Brain Injury and Domestic Violence:

Making the Connection and Improving Care

October 2017 to March 2019

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INTRODUCTION

Brain injury can happen to anyone, anywhere at any time. Brain Injury (BI) has an immediate cognitive, emotional, and physical consequence with lasting and potentially permanent repercussions. Single or repeated BI may make it more difficult to think effectively, be physically healthy, seek help, identify and utilize resources, make sound decisions, and be interpersonally effective. Individuals with BI may appear to be disorganized, aggressive, temperamental, or confused and have physical symptoms such as headaches, changes in vision, hearing loss, or difficulty with balance. If these symptoms are misunderstood the individual may not get the needed help or may be inappropriately classified.

BIA-NE and partners increased brain injury recognition, assessment and management in programs serving victims of domestic violence.

Staff working with victims of domestic violence programs were 1) trained in BI recognition and management, 2) trained to implement a modified evidence-based BI screening tool (HELP screening tool), 3) referred victims who screen positive for BI onto neuropsychologist for individualized brain injury assessment, if the individual was interested in doing so. Once the assessment was complete the victim was given BI management recommendations. Additionally, a sample (10) of the victims were interviewed regarding their experience with the screening and the assessment.

BIA-NE and partners also provided BI and domestic violence awareness and training to community-based health and legal providers which serve domestic violence victims.

PRIMARY PROJECT PARTNERS

- Friendship Home in Lincoln
- WCA in Omaha
- University of Nebraska at Lincoln- Dr. Kathy Chiou, Kate Higgins
- University of Nebraska Medical Center- Dr. Matt Garlinghouse and Dr. Shireen Rajaram

BRAIN INJURY SCREENING[1]

Friendship Home and Voices of Hope in Lincoln and WCA in Omaha were provided with a 90-minute BI 101 training which included instructions on how to administer the short HELP screening tool. Programs identified which staff would be interviewing the clients at a specific time in their program intake process. The average amount of time to complete the screening tool was 5-10 minutes. If an individual screened positive the staff member offered them the opportunity to complete a neuropsychological assessment. See Attachment A for sample of the letter provided.

The screening tool HELP was specifically designed to be used by people who are not experts in traumatic brain injury. "HELP" it is an acronym for the key parts of screening: **H** = Hit in the head; **E** = Emergency room treatment; **L** = Loss of consciousness; **P** = Problem because of a hit to the head or due to strangulation. See Attachment B for the sample of the screen.

A HELP screening is considered positive for a possible brain injury when the following three items are identified:

1. An event that could have caused a brain injury (yes to H or E), and
2. A period of loss of consciousness or altered consciousness after the injury or another indication that the injury was severe (yes to L or E), and
3. The presence of two or more chronic problems listed under P that were not present before the injury.

Between the three organizations (Friendship Home, Voices of Hope, and WCA), a total of 171 brain injury screenings were completed. However, there were missing data from nine of the screenings, which were therefore unable to be included in the "key finding" of the prevalence of positive screens among this population (see directly below).

KEY FINDING

- ***58% (100 out of 162) of women screened for a brain injury in domestic violence shelters screened positive for a possible brain injury.***

(Note, the estimates of individuals with BI in the general public range anywhere from 5% to 24%.)

[1] Rajaram, S., New-Aaron, M., Ojha, T. & Smith, L. (2019). Brain Injury Screening: Survivors of Domestic Violence in Nebraska. Submitted to the Brain Injury Alliance of Nebraska

HITS TO THE HEAD and MEDICAL TREATMENT

- ***91% (155 out of 171) of screening participants had been hit in the head or strangled.***
- ***65% (100 out of 155) of those who had been hit in the head or strangled received no medical treatment for their injury.***

Among those who had been hit in the head or strangled, 50% reported that this had happened to them within the past year (Figure 1) and 31% reported that they have been hit in the head or strangled more than six times in their life (Figure 2).

