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# Traumatic Brain Injury in Women: A Case Study of Intimate Partner Violence Victimization

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**ABSTRACT:** This case study was published with the purpose to shed light on the possible mechanism of injury, symptoms, resultant deficits and possible rehabilitation program of an individual with a traumatic brain injury (TBI) acquired through domestic violence. This case documents the patient from initial inpatient care at the hospital through to discharge to home care. Included in this case presentation is a background overview of TBI acquired through intimate partner violence (IPV), our fictional client characteristics, the examination findings, the intervention and rehabilitation program and the outcomes.

The patient is a 33-year old female presenting with a moderate traumatic brain injury acquired through intimate partner violence on the same day of admission to the hospital. Damage was sustained to the right parietal and temporal lobes. Patient lost consciousness for approximately 40 minutes and could only remember events from about 1 week before the injury. Patient scored a 12 on the Glasgow Coma scale (GCS) and a 2 (moderate injury) on the Abbreviated Injury Scale at intake to hospital. Upon initial assessment, beginning after day 3 of intake, patient presents with left sided hemiparesis, high tone in both extremities on left side, with greater range of motion loss and strength deficits, as well as increased spasticity in the left upper extremity (UE). Sensation examination found positive upper motor neuron tests and abnormal reflexes on the left side. Cortical sensations are also diminished on the left side. The patient scored a Stage 3 of motor recovery on the Chedoke McMaster Stroke Assessment (CMSA) and requires supervision with activity according to the Activity Inventory. Balance and gait show great deficits as the Timed Up and Go test indicates she is at an increased risk of falls. In terms of a cognitive assessment, the patient scored a 66 on the Galveston Orientation and Amnesia Test (GOAT) administered by a neurologist, indicating she is still experiencing memory deficits. The patient displays preservation and confabulation and some uncharacteristic aggressive behaviour, however patient does present with a history of depression. The patient was determined to be at level 4, confused-agitated according the Ranchos Los Amigos, Level of Cognitive Functioning (LOCF) Scale, four days after initial intake to inpatient care.

Patient rehabilitation began day 4 after intake into hospital. Her LOCF increased to a level 5, confused inappropriate when rehab commenced. She receives 3 hours of therapy every day, 5 days a week with a rehab team including physiotherapists, physiotherapy assistant, nurses and occupational therapists. With the goal of improving activities of daily living and functional ambulation, her treatment program consists of gait and balance training, range of motion exercises, contracture prevention techniques, and functional strength training. As her physiotherapist, working daily with the patient, her mental health and cognitive functioning will be monitored and taken into consideration for what type of treatment is warranted on a day to day basis.

During inpatient rehabilitation, the patient will also be cared by a social worker and psychologist to help cope with the effects of the intimate partner violence and she will be educated and supported on her options for support groups, safety planning and return to home life. After 42 days of inpatient care, the patient improved in her physiotherapy related outcome measures. She is able to perform Activities of Daily Living (ADL's), can functionally ambulate with a quad cane, and has been determined to be cognitively improved to level 7 (automatic appropriate) of the LOCF scale and is safely discharged to her mother's house with help from the occupational therapist to determine her specific needs. She will continue to receive home physiotherapy care to improve her independent functioning. As well as support from the social worker and psychologist to assist her in managing her mental health as a result of domestic abuse.



## I. INTRODUCTION

A TBI is defined as an alteration in the brain's function, caused by an external force<sup>[1]</sup>. Although there is ample research on this topic, there is a gap in investigating the effects of TBI specifically in cases of IPV. In addition, there is a major under representation of women in TBI research. IPV is defined as 'a pattern of physical and/or sexual violence in the context of coercive control by an intimate or ex-intimate partner'<sup>[2]</sup>. It has been shown that 75% of women who have experienced physical or sexual IPV have sustained at least one TBI<sup>[3]</sup>. In the literature, this has been described as an "unrecognized public health epidemic"<sup>[3]</sup>. Therefore, it is crucial that all healthcare professionals (HCPs) in the patient's extended healthcare team be aware and knowledgeable in how to work with survivors of IPV.

This case study discusses a 33-year-old female diagnosed with moderate TBI from IPV.

