

Group	% of women
General adult population	9%
Psychiatric inpatient	29%
Psychiatric outpatient	19%
<b>Denver Triage Project: Police-reported intimate partner abuse</b>	<b>56%</b>

Head Injury Screening and Intimate Partner Violence  
Note: Screen for head injury and intimate partner violence in all women seeking services at the Rose Anderson Center. The Rose Anderson Center is a community-based organization that provides a range of services to women seeking services after intimate partner abuse. The Rose Anderson Center is a community-based organization that provides a range of services to women seeking services after intimate partner abuse.

Our findings are in line with others.

**20-75%** of participants with mild TBIs across 40+ studies, many in emergency settings

**Battered and Brain Injured: Traumatic Brain Injury Among Women Survivors of Intimate Partner Violence—A Scoping Review**

Halina (Lin) Haag<sup>1\*</sup>, Dayna Jones<sup>2</sup>, Tracey Joseph<sup>3</sup>, and Angela Colantonio<sup>1,6</sup>

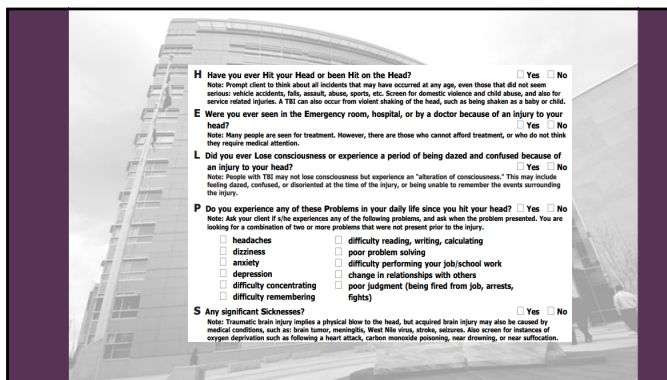
Review Manuscript

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**Abstract**  
Objectives: The objective of this scoping review is to examine the extent, range, and nature of literature targeting health-care professionals on the prevalence and outcomes of intimate partner violence (IPV)-related traumatic brain injury (TBI). The purpose is to gain an understanding of prevalence, investigate screening tool use, generate IPV/TBI-specific support recommendations, and identify opportunities for future research. **Method:** The review was guided by Arksey and O'Malley's five stages for conducting a scoping review. A comprehensive search of five databases revealed 1,739 articles. In total, 42 published research papers that focused specifically on TBI secondary to IPV were included in the study. **Results:** The literature reports inconsistencies in prevalence rates from IPV-related TBI. There are no current standardized screening practices in use, though the literature calls for a specialized tool. Frontline professionals would benefit from education on signs and symptoms of IPV-related TBI. Empirical studies are needed to generate reliable data on prevalence, experience, and needs of brain-injured survivors of TBI. **Conclusions:** Findings from this study demonstrate the need for the development of an IPV-sensitive screening tool, more accurate data on prevalence, an interprofessional approach to care, and raised awareness and education on the diffuse symptoms of IPV-related TBI.

**Keywords:**  
traumatic brain injury (TBI), intimate partner violence (IPV), women's health, scoping review

Traumatic brain injury (TBI) is a serious consequence of will experience IPV in their lifetime (WHO, 2017). According intimate partner violence (IPV) that is often overlooked or to more Canadian statistics, rates of self-reported sexual violence are increasing.



**H Have you ever Hit your Head or been Hit on the Head?** ☐ Yes ☐ No  
Note: Prompt client to think about all incidents that may have occurred at any age, even those that did not seem serious: vehicle accidents, falls, assault, abuse, sports, etc. Screen for domestic violence and child abuse, and also for service-related injuries. A TBI can also occur from violent shaking of the head, such as being shaken as a baby or child.