Figure 1. When was your head hit or when were you strangled (multiple responses possible) (n=155)

(among those who have ever been hit in the head or strangled)

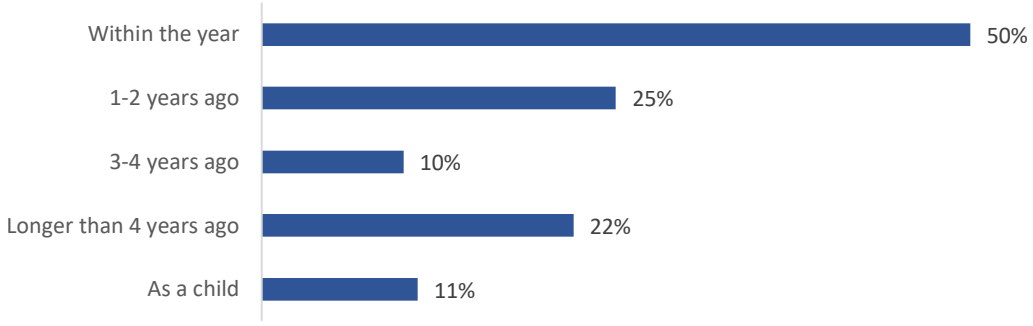
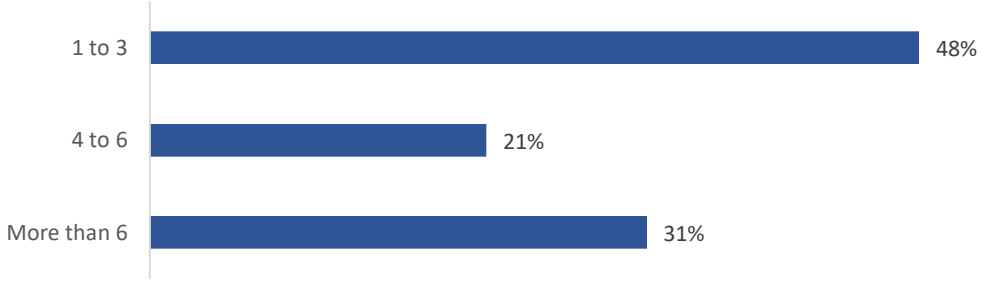


Figure 2. How many times have you been hit in the head or strangled? (n=155)

(among those who have ever been hit in the head or strangled)



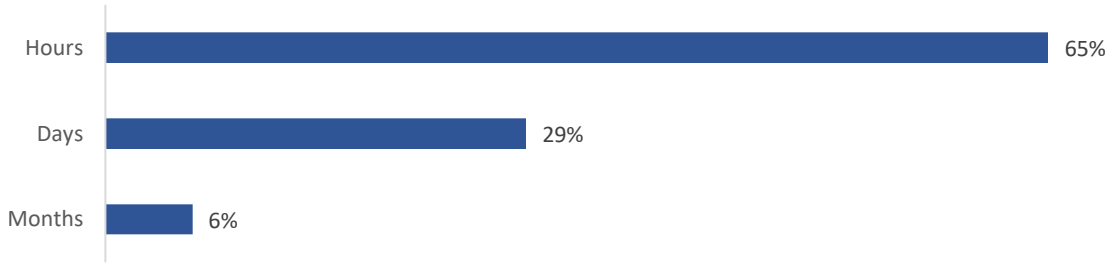
IMPAIRMENTS IN CONSCIOUSNESS

- ***64% (99 out of 155) of those who had been hit in the head or strangled reported that they have blacked out, lost consciousness, or experienced a period of being dazed and confused because of a hit to the head or due to choking or strangulation.***

Among those who report such an impairment in consciousness, 29% report feeling this way for days and 6% report feeling this way for months (Figure 3).

