed due to the limitations of neuroimaging scans in detecting these subtle structural changes. Without an objective means to measure the extent of the physiological changes in the brain, individuals who have sustained injury to the head and/or neck are often given a clean bill of health.

Functional recovery from TBIs is difficult to predict, yet health care professionals typically rely on the severity of injury to predict recovery (Jennett, Snokek, Bond, & Brooks, 1981). It is thought that the most severely impaired patients will show the least recovery, but this method of prediction is not without flaws (Novack, Alderson, Bush, Meythale, & Canupp, 2000). For those with the mildest form of TBI, which encompasses many survivors of IPV, the literature suggests that they will have good functional outcomes within days or weeks post-injury (Gronwall &

Wrightson, 1975; Ponsford et al., 2000), yet this is not true for all individuals who have sustained an mTBI. For a small number of individuals with mTBI, there may be lasting physical, emotional, and/or cognitive deficits (Ruff & Jurica, 1999; Vanderploeg, Belanger, & Curtiss, 2009). Close to 25% of individuals who have sustained an mTBI show chronic side effects (e.g., slowed information processing speed and attention deficits), even when they are apparently symptom free as measured by standardized tests (Stuss et al., 1985; Warden et al., 2001). The reason for persistent symptoms in a small group of individuals with mTBI is still unclear. Numerous factors have been cited as influencing this outcome, including history of previous TBIs (McKee et al., 2009), genetic factors (Diaz-Arrastia & Baxter, 2006), age (Dikmen, Ross, Machamer, & Temkin, 1995; Katz & Alexander, 1994), gender (Ponsford et al., 2000), and preexisting psychiatric disorders (Ponsford et al., 2000). There are many unanswered diagnostic and prognostic questions in the field of TBI that current clinical tools cannot address, yet there is a critical need given the sheer number of TBIs each year.

The media is aware of the numbers and have given more attention to the disorder in recent years. Attention typically focuses on two specific populations: military veterans returning from war who sustained TBIs during warfare and athletes, particularly professional football players in the National Football League (e.g., Wenner, 2012). Because of the media attention, professionals working with athletes and military personnel continue to learn a great deal about TBI and its impact. However, noticeably absent from this public dialogue surrounding TBI has been survivors of IPV, which is problematic for a number of reasons. First, the resources available to support this population of victims and survivors are remarkably few as compared to the other groups, and therefore, the lack of media attention keeps IPV survivors hidden from the public's view. Second, with less attention to IPV, professionals who work with victims and survivors may be less apt to recognize TBI symptoms within this population, as the condition may not be viewed as common or relevant to them. Finally, victims and survivors themselves may be less likely to identify their own risks or indicators of TBI if they view this as an issue that impacts only those who have been in war or injured through athletic pursuits. Nonetheless, as the research reviewed in the next section demonstrates, there is growing recognition of the importance of identifying and responding to the potential risks for TBI associated with IPV.

Current Research on IPV-Related TBI

As an umbrella term that describes a range of behaviors, IPV describes “any form of physical, sexual, emotional, psychological, and/or verbal abuse between partners in a [current or former] intimate relationship” (Murray & Graves, 2012, p. 14). Battering is a more severe form of IPV that involves a “patterned and repeated use of coercive controlling behavior to limit, direct, and shape a partner's thoughts, feelings, and actions” (Almeida & Durkin, 1999, p. 313). Although physical violence may occur in all forms of IPV, the physically abusive dynamics within battering can be especially severe and may involve several forms of violence that may place a victim at risk for a TBI. Any form of force, violence, or trauma to the head or neck can have implications for the healthy functioning of the brain. The Physical Assault subscale of the Revised Conflict Tactics Scale (CTS2; Straus, Hamby, Boney-McCoy, & Sugarman, 1996)—a widely used assessment tool used to measure IPV—provides examples of types of physical force that may occur in physically abusive relationships, although the CTS2 does not ask participants to describe where on their bodies they experienced each form of violence. Examples of physical

violence on the CTS2 include being kicked, punched, slapped, beat up, choked, slammed against the wall, having something thrown at oneself, having a knife or gun used on oneself, being pushed, shoved, and burned. Any one of these could be directed to a victim's head or neck.