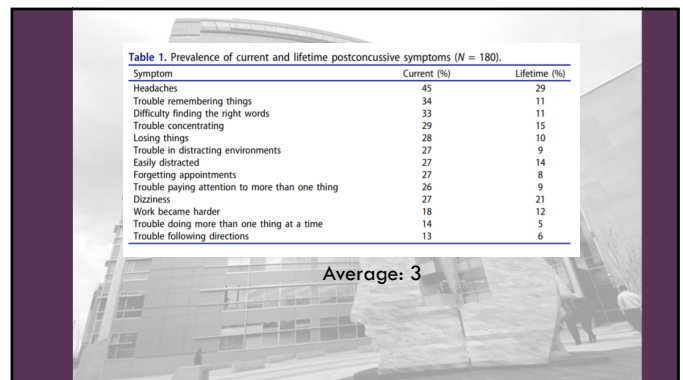
**E Were you ever seen in the Emergency room, hospital, or by a doctor because of an injury to your head?** ☐ Yes ☐ No  
Note: Many people are seen for treatment. However, there are those who cannot afford treatment, or who do not think they require medical attention.

**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 with TBI may not lose 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 s/he experiences 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.

<input type="checkbox"/> headaches	<input type="checkbox"/> difficulty reading, writing, calculating
<input type="checkbox"/> dizziness	<input type="checkbox"/> poor problem solving
<input type="checkbox"/> anxiety	<input type="checkbox"/> difficulty performing your job/school work
<input type="checkbox"/> depression	<input type="checkbox"/> change in relationships with others
<input type="checkbox"/> difficulty concentrating	<input type="checkbox"/> poor judgment (being fired from job, arrests, fights)
<input type="checkbox"/> difficulty remembering	

**S Any significant Sicknesses?** ☐ Yes ☐ No  
Note: Traumatic brain injury requires a physical blow to the head, but acquired brain injury may also be caused by medical conditions, such as: brain tumor, meningitis, West Nile virus, stroke, seizures. Also screen for instances of oxygen deprivation such as following a heart attack, carbon monoxide poisoning, near drowning, or near suffocation.



**Table 1. Prevalence of current and lifetime postconcussive symptoms (N = 180).**

Symptom	Current (%)	Lifetime (%)
Headaches	45	29
Trouble remembering things	34	11
Difficulty finding the right words	33	11
Trouble concentrating	29	15
Losing things	28	10
Trouble in distracting environments	27	9
Easily distracted	27	14
Forgetting appointments	27	8
Trouble paying attention to more than one thing	26	9
Dizziness	27	21
Work became harder	18	12
Trouble doing more than one thing at a time	14	5
Trouble following directions	13	6

**Average: 3**



**Women's Health Project:**  
Extending research beyond emergency settings to women seeking services after intimate partner abuse.

*Rose Anderson Center*

**Collaborators:** Rose Andom Center, Drs. Kim Gorgens and Julia Dmitrieva, and graduate students.



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**PRELIMINARY**

**Collaborators:** Rose Andom Center, Drs. Kim Gorgens and Julia Dmitrieva, and graduate students.

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 Note: Please check to be sure about all injuries that have occurred at any age, even those that did not cause serious injuries (bruises, lacerations, etc.). Remember for domestic violence and other abuse, and you do not have to report the injury. A TBI can also occur from a violent shaking of the head, such as being shaken or held in a choke hold.

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**Ohio State University TBI Identification Method – Interview Form**

**Step 1: Initial Assessment**

**Step 2: Detailed Assessment**

**Step 3: Final Assessment**

**Step 4: Follow-up Assessment**

**Step 5: Summary Assessment**

**Step 6: Final Assessment**

**Step 7: Final Assessment**

**Step 8: Final Assessment**

**Step 9: Final Assessment**

**Step 10: Final Assessment**

**Step 11: Final Assessment**

**Step 12: Final Assessment**

**Step 13: Final Assessment**

**Step 14: Final Assessment**

**Step 15: Final Assessment**

**Step 16: Final Assessment**

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**Step 98: Final Assessment**