Figure 3. How long have you felt this way? (n=95)

(among those who have ever been hit in the head or strangled and have blacked out, lost consciousness, or experineced being dazed and confused because of a hit to the head or due to choking or strangulation



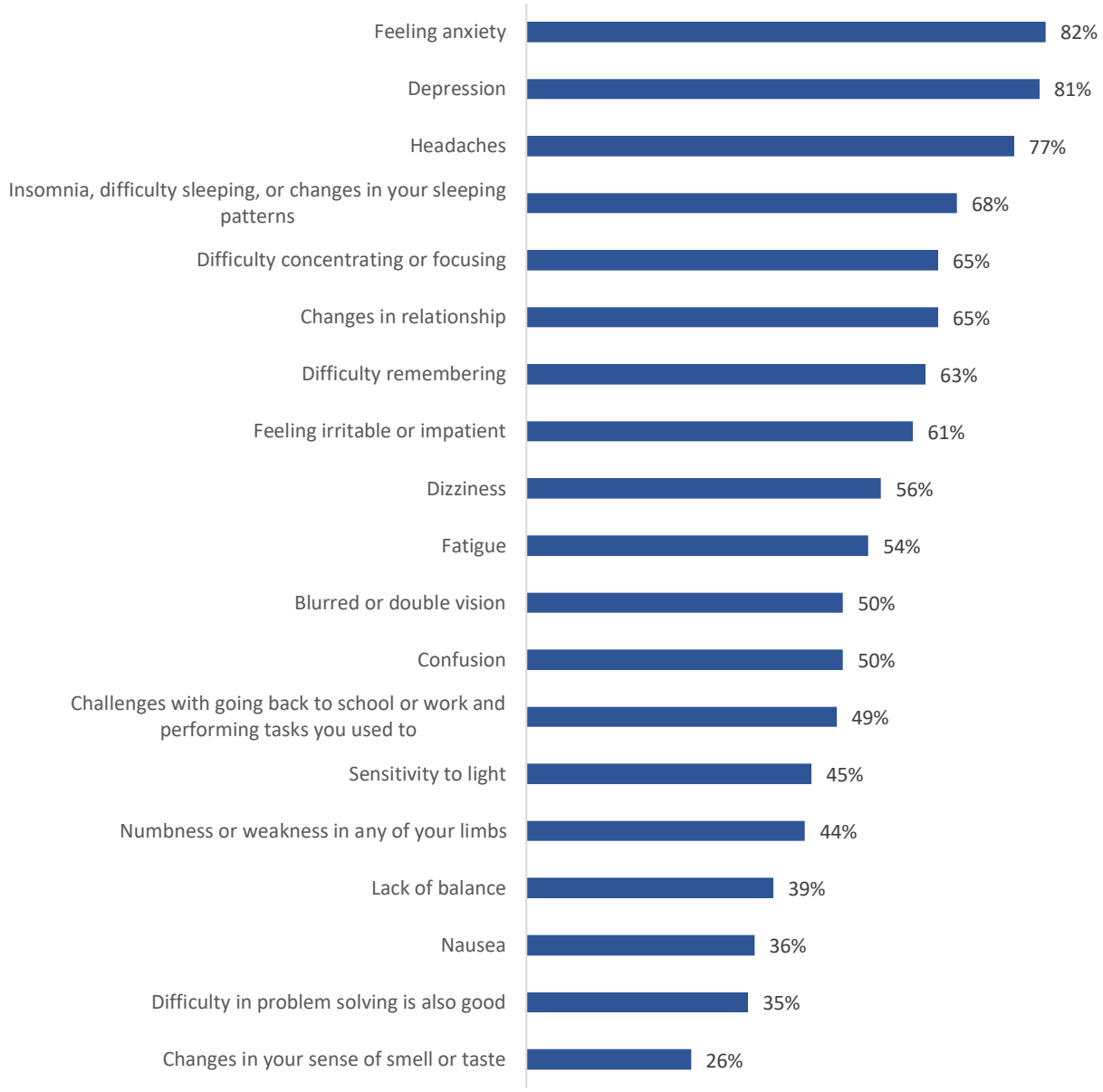
PROBLEMS IN DAILY LIFE

- ***88% (121 out of 138) of those who had been hit in the head or strangled reported that they have experienced problems in daily life which may be a result of a brain injury (see list of problems below).***
- ***43% (49 out of 115) believe these problems in daily life are related to a head injury (an additional 37% are uncertain).***

Among those who report problems in daily life, the most frequent issues include anxiety, depression, headaches, insomnia, changes in relationships, difficulty remembering, and feeling irritable. All of these issues were reported by 60% of more of women who experienced or are experiencing problems in daily life (Figure 4).