TBIs are often unreported and thus untreated among IPV victims. However, based on a comprehensive literature review, Kwako et al. (2011) estimated that TBI is present in anywhere between 30% and 74% of all victims of IPV who seek services in battered women's shelters or emergency departments. Furthermore, rates of physical IPV that involves head and/or neck injuries may be as high as 88–94% (Arosarena, Fritsch, Hsueh, Aynechi, & Haug, 2009). Kwako et al. (2011) concluded that “current research suggests that TBIs are sustained often by women experiencing IPV, likely to occur over multiple incidents, and are unlikely to be reported or treated in medical settings” (p. 3).

Other research suggests the high rates of TBI-related symptoms and/or the types of injuries that could lead to TBIs among community samples of IPV victims (e.g., Jackson, Philip, Nuttall, & Diller, 2002; Mechanic, Weaver, & Resick, 2008; Valera & Berenbaum, 2003). Even when TBI risk factors and/or symptoms are present, victims may not seek medical care that would help them access assessment and treatment (Roberts & Kim, 2005). Given the patterned nature of abuse within many violent relationships, researchers (e.g., Valera & Berenbaum, 2003) have noted the increased risk posed for individuals with multiple IPV-related TBIs. Existing in a violent partnership exacerbates the risk of cumulative and progressively serious consequences of repeated hits to the head. In addition to the potential for TBI to be a consequence of IPV, the presence of TBI symptoms may increase a victim's risk for further violence, particularly because their symptoms may increase their vulnerability to their abusive partners (Jackson et al., 2002).

Given that abusive incidents within IPV often involve repeated incidents of violence within a single incident, it is possible that a victim may experience multiple injuries to the head and neck within a violent episode. Furthermore, because of the cycle of violence often involved in IPV, repeated episodes of violence may place a victim at risk of repeated injuries to the head and/or neck over a period of time, and the risks of negative consequences from TBI increases significantly in the context of multiple injuries. Although the risk for violence to the head and neck is high among victims of IPV, there is limited recognition and attention to TBI within the current research and practice related to IPV. Therefore, IPV-related TBI, especially when it is mild, may go unrecognized and untreated.

Screening and Practice Considerations

The following screening and practice recommendations are intended to help ensure that survivors' care is delivered in a way that accounts for the unique potential impacts of TBI. Diagnosing TBI is likely outside the purview of most readers of this article, and the recommendations presented are primarily for professionals who are not brain injury specialists and therefore are not directly involved in the treatment of TBI but who work with victims and survivors in other ways (e.g., victim advocates, mental health professionals, attorneys, and law enforcement officials). Although these recommendations are intended to be comprehensive, there is no single profile of an individual with a TBI, just as there is no single profile of someone who

has experienced IPV. As such, it is important to customize assessment and intervention methods to match each client's unique needs, goals, resources, and characteristics.

Screening Considerations

Identifying TBI is critical for ensuring that survivors receive proper assessment and treatment. Based on current research, the following six screening practices are recommended:

1. Learn the symptoms of mTBI and screen clients for them. The Centers for Disease Control and Prevention (CDC, 2014) suggests that TBI symptoms fall into the following four categories: (a) cognitive disruptions: attending, thinking, and remembering; (b) physical symptoms: nausea, dizziness, and sensitivity to light; (c) emotional and mood-related changes: anger, depression; and (d) sleep disruptions. Some or all of these symptoms may occur immediately following the injury or, as described previously, they may be secondary events apparent in the hours or days following the injury. These symptoms may persist for days or months. Clients may initially describe TBI-like symptoms (e.g., lightheadedness and headache) but not connect them to their experiences with injury to the head or neck. However, if any of the symptoms that could signify a TBI are present in the immediate or long-term aftermath of an IPV-related injury to the head or neck, service providers should encourage survivors to report these symptoms to their primary care physician. Symptoms that are particularly critical to address in the minutes to days following the injury, as they may indicate a highly lethal situation, include a chronic and/or worsening headache; weakness or numbing; frequent vomiting and/or nausea; slurred speech; extreme drowsiness; differences in the dilation of the pupils in the eye; an inability to remember facts or people; increasing confusion or agitation; any unexplained, unusual behavior; and a loss of consciousness (CDC, 2014). Thus, careful gathering of case history information is essential for determining whether a TBI occurred. Screening devices such as the HELPS Brain Injury Screening Tool (Picard, Scarisbrick, & Paluck, 1991) and the Brief TBI Screening (1998) have been shown to be reliable tools for quickly identifying those individual who may be at risk for brain injury. Service providers should encourage at-risk survivors to share the results of the screening with their primary care physician who may then refer them to a brain injury specialist. Readers interested in additional information about how brain functioning may be impacted by IPV, beyond the risk of TBI, are referred to Wong, Fong, Lai, and Tiwari (2014) for a comprehensive review.