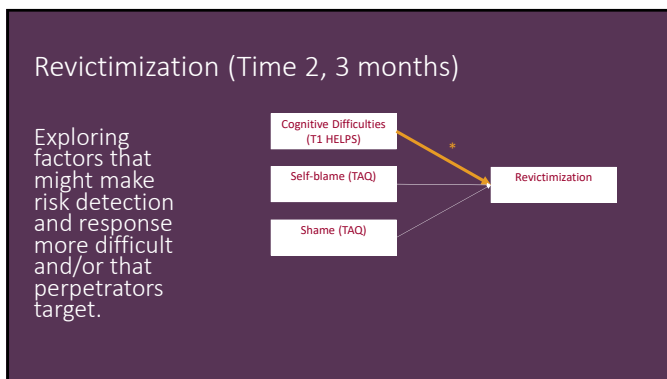
**Step 99: Final Assessment**

**Step 100: Final Assessment**

Item	n	%
<b>HELPS-Lifetime (n=102)</b>		
Have you ever Hit your Head or been Hit on the head? (H)	86	84.3%
Were you ever seen in the Emergency room, hospital, or by a doctor because of an injury to your head? (E)	59	57.8%
Did you ever Lose consciousness or experience a period of being dazed and confused because of an injury to your head? (L)	69	67.6%
H or E	87	85.3%
H or E or L	87	85.3%
H or E plus L	69	67.6%
H or E plus L plus at least 2 symptoms	63	61.8%
<b>OSU (n = 99)</b>		
Any head injury	86	86.9%
Any head injury plus AOC	79	79.8%

	n	%
Any head injury	86	86.90%
Any head injury plus AOC	79	79.80%
1st LOC before age 15	19	19%
LOC >30 min	21	21%
3+ with AOC	55	54%
3+ recent with AOC	2	2%

	n	%	Of those, DV-specific:
Any head injury	86	86.90%	
Any head injury plus AOC	79	79.80%	
1st LOC before age 15	19	19%	
LOC >30 min	21	21%	9 47%
3+ with AOC	55	54%	35 80%
3+ recent with AOC	2	2%	2 100%

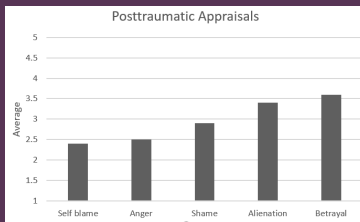


**New head injuries (Time 2, 3 months)**

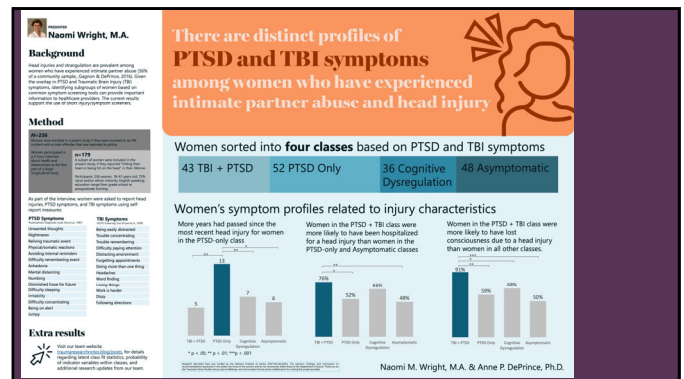
10% of women reported a new head injury with AOC.

n=65

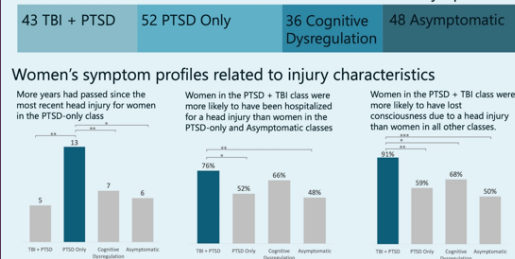
## Co-Occurring Psychological Distress



Symptom Severity	Average	
PTSD	14.4	Exceeds cutoff for probable PTSD
Depression	11.6	Moderate-severe



## Women sorted into **four classes** based on PTSD and TBI symptoms



## Co-Occurring Health and Service Needs

- Health Problems: Average of 8 over the year prior to T1
- General Service Needs: Average of 8 needs at T1
- Health Service Needs: 1 in 5 said that they did not get care right away when needed

## Health Literacy and Trust in Physicians

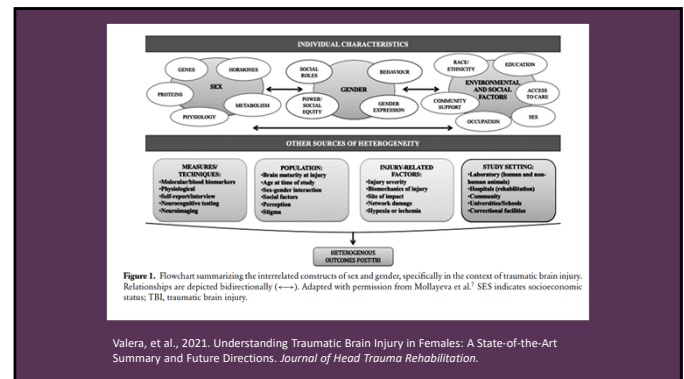
- Spot of good news: High trust and literacy