Figure 4. Given that you had a hit in the head due to strangulation or choking, have you experienced or are you experiencing...? (multiple responses possible) (n=121)

(among those who have ever been hit in the head or strangled and report experiencing prob



For full details of the screening results refer to Attachment C.

NEUROPSYCHOLOGICAL ASSESSMENT[2]

Individuals who screened positive were offered the opportunity to complete a neuropsychological assessment. Out of the 171 individuals screened, 100 (58%) screened positive and of the 100-positive screened, 56 (58%) of the individuals agreed to complete the neuropsychological assessment. Individuals were informed that their participation was completely voluntary, and that they were free to discontinue at any point. The evaluation consisted of a battery of neuropsychological tests designed to assess performance in major domains of cognitive function (see below for list and description). Testing was administered on a one-on-one basis, in a quiet environment with minimal distractions. Upon completion of the evaluation, individuals were provided feedback on their areas of strengths and weaknesses. The evaluations (including assessment and feedback) were conducted by licensed clinical neuropsychologists.

Cognitive Domain	**Description**
Attention/Working Memory	the ability to pay attention and maintain concentration/focus during a specified task. Working memory refers to the ability to maintain and manipulate information held in "short term" memory
Processing Speed	mental "reaction time," the speed at which an individual can process information
Verbal Reasoning	language comprehension/understanding, and ability to think logically and creatively when using verbal information
Visual Reasoning	ability to process, organize, manipulate, and problem solve using visual information
Verbal Memory	recall and recognition of information presented verbally
Visual Memory	recall and recognition of information presented visually
Executive Functioning	"higher order" cognitive functions including the ability to shift/switch tasks, inhibit responses, and self-monitor

Project Sample Demographics:

Total individuals completing assessment	56 (all female)
Mean Age (years)	36.6
Mean Education Level (years)	12.3
Individuals with self-report history of learning disability/disorder	22
Individuals with self-report history of substantial substance use	33

[2] Higgins, K., Garlinghouse, M., & Chiou, K. (2019). "Intimate Partner Violence and Cognition: The Effects of Repeated Losses of Consciousness." Report Submitted to the Brain Injury Alliance of Nebraska.

Assessment Results & Summary: Raw test scores were converted into standardized T-scores which allow for comparison of performance with age-matched peers. According to this scale, a score of 50 reflects average performance of the population at large, and each standard deviation (standard deviation) is 10 points (i.e., a score of 60 means performance at 1 SD above the average, and a score of 40 means performance at 1 SD below the average). Scores falling below 1.5 SD are noted as clinically significant weaknesses.

The cognitive profile of the sample is shown in the graph in Figure 5. The results of the neuropsychological assessment show that on average, individuals with domestic violence-related brain injury obtained T scores that were below 50, meaning that they performed **below the average** in all domains assessed (attention/working memory, processing speed, verbal reasoning, visual reasoning, verbal memory, visual memory, and executive functioning). While these scores may be below average, attention may be warranted for scores that fall below 1.5-2 SDs below the average (i.e., T scores of 35 and 30, respectively). Scores that are within this range (or lower), are generally indicative of clinically significant impairments. This sample of individuals demonstrated **notable weaknesses in the area of verbal memory** and **clinically significant impairments in the areas of visual reasoning and visual memory**. Together, these findings suggest that **cognitive functioning is negatively affected by domestic-violence related brain injury**.

Figure 5. Neuropsychological Assessment Screening Results by Domains of Cognitive Functioning (n=56)