2. Be alert for potential IPV-related violence and injuries that could lead to a TBI. First responders, in particular, should be alert to indicators of a possible TBI (Kwako et al., 2011), but even professionals who work with survivors long after abuse has ended should screen clients for potential TBI, as TBI, even mTBI, can have long-lasting impacts on physical, emotional, and cognitive functioning. One of the first indicators for an IPV-related TBI is the presence of a form of violence that targeted the victim's head or neck. For example, a victim may have a black eye or gash to the head, describe a blow to the head, show evidence of an

attempted strangulation or choking, or indicate that they were pushed against a floor, wall, or object resulting in a direct hit to the head. Professionals should go beyond asking merely what types of violence (e.g., punching, hitting, and pushing) victims and survivors experienced and ask about where on their bodies these forms of violence were experienced. Professionals should also ask about loss of consciousness, blacking out, or seeing stars. One approach for asking these questions is to show the victim a silhouette of a human body and ask them to describe the forms of injury or violence they experienced at different parts of their bodies.

3. Consider how to differentiate possible TBI symptoms from other-related symptom patterns. Readers may have noted the similarities between the TBI symptoms described earlier and other conditions that are common for victims of battering, such as posttraumatic stress disorder (PTSD), anxiety, and depression. Indeed, Kwako et al. (2011) noted that, many of the sequelae evident in survivors of IPV, which have been traditionally linked to abuse severity or PTSD, may be understood as occurring as a result of a physiological disruption to the brain and/or the chronic stress associated with IPV. (p. 7)

In fact, differentiating between PTSD and TBI symptoms can be very challenging, and it is possible for a person to meet the diagnostic criteria for both conditions (Bryant, 2011). Because of the potentially overlapping symptoms, an interdisciplinary approach to diagnosis may be warranted. Thus, professionals can refer victims of IPV who may be exhibiting TBI, PTSD, and any other mental health symptoms to both a medical professional and a mental health professional for thorough assessment. Professionals with long-term involvement with victims and survivors can help clients ensure that these professionals are collaborating and communicating to ensure that treatment recommendations and approaches are appropriate, cohesive, and not overwhelming to the victim or survivor.

4. Consider how TBI symptoms may impact the accuracy of assessment findings. Victims and survivors who have experienced a TBI may have resulting cognitive and emotional sequelae that could impair their ability to provide accurate assessment information and/or sustain their focus during an assessment processes that may have a lengthy duration. For example, cognitive symptoms that could impact a victim's ability to participate in the assessment process include confusion (Lezak, 2004), distractibility (Baddeley, Della Sala, Papagano, & Spinnler, 1997), memory deficits, and information processing difficulties (Tinius, 2003). Therefore, when such symptoms are present, professionals can consider ways to modify the assessment or screening process, if possible, to meet the victims' or survivors' unique needs. Modifications may include a slow presentation of information, repeating and rephrasing information, and frequent breaks, for example.

5. Use screening information to help clients access beneficial services. One of the main reasons to ensure that a possible IPV-related TBI is properly screened is to inform future treatment and intervention plans (Coelho, Ylvisaker, & Turkstra,

2005). When professionals refer victims and survivors for additional assessment, they should discuss with their clients whether they would grant the professionals permission to access the assessment findings and/or communicate with the specialists who completed the in-depth TBI assessment. Professionals with limited knowledge about TBI symptoms and how these symptoms impact day-to-day functioning should consult with other TBI specialists on how to address clients' unique needs and symptoms in the delivery of services and interventions.