## Other sources of potential brain injuries

- At Time 1, 68.6% of respondents had been strangled by the target intimate partner

## Considering these findings in larger research context:

### Female Brains are Unique



### Special Risks to Women

- Women report significantly more postconcussive symptoms and have a higher rate of long-term disability
  - (Bazarian, et al., 2010; Corrigan et al., 2010)
- Poorer physical health after injury (e.g., more inflammation)
  - (Bonomi et al., 2006; Kwako, et al., 2011)
- More cognitive difficulties, including executive dysfunction and memory deficits after injury
  - (Faul, et al., 2010; Ryan & Warden, 2003)
- More affective problems, particularly suicidality after injury
  - (Perna, 2005; Wasserman, et al., 2008)
- Higher risk of early onset dementing disease
  - (Mollaveya, et al., 2019)
- 50% women with TBI reported not receiving needed care, particularly for mental health symptoms
  - More structural and financial barriers than women without TBI
    - (Toor et al., 2016)

### Violence-Related TBI

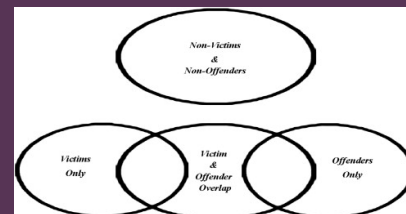
- Violence-related TBI is associated with poorer outcomes
  - Poorer community integration
  - Poorer social productivity
  - Higher rates of public sector income sources compared with survivors of nonviolent TBI
    - (Bruns & Hauser, 2003; Schopp, et al., 2006)
- At 1-year post-injury, unemployment and divorce rate increased more in violently injured group than any other group with TBI
  - (Bushnik et al., 2003)

### Criminal Justice

- Gender differences disappear completely in the justice-involved population
  - Rate of TBI is 5 to 7 percentage points higher among incarcerated women compared with incarcerated men
    - (Fishbein, et al., 2014; Shiroma, et al., 2010)
- Women with a TBI history have a 144% higher rate of violent infractions
  - (Shiroma, et al., 2010)
- CHICKEN→EGG
  - Relationship between violence and criminality in women after TBI
  - Women with histories of TBI are more likely to have sustained their TBI prior to their first criminal offense
    - (Colantonio, et al., 2014)
  - TBIs with loss of consciousness (LOC), suicide attempts, recent physical abuse, and low cortisol levels, are correlated with conviction for violent crimes (number of TBIs with LOC was the strongest predictor)
    - (Shiroma, et al., 2010)

### Victim/Offender Overlap

Prison wardens and health care workers estimate that 75% to 90% of incarcerated women have experienced intimate partner violence (Zust, 2009)



## Women in the System

Wall, K. C., Gorgens, K., Dettmer, J., Davis, T. M., & Gafford, J. (2018). Violence related traumatic brain injury in justice-involved women. *Journal of Interpersonal Violence, 45*(10), p.1588-1605.

- Women were twice as likely as men to incur multiple TBIs of any kind and **six times more likely** to have multiple TBIs related to violence.
- Violence-related TBIs were associated with more reports of physical illness
- Violently-injured women had longer total incarceration times
  - Not due to more violent offenses but to rearrest
- Women were overwhelmingly more likely to have two or more violence-related injuries within close proximity to each other
  - This may increase their risk of developing neuropathological conditions as they age

Gorgens, K., Meyer, L., Dettmer, J., Lyman, H., Matson, J., Kantor, C., & Knauer, R. (In preparation). Women in Criminal Justice with Traumatic Brain Injury: Differences in Comorbidities and Criminal History *Feminist Criminology*.