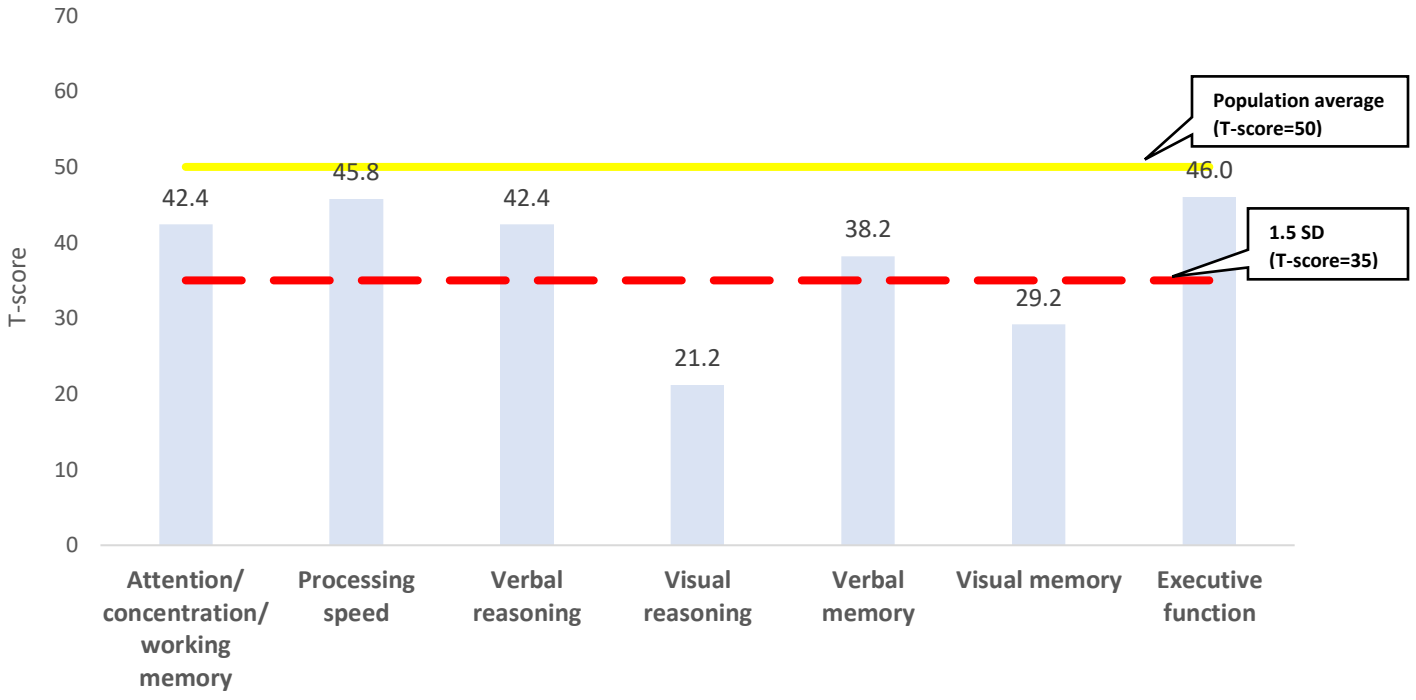


Figure 5. Graph showing average performance (as measured by standardized T scores) across assessed domains of cognitive function for survivors of domestic violence related brain injury. Yellow line represents the population average, and red-dotted line represents the cut off for 1.5 standard deviations below the mean. Results show notable weaknesses in domains of visual reasoning, and verbal memory.

QUALITATIVE STUDY[3]

After completing the neuropsychological assessment, 10 of the individuals agreed to an in-depth one-on-one interview to explore their perceptions of the brain injury screening and testing process.

With this small sample, majority of the participants were between 19-45 years, unemployed, not married, lived in the Douglas County area, had children, previously or currently lived in either a domestic violence or a homeless shelter, and were white Caucasian. Five participants had a college degree.

QUALITATIVE STUDY SUMMARY

- Women had varied reactions when they learned that they might have a brain injury resulting from the trauma of their domestic violence.
    - *Gina: I felt very angry, very angry at him, you know. Like you knew that I was abused before and you did it again. You know I was already broken when I met you, and then I -- because I was very open with him, and then he just took that and ran with it.*
- Despite being angry, scared, and embarrassed, they were thankful that they now had an explanation for some of the cognitive symptoms they were experiencing.
    - *Connie: Knowing what is wrong is like a million bucks. I feel mad at all the stuff that has happened to me, but that is like a million bucks, to know what is wrong.*
- Most of them experienced memory loss and had problems with their concentration.
    - *Sandra: "Yeah, I said, But forgetting so much…Because I feel like I'm going to go crazy. Like I'm going crazy or something…it scares me."*
- These symptoms disrupted their daily activities, social relationships with family and friends and their overall quality of life.
    - *Donna: Well, I pushed a lot of people away. I didn't get the help I needed at first. I really -- so now I'm allowing people to help me, allowing [myself] to get the support I need…I'm really just learning how to, like I said, live again like socially, mentally, physically.*