Practice Considerations

The suitability and appropriateness of intervention practices may be impacted by the presence of an IPV-related TBI. As such, the following nine recommended practices relate to services and/or legal interventions that professionals may offer to victims and survivors of IPV:

1. Understand TBI treatment and rehabilitation options that are available in your community, so you can support clients who are receiving them. There are seven main purposes for cognitive rehabilitation for individuals who have experienced a TBI: (a) restoring prior functioning, (b) developing compensatory strategies for new skill and functioning deficits, (c) increasing the patient's awareness of these new deficits, (d) enhancing the patient's mood and emotional regulation, (e) helping the individual return to work, (f) integrating the patient into the community, (g) preventing harmful behaviors to oneself or others, and (h) emphasizing the imperative for rest following a TBI and the urgency of preventing subsequent injuries (Dams-O'Connor & Gordon, 2010). Treatment options may include the following: patient monitoring for worsening symptoms, pain relievers, other medications, surgery, and post-injury rehabilitation (e.g., occupational, physical, and/or speech-language therapy; medication) (BIAA, 2014; Mayo Clinic, 2014). It is important for professionals to identify treatment options and other resources in their communities, in order to effectively link clients to services they need.

2. Encourage victims and survivors with TBI to seek early treatment from a TBI specialist. Not only is appropriate treatment important for recovery from a TBI, but whenever possible, people at risk for TBI should receive services immediately following the injury (Kwako et al., 2011). The consequences of a TBI can be long term and severe. Early intervention is critical to ensuring proper care and for improving the prognosis for recovery (CDC, 2014). Victims of IPV may be hesitant to seek help for a variety of reasons, including safety concerns, shame, fear that they will lose custody of their children, or fear of getting their partners in trouble, especially, if they are economically dependent on them. Therefore, they may be hesitant to seek help for any reason, including addressing a possible TBI. However, professionals can talk with clients about how important early intervention is to the successful recovery from a TBI and help clients identify ways that they may be able to seek help in a manner that addresses the reasons they are hesitant to do so.

3. Account for TBI symptoms in the safety planning process. Safety planning is a widely used intervention to help IPV victims identify strategies to enhance their safety in potentially harmful IPV-related situations (Murray et al., 2015). Both TBI-related symptoms and treatment considerations may need to be considered when developing a safety plan for an affected client. For example, the memory loss associated with a TBI may make it difficult for a client to remember strategies outlined on a safety plan. Because clients may not be able to safely bring a paper version of their safety plan into their home (e.g., if the abuser lives in the home), professionals can help clients find a safe way to write down safety planning information (BIAA, 2014; CDC, 2014), such as electronically or by leaving the information with a friend.

Other relevant issues that safety plans can address include finding safe places where the client can rest during recovery from a TBI, identifying locations in their home where they may be less at risk of injury to the head (e.g., where there are fewer hard surfaces), and identifying ways for the client to access treatment more quickly if there is a reinjury.

4. Maintain contact (as appropriate) with other involved professionals (e.g., doctors and rehabilitation professionals) and other supportive people in the clients' lives to identify new needs as they arise. Professionals working with victims and survivors of IPV can enlist the support of other relevant professionals, as well as members of clients' social support networks, to help promote optimal recovery from a TBI. Appropriate documentation of clients' permission to release confidential information may be needed to facilitate interprofessional collaborations. Professionals also can help clients reach out for credible patient information resources, such as through their state-level affiliates of the BIAA (see <http://www.biausa.org/state-affiliates.htm>). To enhance the support available in clients' support networks, professionals can help trusted people in their lives understand the nature of the IPV and TBI and develop strategies for providing additional help, as appropriate.

