

# Traumatic Brain Injury in Domestic Violence Victims: A Retrospective Study

Glynnis Zieman MD, Ashley Bridwell LMSW, Javier Cárdenas MD

Barrow Concussion and Brain Injury Center, Barrow Neurological Institute, Phoenix, AZ



## Background

- An estimated 1.7 million people are diagnosed with traumatic brain injury (TBI) each year in the U.S. (does not include the large number of patients who do not seek medical care)
- Domestic violence (DV) victims are at risk for repeated injuries and only about 34% receive medical care
- 1 in 3 women and 1 in 4 men will experience physical violence by an intimate partner in their lifetime
- DV accounts for 20% of all violent crimes in the U.S.
- Risk of injury to the head or neck may be as high as 88-94%, and up to 74% of victims have symptoms of TBI
- TBI recovery is generally prolonged in this population due to repeat injuries, coexisting psychiatric disease and lack of medical care, amongst other factors
- Many victims are unaware of the expected symptoms and consequences of TBI and, as such, may not seek treatment for months to years later, if at all
- The physical, behavioral and cognitive consequences of TBI, especially multiple TBI, can interfere with patients' abilities to work, parent their children and care for themselves
  - 21-60% of DV victims lose their jobs due to their injuries
  - DV is correlated with an increase risk of depression

## Objective

- Identify demographic and clinical characteristics of patients with traumatic brain injury due to domestic violence
- Evaluate common symptoms and evaluation findings to improve care of patients in this population in the future

## Methods

- Area shelters perform screening on all new residents to identify patients with possible traumatic brain injury (HELPS Screen)
- Patients are then referred to our clinic for evaluation and care, with the assistance of a financial grant to cover their expenses
- Identified all patients who presented to our clinic via our community partnership grant program from April 2012 through November 2015
- All patients from the program who either did not have a history of TBI, or their TBI was due to another cause besides DV were excluded from this study

**HELPS BRAIN INJURY SCREENING TOOL**

Consumer Information: \_\_\_\_\_

Agency/Screeners Information: \_\_\_\_\_

H Have you ever hit your head or been hit on the head?  Yes  No  
Note: Please do not try to think about all accidents that may have occurred at any age, even those that did not seem serious: car accidents, falls, assault, sports, etc. Screen for depressive symptoms and other stressors and also for serious medical symptoms. A TBI can also occur from indirect trauma of the head, such as being shaken as a baby or child.

E Were you ever seen in the Emergency room, hospital, or by a doctor because of an injury to your head?  Yes  No  
Note: Many people are seen for treatment, however, there are those who cannot afford treatment, or who do not think they require medical attention.

L Did you ever lose consciousness or experience a period of being dazed and confused because of an injury to your head?  Yes  No  
Note: People who hit may not have consciousness but experience an "alteration of consciousness." This may include feeling dazed, confused, or disoriented at the time of the injury, or being unable to remember the events surrounding the injury.

P Do you experience any of these problems in your daily life since you hit your head?  Yes  No  
Note: Ask your client if you experience any of the following problems, and ask when the problem presented. You are looking for a combination of two or more problems that were not present prior to the injury.

S Any significant sicknesses?  Yes  No  
Note: Traumatic brain injury creates a physical stress to the head, but acquired brain injury may also be caused by medical conditions, such as lupus, tumor, meningitis, viral like virus, stroke, seizures. Also screen for instances of ongoing medication such as taking a heart attack, action medication, psychiatric, pain relievers, or new medications.

Scoring the HELPS Screening Tool  
 A HELPS screening is considered positive for a possible TBI when the following 3 items are identified:  
 1.1 Any event that could have caused a brain injury (see H, L or E), and  
 2.1 A period of loss of consciousness or altered consciousness after the injury or another indication that the injury was severe (see H, L or E), and  
 3.1 The presence of two or more chronic problems listed under P that were not present before the injury.

Note:  
 • A positive screening is not sufficient to diagnose TBI as the reason for current symptoms and difficulties; other possible causes may need to be ruled out.  
 • Some individuals could present exceptions to the screening results, such as people who do have TBI-related problems but answered "No" to some questions.  
 • Consider positive responses within the context of the person's self-report and documentation of altered behavioral and/or cognitive functioning.

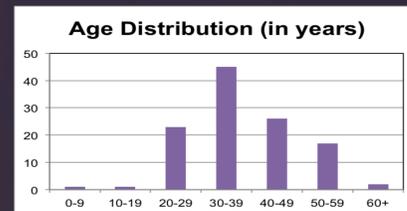
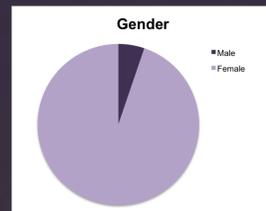
The program is a screening tool developed by H. Koenig, D. Swanson, R. Hagan, MD, International Center for the Study of Trauma, TBI-HIT, LLC, Department of Psychiatry, University of Colorado, Denver, CO. The tool was adapted and modified for use by the Barrow Neurological Institute. The tool is available for use by the Barrow Neurological Institute. The tool is available for use by the Barrow Neurological Institute. The tool is available for use by the Barrow Neurological Institute.