Working with patients who have a TBI from IPV can be challenging, due to the possibility of underlying conditions directly related to their experiences of violence, such as PTSD, anxiety, depression, and addictions<sup>[2]</sup>. There is a high rate of psychological trauma existing alongside TBI. This requires a more holistic approach to care, which means that Healthcare professionals (HCPs) need to work in a safe and non-threatening environment to ensure the best possible care for this population.

The purpose of this case study is to provide Physiotherapists and other HCPs with an example of what a patient who has been diagnosed with a TBI from IPV may present like. Although many of the treatment techniques used by a Physiotherapist may look similar to other TBI patients, there are some very important differences in how one should approach treatment with a survivor of IPV. This case study will also give HCPs resources for screening patients that may be involved in a violent relationship, resources to provide patients with (toolkit, peer support groups, etc), as well as safety planning processes. As a member of the multi-disciplinary team, it is the Physiotherapist's job to ensure the patient can safely return to the community, whether that means returning home or to another place of living.

### Patient Characteristics

The patient is a 33-year-old female, who presents in hospital with a moderate TBI, resulting from IPV. She was brought to hospital by police following a report of physical violence by her partner. She suffered a blunt force trauma to the lateral portion of her head, producing a closed-head injury. The mechanism of injury (MOI) was repeated forceful impact of the lateral head on a wall. MRI showed intracranial contusion affecting the right parietal and temporal lobes. Multiple micro traumas were also visible in the image, which was interpreted as multiple mTBIs, likely caused by previous IPV. The patient was referred to in-patient Physiotherapy to improve mobility, strength, and balance, as well as work on functional activities. Depression and anxiety were also noted in her chart and should be considered when working with this patient.

### Examination Findings

#### Subjective

##### History of Present Illness

Medical Dx: Moderate TBI with cerebral contusion in parietal/temporal area sustained through blunt trauma on March 29. Admitted to KGH on March 29, 6 hours after injury. Intracranial pressure (ICP) was slightly increased due to swelling in brain tissue, no hemorrhage or hematoma was identified.

Saw a physiotherapist off and on in the last 5 years for neck pain and headaches. The patient was seen for a concussion 3 years ago and recovered fully apart from the continued headaches and occasional dizziness.

##### Neurobehavioral State (Severity of TBI)

Loss of consciousness was estimated to be 40 minutes (prior to arriving at hospital). Patient was in a minimally conscious state (MCS) for 24 hours post-injury. The patient was able to remember events approximately 1 week before the injury (going to her mother's house). The patient received a score of 12 on GCS upon admission and scored a 2 on the Abbreviated Injury Scale (moderate injury). Neuroimaging showed a minor contusion in the parietal/temporal lobe area. These findings put this injury into a Moderate TBI category.

##### Medications

- Setraline (Zoloft)
- Aspirin (for frequent headaches)





**Current Status**

Current status was determined by both the patient and the caregiver (the patient's mother) due to the altered cognitive/behavioural state of the patient.

**Pain**

With use of her right arm, the patient pointed to her left arm to indicate where she feels pain and points to her head and neck. Using a VAS scale with pictures, she complains of moderate to severe pain in her head and neck and mild pain throughout her left arm that intensifies with any movement attempts of the left arm.

**Movement**

The patient's mother indicates that all movements of her UE have been with her right arm since she was admitted to the hospital, rarely attempting to use her left hand or arm. The patient also reports frequent mild dizzy-spells with movements of her head. The patient had been able to sit on the edge of the bed and stand with minimal assist since she had been admitted to the hospital. The patient presents mild dysarthria.

**Behaviour**

The patient's mother reports the patient speaking somewhat non-sensically and repeating words or phrases and frequently interrupting the nurses or physician with unrelated information. She reports her daughter being unable to remember the names of the nurses, the hospital and why exactly she is in the hospital. This was reported as atypical behaviour from the patient's caregiver.

**Other Medical History**

The patient's mother reports that the patient has been battling depression for several years now and is on anti-depressant medication. No other comorbidities were present. The patient is a non-smoker and occasional drinker.

**Social Hx**

The patient lives with her husband and does not have any children. She works full time as a daycare manager. Prior to injury she walked 5km a day, practices yoga and enjoys playing with the children in her daycare. She lives down the road in the same neighbourhood.

**Functional Status/Activity**

Frequent headaches prior to the TBI limited her activity to walking and playing with the children. She avoided higher intensity exercises due to headaches and occasional dizziness. Patient did not use any mobility aids prior to TBI. The patient is right-handed.