5. Support the client in health-promoting behaviors that aid in recovery from TBI. Medical assessment and rehabilitation are critical for recovery from a TBI. Therefore, professionals can help clients report any potential IPV-related TBI to their primary care physicians, who can then make a referral to a brain injury specialist to provide individualized suggestions to enhance recovery. In addition, the BIAA (2014) and CDC (2014) recommend the following behaviors and strategies to suggest to clients to support their recovery from a TBI. First, following an injury to the head or neck, encourage the client to rest and be still with minimal stimulation (e.g., minimal technology/screen time) for at least a few days. Second, clients should be mindful of their physical and mental health in the days and weeks following an injury in order to identify if any symptoms get worse, or if new symptoms emerge, and if so, they should seek medical attention immediately. Third, clients should take time before getting back to normal daily routines, and they should gradually ease into resuming activities, with proper

clearance from a medical professional. Fourth, as reaction times may be slowed, it may be unsafe to do such activities as driving or using heavy machinery. Clients should ensure that these activities are permissible before engaging in them. In general, clients should avoid engaging in physically or emotionally intense activities until symptoms are resolved or until they receive clearance from their medical care team. Fifth, clients should avoid using alcohol or nonprescribed drugs without having clearance from a medical professional. Sixth, it is very important for clients to take all steps possible to avoid further injuries to their head or neck, as the risk of severe consequences is magnified with repeat injuries. Finally, clients should make all efforts possible to take overall good care of themselves emotionally and physically to promote optimal wellness following a TBI. Clearly, many of these suggestions may be very difficult to follow in the context of an ongoing abusive relationship, especially, if the client continues to live with the abusive partner. Therefore, professionals can help support victims and survivors of IPV in developing and implementing a plan to take care of their health to the extent possible in the context of their current life and relationship circumstances.

6. Educate other professionals in your community about the importance of identifying TBI early in the context of IPV. Given the lack of media and professional attention that has been given to IPV-related TBI, it is likely that many community-based professionals are not aware of the significant risks and symptoms associated with TBI, especially mTBI. Therefore, professionals with the knowledge about IPV-related TBI can provide educational opportunities (e.g., professional development workshops) to educate involved personnel on the symptoms and types of injuries that may signify the presence of a TBI. Likewise, medical and rehabilitation professionals who work with clients impacted by TBI may need additional training on the dynamics of IPV and safety when working with victims and survivors.

7. Help clients develop problem-solving abilities. The empowerment approach that underlies many services for IPV victims maintains the importance of helping clients make the best decisions for their own lives. Although this focus typically means that clients should be empowered to make decisions for themselves, TBI symptoms (e.g., confusion, impulsivity, poor organization abilities, and attentional deficits) may hinder a client's ability to solve problems and make complex decisions for himself or herself. Therefore, clients with TBIs may benefit from learning formal problem-solving strategies to help increase their capacity to solve problems on their own with the help of a rehabilitation specialist (Cicerone et al., 2005). In particular, professionals can help remind clients that they can take time to make decisions, consider all the options, and determine the best outcome to meet their needs.

8. Help victims and survivors adjust to work and/or educational functioning with consideration of TBI symptoms. Unemployment rates are high among people with a history of TBI (Fraser & Wehman, 1999), and TBI symptoms can impact one's

ability to function in work and school environments (Hoofien, Gilboa, & Vakil, 2001). However, being able to return to one's career pursuits can offer many benefits for victims and survivors of IPV, including economic self-sufficiency, social connections, and enhanced self-worth (Green et al., 2008). In planning for reentry to work or educational settings in the aftermath of an IPV-related TBI, victims, and survivors may need to redevelop some of their preexisting skills (BIAA, 2014; CDC, 2014). Thus, referrals for vocational rehabilitation or educational training programs may be warranted.

9. Avoid revictimizing and contributing to the stigma that victims and survivors of IPV already face. There is a significant stigma surrounding IPV, and this stigma may prevent victims and survivors from seeking help (Crowe & Murray, 2015; Overstreet & Quinn, 2013). The symptoms associated with TBIs, combined with their potentially long-term impacts, could be perceived as extremely upsetting and demoralizing for IPV victims and survivors. Therefore, care must be given to ensure that clients receive information about a potential or diagnosed TBI in such a way that does not imply that there is something "wrong with them." Likewise, information about the TBI must be protected from abuse perpetrators, who could potentially use that information to further emotionally and verbally denigrate a victim, as well as use the diagnosis against them during legal proceedings. To the extent possible, information about IPV-related TBI should be discussed with clients using a positive tone and through a conversation that highlights clients' strengths and resources and opportunities for healing and recovery. Finally, all interactions with the client should be foregrounded in dignity and respect.