[3] Rajaram, Shireen (2019). "Knowing what is wrong is like a million bucks." Perspectives of Survivors of Domestic Violence on Brain Injury Screening/Testing -- A Qualitative Study. Report Submitted to the Brain Injury Alliance of Nebraska.

- Most participants found the neuropsychological assessment to be challenging and difficult, but the experience also made them aware of the deficits in their cognitive functioning.

    - *Jessica: Yeah, coz I didn't realize that I couldn't remember that much stuff, and it just -- it kinda -- to me, it was kind of mind-opening to realize that I don't know as much as -- you know my brain's not working as well as I thought it was.*

- Several participants followed up and took steps to seek more information on their condition.

    - *Jessica: Because, I felt after XX testing, I realized there was a lot more that I wasn't remembering, and so I went and had some more testing done…I think I'd need to have the brain scan done just to see what comes out of that just because I think there is some trauma there, and I wanna know what kind of trauma it is.*

- Women indicated that they would like more information on how they fared on the neuropsychological assessment and steps that they could take to help them better manage some of their symptoms. These included helpful tips and information on community resources that will help them improve their quality of life.

    - *Betty: Yeah, is there anything I can do by myself to improve? On my own. I know there's ways I can do that with help out in the community, but for me to do, individually.*

For full details of the qualitative study refer to Attachment D.

COMMUNITY BASED EDUCATION/TRAINING[4]

A total of 900 participants attended one of the 20 education/training events over the course of the grant period. Table below shows dates, audience, location, and number of participants attending the trainings. Training participants included nurses, lawyers, law enforcement personnel, probation officers, social workers, advocates, etc. Trainings were anywhere from 60 minutes to 6 hours and was dependent on the organization coordinating the training.

The largest training was done in partnership with UNO School of Criminal Justice and Criminology (250 participants) and the second largest was done in partnership with UNO School of Social Work (96 participants). See Attachment E as one sample of promotional flyers.

Month	Event	Location	# Participants
12/6/2017	Voices of Hope	Lincoln	15
12/14/2017	Friendship Home	Lincoln	35
2/9/2018	UNO School of Social Work	Omaha	96
3/6/2018	Community Coordinated Response meeting	Lincoln	8
3/30/2018	UNO School of Criminal Justice	Omaha	250
4/4/2018	Clinic with a Heart Training	Lincoln	8
4/12/2018	Heartland Juvenile Services Assoc. Conf.	Omaha	30
4/18/2018	St. Elizabeth ER	Lincoln	15
4/25/2018	WA State Dept. of Health Hot Topic Webinar	Lincoln	60
5/9/2018	Center Pointe Training-Omaha	Omaha	60
5/10/2018	Center Pointe Training-Lincoln	Lincoln	30
6/7/2018	Voices of Hope	Lincoln	15
7/26/2018	Heartland Family Service	Omaha	20
8/2/2018	WCA	Omaha	40
9/6/2018	Nebraska State Bar Assoc.	Lincoln	30
9/12/2018	One Health	Lincoln	11
10/19/2018	Lutheran Family Services	Lincoln	36
10/19/2018	Nebraska State Bar Assoc.	Lincoln	46
10/26/2018	Probation officer training	Lincoln	50
12/18/2018	Probation officer training	Lincoln	45
	Total		**900**

A total of 344 participants filled out the presentation evaluations.