HELPS Screening Tool for Brain Injury

## Results

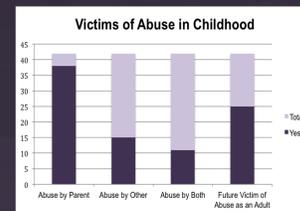
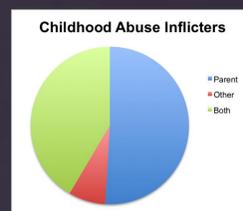
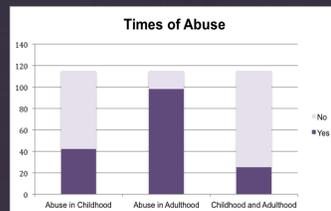
### Patient Demographics

- Study Population: 115 patients identified with a history of TBI and DV
- 109 female (94.8%), 6 male (5.2%)
  - Age range 4-68 years, mean 37.9 years



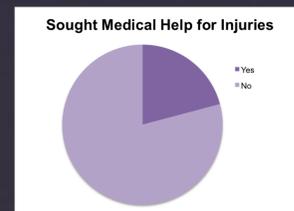
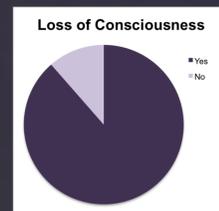
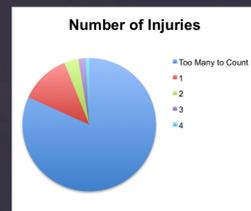
### Distribution of Abuse

- 36.5% experienced abuse in childhood, 85.2% as an adult
- Of the patients abused as a child, 25/42 (59.3%) went on to experience abuse as an adult



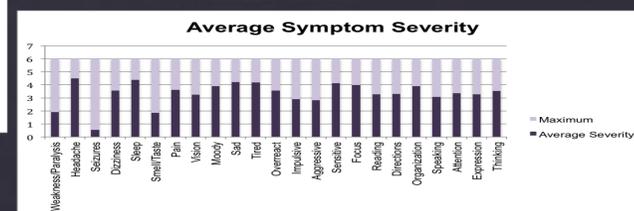
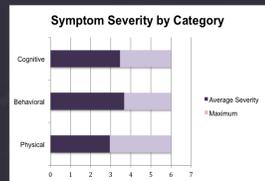
### Traumatic Brain Injury Characteristics

- Overall, 87.8% of patients reported greater than one head injury
  - The vast majority of those (92.1%) reported too many to count
- Only 20.9% previously sought medical care for their injuries



## Symptoms

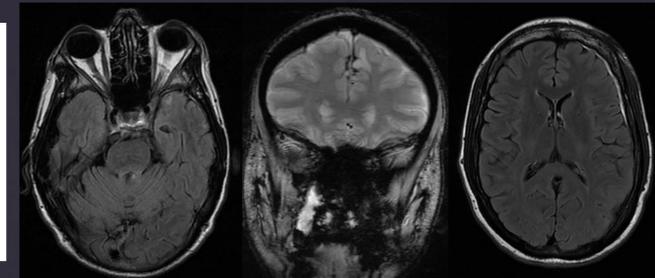
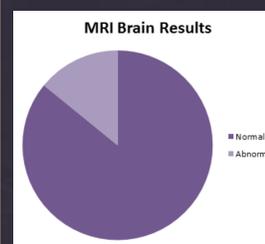
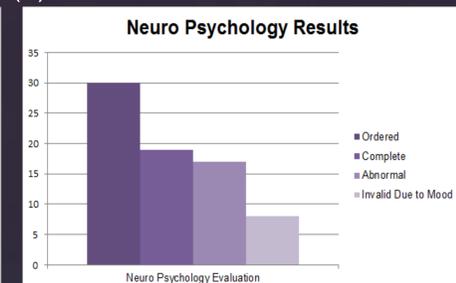
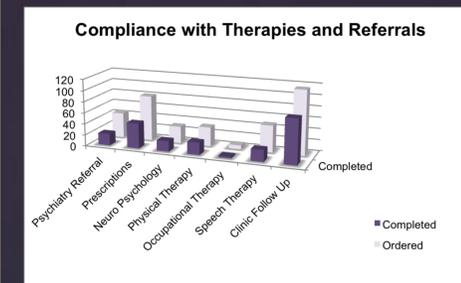
- The top chief complaints were Headache and Memory Loss
- Most severe self-reported symptoms: Headache, Sleep, Sadness
  - Most severe symptom domain: Behavioral (followed by Cognitive, then Physical)



## Results, cont.

### MRI and Follow Up Information

- 80 of 115 patients (69.6%) followed up for their next clinic visit
- Neuro Psychology testing ordered in 30 patients, complete in 19
  - Abnormal in 17 (89.5%), but 8 invalid due to mood
- 45 of 81 patients (56.6%) were compliant with medications
- MRI ordered in 108 patients, performed in 78 patients
- Abnormal in 11 patients (14%)
  - MRI abnormalities included:
    - Encephalomalacia (3)
    - Cerebral aneurysms (2)
    - White matter lesions (2)
    - Old fracture (1)
    - Hemosiderin deposition (1)
    - Volume loss (1)
    - Subdural hematoma (1)



(L to R) L temporal lobe encephalomalacia, bifrontal hemosiderin deposition, L frontoparietal SDH

## Conclusions

- Most of these patients experienced too many injuries to quantify
- Majority of the patients did not seek medical care for their injuries
- Over half of the patients who experience abuse as a child went on to be abused as an adult
- Although the most common chief complaint was Headache, the Behavioral and Cognitive domains were overall the most concerning to patients on subjective review of symptoms
- Neuro psychology evaluation was abnormal in 89.5% of patients, but almost half of these results were invalid due to mood
- MRI was abnormal in 14% of patients, but this excluded studies with nonspecific white matter lesions (migraine, small vessel disease, etc.), which were evident on many of the patients' MRIs
- Data is still being gathered and analyzed