Conclusion

There is growing recognition of the potential for TBI among victims and survivors of IPV. However, to date, there has been little attention paid to how to address TBI in the multidisciplinary, community-based interventions, and treatments for this population. Existing research can inform practices that are responsive, supportive, and ethically sound for survivors who have experienced TBI. However, there remains a critical need for further research and practice developments in this area. The five assessment recommendations and nine practice recommendations described in this article offer a starting point for professionals who work with clients who have a potential or diagnosed IPV-related TBI. However, as new information continues to emerge regarding the dynamics, prevention, and treatment of IPV-related TBI, these recommendations will need to be revised in order to promote the best possible care for victims and survivors.

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References

- Almeida, R. V., & Durkin, T. (1999). The cultural context model: Therapy for couples with domestic violence. *Journal of Marital and Family Therapy*, 25, 313–324.
- Arosarena, O. A., Fritsch, T. A., Hsueh, Y., Aynehchi, B., & Haug, R. (2009). Maxillofacial injuries and violence against women. *Archives of Facial Plastic Surgery*, 11, 48–52.
- Baddeley, A., Della Sala, S., Papagano, C., & Spinnler, H. (1997). Dual task performance in dysexecutive and nondysexecutive patients with a frontal lesion. *Neuropsychology*, 11, 187–194.
- Barkhoudarian, G., Hovda, D. A., & Giza, C. C. (2011). The molecular pathophysiology of concussive brain injury. *Clinics in Sports Medicine*, 30, 33–48.
- Bazarian, J. J., Cernak, I., Noble-Haeusslein, L., Potolicchio, S., & Temkin, N. (2009). Long-term neurologic outcomes after traumatic brain injury. *Journal of Head Trauma Rehabilitation*, 24, 439–451.
- Blumbergs, P. C., Scott, G., Manavis, J., Wainwright, H., Simpson, D. A., & McLean, A. J. (1994). Staining of amyloid precursor protein to study axonal damage in mild head injury. *Lancet*, 344, 1055–1056.

- Borg, J., Holm, L., Pelosos, P. M., Cassidy, J. D., Carroll, L. J., von Holst, H., ... Yates, D. (2004). Non-surgical intervention and cost for mild traumatic brain injury: Results of the WHO Collaborating Centre Task Force on Mild Traumatic Brain Injury. *Journal of Rehabilitative Medicine*, 43 (Suppl), 76–83. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/15083872>
- Brain Injury Association of America. (2014). About brain injury. Retrieved June 16, 2014, from <http://www.biausa.org/about-brain-injury.htm>
- Bryant, R. (2011). Post-traumatic stress disorder vs. traumatic brain injury. *Dialogues in Clinical Neuroscience*, 13, 251–262.
- Centers for Disease Control and Prevention. (2014). Injury prevention & control: Traumatic brain injury. Retrieved June 16, 2014, from <http://www.cdc.gov/TraumaticBrainInjury/>
- Cicerone, K., Dahlberg, C., Malec, J. F., Langenbahn, D. M., Felicetti, T., Kneipp, S., ... Catanese, J. (2005). Evidenced-based cognitive rehabilitation: Updated review of the literature from 1998 through 2002. *Archives of Physical and Medical Rehabilitation*, 86, 1681–1692.
- Coelho, C., Ylvisaker, M., & Turkstra, L. (2005). Nonstandardized assessment approaches for individuals with TBI. *Seminars in Speech and Language*, 26, 223–241.
- Crowe, A., & Murray, C. E. (2015). Stigma from professional helpers toward survivors of intimate partner violence. *Partner Violence*, 6, 157–179.
- Dams-O'Connor, K., & Gordon, W. A. (2010). Role and impact of cognitive rehabilitation. *Psychiatry Clinics of North America*, 33, 893–904. doi: 10.1016/j.psc.2010.08.002
- Delaney, J. S., Abuzeyad, F., Correa, J. A., & Foxford, R. (2005). Recognition and characteristics of concussions in the emergency department population. *The Journal of Emergency Medicine*, 29, 189–197.
- Diaz-Arrastia, R., & Baxter, V. K. (2006). Genetic factors in outcome after traumatic brain injury: What the human genome project can teach us about brain trauma. *The Journal of Head Trauma Rehabilitation*, 21, 361–374.
- Dikmen, S. S., Ross, B. L., Machamer, J. E., & Temkin, N. R. (1995). One year psychosocial outcome in head injury. *Journal of International Neuropsychological Society*, 1, 67–77.
- Faul, M., Xu, L., Wald, M., & Coronado, V. (2010). Emergency department visits, hospitalizations, and deaths 2002-2006. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Retrieved April 17, 2015, from http://www.cdc.gov/traumaticbraininjury/pdf/blue_book.pdf