Some of the key areas participants emphasized as helpful were: learning about the signs and symptoms of BI, screening tool (HELP) that they could use, how to better work with individuals

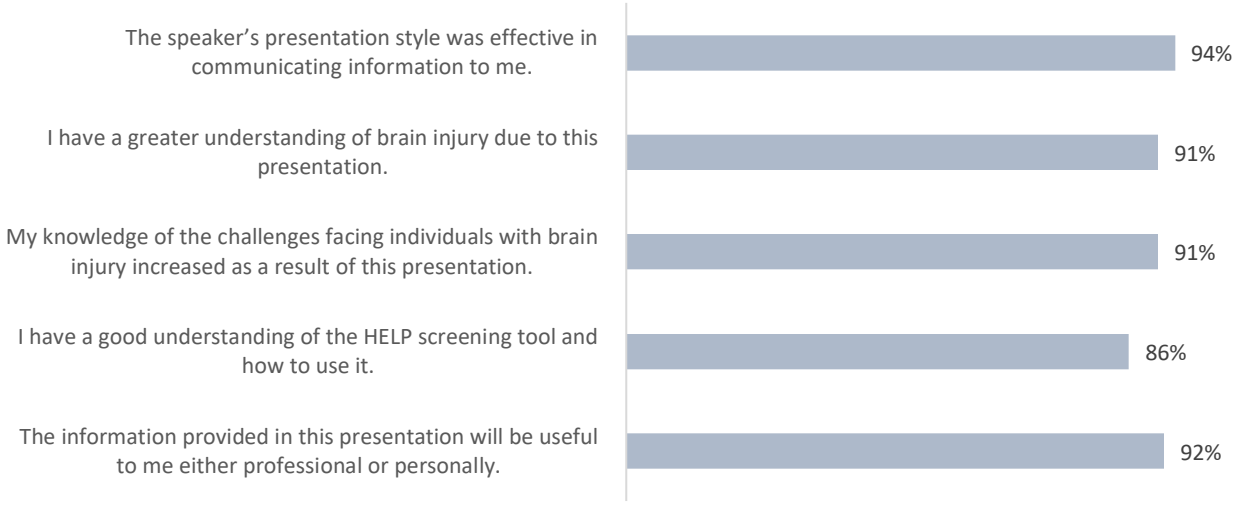
[4] Rajaram, S., New-Aaron, M., Ojha, T. & Smith, L. (2019). Evaluation of Educational Presentations on Brain Injury. Submitted to the Brain Injury Alliance of Nebraska

with a BI, resources in the community that their clients could access to get better, and statistics of the BI among DV survivors. Participants also appreciated hearing personal stories and becoming more knowledgeable about practical tips on how to help survivors deal with their symptoms.

One participant stated, “hopefully with your training, you can help them [medical professionals/providers] to be more aware that something is wrong, without being judgmental of people no matter who they are.” Another participant stated, “Learning tips, practical, of how to better serve survivors of TBI tips to give them to help them succeed and better mitigate through their lives.” A participant commented, “Having tools to use as screenings of being able to know where to refer.”

The substantial majority of participants either “agreed” or “strongly agreed” to the five close-ended evaluation questions in the training evaluation survey (Figure 6). For full details of the evaluation results refer to Attachment F.

Figure 6. Summary of Training Evaluations (n=344)
[% agree or strongly agree with each statement]*



*Response options: strongly disagree, disagree, neutral, agree, strongly agree.

In addition to the in personal educational/training opportunities The Nebraska Lawyer July/August 2018 edition featured an article on BI and Domestic Violence which went out to more than 5000 members. See Attachment G.

CONCLUSION

This project is the first of its kind in Nebraska that organizations providing services to survivors of domestic violence were trained to screen survivors of domestic violence for a possible brain injury and offer an opportunity for neuropsychological assessment. This project also captured the voices of survivors of domestic violence who may have experienced brain injury.

The project found:[5]

- 58% of the 171 women who were screened, tested positive
- Among women who were screened 91% indicated that they had been hit in the head or strangled
- 31% of these women reported that this happened more than six times in their life
- 65% of women received no medical treatment due the hit to the head or strangulation
- 64% reported losing consciousness or experienced a period of being dazed and confused
- 43% believed the problems were due to the head injury
- Most commonly experienced the following symptoms related to brain injury: anxiety, depression, headaches, insomnia, changes in relationships and difficulty concentrating.
- 33% of those screened also completed the neuropsychological assessment which demonstrated notable weaknesses in the areas of verbal memory and clinically significant impairments in the areas of visual reasoning and visual memory.