- Females were more likely than males
  - to have a physical health complaint,  $\chi^2(1, n = 944) = 10.683, p < .005$ ;
  - to have a mental illness,  $\chi^2(1, n = 959) = 28.238, p < .001$ ;
  - to be prescribed psychiatric medications,  $\chi^2(1, n = 958) = 11.112, p < .005$ ;
  - to have made a suicide attempt,  $\chi^2(1, n = 938) = 26.952, p < .001$ ;
  - be the victim of childhood violence,  $\chi^2(1, n = 940) = 9.819, p < .005$ ;
  - be the victim of adulthood violence,  $\chi^2(1, n = 938) = 93.152, p < .001$ .
- There were no gender differences in total length of time incarcerated,  $t(879) = -.002, p = .496$  but females reported significantly fewer criminal convictions for personal crime than males,  $\chi^2(1, n = 929) = 19.278, p < .001$ , and for DUI/DWI,  $\chi^2(1, n = 895) = 9.234, p < .005$ , and no differences in the frequency of property crime conviction,  $\chi^2(1, n = 919) = 3.101, p = .078$ ; inchoate crime conviction,  $\chi^2(1, n = 900) = .253, p = .615$ ; statutory offense,  $\chi^2(1, n = 890) = 0, p = .994$ ; and drug-related charges,  $\chi^2(1, n = 906) = 3.906, p = .048$ .
- Most common mechanism of injury for both genders was assault

## Implications for Practice

- Basic Accommodations
  - Make a point to minimize distractions
  - Incorporate short breaks
  - Check understanding
- Multiple reminders
  - Write information down
    - **Balance** with safety: What if the abuser intercepts reminders or finds written information?
  - **Self-Advocacy**

Never underestimate the transformative power of Self-Advocacy

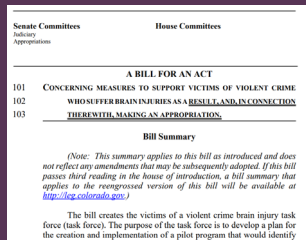
## The Criminal Justice Issue Nobody Talks About: Brain Injuries

*I know firsthand what it's like to navigate the criminal justice system with a brain injury caused by domestic violence. I also live with the fact that an injury like mine can turn a victim into a perpetrator.*



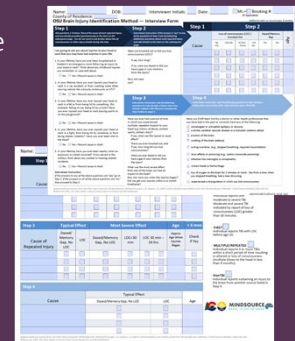
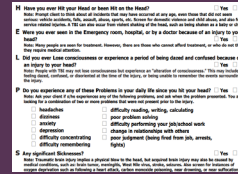
## Implications for Practice

- Screening



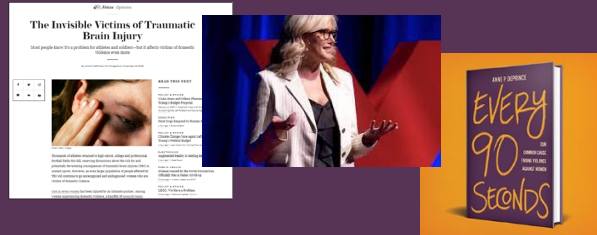
## Implications for Practice

- Screening considerations



## Implications for Practice

- Public education



## Thank you.



@apdeprince @bubblewrapbrain  
traumaresearchnotes.blog

**Partners:** Rose Anom Center, Denver District Attorney's Office, Denver Police Department, SafeHouse Denver, Project Safeguard, Rocky Mountain Victim Law Center, The Blue Bench

**TSS Group:** Rebecca Babcock, Maria-Ernestina Christ, Melody Combs, Kerry Gagnon, Claire Hebenstreit, Michelle Lee, Hollis Lyman, Maria Novak, Ryan Matlow, Courtney Welton-Mitchell, Julie Olomi, Kim-Chi Pham, Rheena Pineda, Adi Rosenthal, Tejas Srinivas, Rebecca Suzuki, Kristin Weinzierl, Naomi Wright, undergraduate research assistants

**Collaborators and Colleagues:** Julia Dmitrieva, Joanne Belknap, Ann Chu, Susan Buckingham, Jennifer Labus

### Participants

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