- Giza, C., & Hovda, D. (2001). The neurometabolic cascade of concussion. *Journal of Athletic Training*, 36, 228–235.
- Green, R. E., Colella, B., Hebert, D. A., Baylley, M., Kang, H. S., Till, C., & Monette, G. (2008). Prediction of return to productivity after severe TBI: Investigations of optimal neuropsychological tests and timing of assessment. *Archives of Physical Medicine and Rehabilitation*, 89, S51–S60.
- Gronwall, D., & Wrightson, P. (1975). Cumulative effect of concussion. *The Lancet*, 306, 995–997.
- Hoofien, D., Gilboa, A., & Vakil, E. (2001). TBI 10-20 years later: A comprehensive outcome study of psychiatric symptomatology, cognitive abilities and psychosocial functioning. *Brain Injury*, 15, 189–209.
- Iverson, G. L., Lange, R. T., Gaetz, M., & Zasler, N. (2012). Mild traumatic brain injury. In N. D. Zasler, D. I. Katz, & R. D. Zafonte (Eds.), *Brain injury medicine: Principles and practice* (2nd ed., pp. 434–469). New York, NY: Demos Medical Publishing.
- Jackson, H., Philip, E., Nuttall, R. L., & Diller, L. (2002). Traumatic brain injury: A hidden consequence for battered women. *Professional Psychology: Research and Practice*, 33, 39–45.
- Jennett, B., Snokek, J., Bond, M., & Brooks, N. (1981). Disability after severe head injury: Observations on the use of the Glasgow outcome scale. *Journal of Neurology, Neurosurgery, and Psychiatry*, 44, 285–293.
- Katz, D. I., & Alexander, M. P. (1994). Traumatic brain injury: Predicting course of recovery and outcome for patients admitted to rehabilitation. *Archives of Neurology*, 51, 661–670.
- Kwako, L. E., Glass, N., Campbell, J., Melvin, K. C., Barr, T., & Gill, J. M. (2011). Traumatic brain injury in intimate partner violence: A critical review of outcomes and measures. *Trauma, Violence, & Abuse*, 12, 115–126.
doi:10.1177/1524838011404251
- Lezak, M. D. (2004). *Neuropsychological assessment* (4th ed.). New York, NY: Oxford University Press.
- Mayo Clinic. (2014). Diseases and conditions: Traumatic brain injury. Retrieved June 15, 2014, from <http://www.mayoclinic.org/diseases-conditions/traumatic-brain-injury/basics/treatment/con-20029302>
- McKee, A. C., Cantu, R. C., Nowinski, C. J., Hedley-Whyte, E. T.,