Together, these findings suggest that cognitive functioning is negatively affected by domestic-violence related brain injury.

Women had varied reactions when they learned that they might have a brain injury resulting from the trauma of their domestic violence. Despite being angry, scared, and embarrassed, they were thankful that they now had an explanation for some of the cognitive symptoms they were experiencing. Most of them experienced memory loss and had problems with their concentration. These symptoms disrupted their daily activities, social relationships with family and friends and their overall quality of life. Most participants found the neuropsychological assessment to be challenging and difficult, but the experience also made them aware of the deficits in their cognitive functioning. Several participants followed up and took steps to seek more information on their condition. They stated that they would like more information on how they fared on the neuropsychological assessment and steps that they could take to help them better manage some of their symptoms. These included helpful tips and information on community resources that will help them improve their quality of life.

[5] Rajaram, S., New-Aaron, M., Ojha, T. & Smith, L. (2019). Brain Injury Screening: Survivors of Domestic Violence in Nebraska. Submitted to the Brain Injury Alliance of Nebraska.

Community based training participants were overwhelmingly positive about the impact of the training on their understanding of brain injury and their knowledge of the challenges facing individuals with brain injury.

Many training participants indicated that the understanding of symptoms of brain injury was very useful to them. Many others noted that the information they received about brain injury was eye opening. One participant noted, "I hadn't thought a lot about the connection between domestic violence and brain injury. This was very valuable." Another stated, "We've only worked with a few people and diagnosed BI but now understand how many of our clients are probably being affected." Another training participant was prompted to think about what accommodations should be made for clients with a brain injury, how to help them avoid things that can worsen a BI, such as stress and anxiety. Clearly, the training opened many new areas of understanding that will allow individuals working with victims of domestic violence to better serve their clients.

RECOMMENDATIONS[6]

- Community based agencies that provide services to women (and men) who have experienced gender-based violence such as domestic violence, human trafficking, and sexual assault should *screen for brain injury* using an established tool such as the modified HELP screen tool.
- Following BI screening provide:
    - *Results* of the screening to women.
    - All *information in writing* since many of the women with a BI experience memory and concentration lapses.
    - Women with free- to low-cost *assessment services* such as neuropsychological assessment, brain scans, etc. for women who score high on a brain injury assessment.
    - Offer timely free- to low-cost *intervention programs* in the community, based on best/promising practices to help women better manage their symptoms resulting from a BI, through interagency collaboration.
        - Such classes could be offered as group or individual classes in the community, preferably by DV serving organizations in collaboration with BI organizations to provide women with tips to manage their symptoms to help women improve their quality of life.

[6] Rajaram, Shireen (2019). "Knowing what is wrong is like a million bucks." Perspectives of Survivors of Domestic Violence on Brain Injury Screening/Testing -- A Qualitative Study. Report Submitted to the Brain Injury Alliance of Nebraska.

    - Information on *community resources* that women can access at free- to low-cost for follow up on the results of the screening process.

- Develop, implement and evaluate *protocols* for screening and management of BI in DV serving organizations.
- Develop, implement and evaluate programs to *educate and train all employees* to screen for BI in DV serving organizations.
- Include the *voices of survivors* in all stages of program development, implementation and evaluation to help survivors better manage their brain injury and improve their quality of life.
- Develop, implement, and evaluate referral protocols for support services for domestic violence survivors who have experienced a brain injury.

SUSTAINED EFFORTS

Friendship Home and WCA have committed to continuing to screen individuals seeking their services. One program leader stated, "We can't un-see what has been seen."

Brain Injury Alliance of Nebraska will continue to follow up with program leaders attending the community trainings, encouraging them to screen their program participants.

With the data collected, project partners are:

- Seeking additional grants to continue the work.
- Planning to publish the findings so the reach is beyond Nebraska.
- Presenting the findings at various state and national conferences.