- Gavett, B. E., Budson, A. E., ... Stern, R. A. (2009). Chronic traumatic encephalopathy in athletes: Progressive tauopathy after repetitive head injury. *Journal of Neuropathology & Experimental Neurology*, 68, 709–735.
- Mechanic, M. B., Weaver, T. L., & Resick, P. A. (2008). Risk factors for physical injury among help-seeking battered women: An exploration of multiple abuse dimensions. *Violence Against Women*, 14, 1148–1165.
- Mild Traumatic Brain Injury Committee, American Congress of Rehabilitation Medicine, Head Injury Interdisciplinary Special Interest Group. (1993). Definition of mild traumatic brain injury. *Journal of Head Trauma Rehabilitation*, 8, 86–87.
- Murray, C. E., & Graves, K. N. (2012). *Responding to family violence*. New York, NY: Routledge.
- Murray, C. E., Horton, G. E., Johnson, C. H., Notestine, L., Garr, B., Marsh, A., ... Doom, E. B. (2015). Domestic violence service providers' perceptions of safety planning: A focus group study. *Journal of Family Violence*, 30, 381–392.
- Novack, T., Alderson, A., Bush, B., Meythale, J., & Canupp, K. (2000). Cognitive and functional recovery at 6 and 12 months post-TBI. *Brain Injury*, 14, 987–996.
- Overstreet, N. M., & Quinn, D. M. (2013). The intimate partner violence stigmatization model and barriers to help seeking. *Basic and Applied Social Psychology*, 35, 109–122.
- Picard, M., Scarisbrick, D., & Paluck, R. (1991). HELPS. New York, NY: Comprehensive Regional TBI Rehabilitation Center.
- Ponsford, J., Willmott, C., Rothwell, A., Cameron, P. A. K., Nelms, R., Curran, C., & Ng, K. (2000). Factors influencing outcome following mild traumatic brain injury in adults. *Journal of the International Neuropsychological Society*, 6, 568–579.
- Roberts, A. R., & Kim, J. H. (2005). Exploring the effects of head injuries among battered women: A qualitative study of chronic and severe women battering. *Journal of Social Service Research*, 32, 33–48.
- Ruff, R. M., Iverson, G. L., Barth, J. T., Bush, S. S., & Broshek, D. K., and the NAN Policy and Planning Committee. (2009). Recommendations for diagnosing a mild traumatic brain injury. *Archives of Clinical Neuropsychology*, 24, 3–10.
- Ruff, R., & Jurica, P. (1999). In search of a unified definition of mild traumatic brain injury. *Brain Injury*, 13, 943–952.
- Straus, M. A., Hamby, S. L., Boney-McCoy, S., & Sugarman, D. B. (1996). The revised Conflict Tactics Scale (CTS2): Development and preliminary psychometric data. *Journal of Family Issues*, 17, 283–316.

- Stuss, D. T., Ely, P., Hugenholtz, H., Richard, M. T., LaRochelle, S., Poirier, C. A., & Bell, I. (1985). Subtle neuropsychological deficits in patients with good recovery after closed head injury. *Neurosurgery*, 17, 41–47.
- Tanielian, T., & Jaycox, L. (2008). *Invisible wounds of war: Psychological and cognitive injuries, their consequences, and services to assist recovery*. Santa Monica, CA: RAND.
- Teasdale, G., & Jennett, B. (1974). Assessment of coma & impaired consciousness. *Lancet*, ii, 81–84.
- Tinius, T. (2003). The integrated visual and auditory continuous performance test as a neuropsychological measure. *Archives of Clinical Neuropsychology*, 18, 439–454.
- Valera, E. M., & Berenbaum, H. (2003). Brain injury in battered women. *Journal of Consulting and Clinical Psychology*, 71, 797.
- Vanderploeg, R. D., Belanger, H. G., & Curtiss, G. (2009). Mild traumatic brain injury and posttraumatic stress disorder and their associations with health symptoms. *Archives of Physical Medicine and Rehabilitation*, 90, 1084–1093.
- Warden, D. L., Bleiberg, J., Cameron, K. L., Ecklund, J., Walter, J., Sparling, M. B., . . . Arciero, R. (2001). Persistent prolongation of simple reaction time in sports concussion. *Neurology*, 57, 524–526.
- Wenner, K. (2012, March 17). War is brain damaging. *The New York Times*. Retrieved from <http://www.nytimes.com>
- Wong, J. Y., Fong, D. Y., Lai, V., & Tiwari, A. (2014). Bridging intimate partner violence and the human brain: A literature review. *Trauma, Violence, and Abuse*, 15, 22–33. doi:10.1177/1524838013496333