**Patient Goals/ or Caregivers**

Patient reports a desire to have less pain, to be able to use her left arm for daily activities and to return home without needing too much help. For more detailed goals, the mother was questioned about what the patient may want to achieve from treatment. The mother reported that she really enjoys going on her walks and yoga practice and they help a lot with the her session and keep her active for her kids. She also reports that the patient loves her job and would want to return to work with limited restrictions (a.k.a being able to pick up the children at daycare or get down on the floor to play with them).

**Objective**

Glasgow Coma Scale<sup>[4]</sup>

12 upon admission (E4, M4, V4).

Range of Motion and Muscle Strength

Upper Extremity			Lower Extremity		
Joint	AROM	PROM	Joint	AROM	PROM
Shoulder Flexion	60°	70°	Hip flexion	100°	120°
Elbow flexion	120°	130°			



Elbow Extension	-30°	-30°	Hip Extension	5°	5°
Wrist Flexion	40°	50°			
Wrist Extension	35°	40°			
Supination	50°	60°	Ankle DF	-5°	-5°
Pronation	75°	75°	Ankle PF	45°	55°
MMT Scores			MMT Scores		
Shoulder flexion	2+		Hip Flexion/Ext	3+/2+	
Elbow flexion	2+		Knee Flex/Ext	2+/2+	
Wrist flexion	2+		Ankle DF/PF	3+/3+	
Grasp	2+				

#### Notes from ROM testing:

Range of Motion Testing was measured in lying. MMTs and ROM normal on the right side. Passive ROM was limited due to hypertonicity which was noted and worse in UE CMSA. Spastic end feel was noted on the majority of upper and lower extremity joints excluding hip extension, pronation, supination and wrist extension. Active movements presented in a flexion synergy. Isolated movements of each joint were not able to be performed so measurements were made accordingly. No contractures are noted. Range of motion and strength testing was split into three sessions due to the irritability and experience of pain from the patient.

#### Sensation

Dermatomes: no dermatomal pattern of sensory loss

Myotomes: no myotomal pattern of weakness. All myotomes were impaired on the left side UE due to damage to the cortical representation of the arm and hand.

Deep tendon reflexes from C7, C8, L3/4 and S1 were tested. Reflexes were graded hyperreflexic in the lower extremity and spastic in the upper extremity on the left side. Right-sided reflexes were normal.

Positive babinski on left.

Primary and secondary sensation intact bilaterally. Cortical sensations diminished on the left side. The patient demonstrated agraphesthesia and tactile extinction on the left upper extremity. All other areas of sensation were normal.

#### Chedoke McMaster Stroke Assessment <sup>[5]</sup>

The CMSA was used, despite being designed for stroke patients, due to the patient's presentation of hemiparesis similar to a stroke presentation.

#### Stage 3 of Motor Recovery: Increased Spasticity (UE)

Note: Patient showing flexion synergy (wrist flexion and shoulder flexion) with elbow flexion movement.

#### Stage 6 of Postural Control

The patient was able to right herself sideways and backward with displacement in sitting with feet off the floor and was able to stand on the right leg for 5 seconds. Patient was unable to complete sideways braiding for 2 metres.



Stage 3 of Arm

Chedoke-McMaster Stroke Assessment  
SCORE FORM Page 4 of 4  
ACTIVITY INVENTORY

SCORING LEVELS		
NO HELPER	7 Complete Independence	(Timely, Safety)
	6 Modified Independence	(Device)
Modified Dependence		
	5 Supervision	
	4 Minimal Assist	(Chart = 75%)
HELPER	3 Moderate Assist	(Chart = 50%)
Complete Dependence		
	2 Maximal Assist	(Chart = 25%)
	1 Total Assist	(Chart = 0%)

- Supine to side lying on strong side
- Supine to side lying on weak side
- Side lying to long sitting through strong side
- Side lying to sitting on side of the bed through strong side
- Side lying to sitting on side of bed through the weak side
- Remain standing
- Transfer to and from bed towards strong side
- Transfer to and from bed towards weak side
- Transfer up and down from floor and chair
- Transfer up and down from floor and standing
- Walk indoors - 25 meters
- Walk outdoors, over rough ground, ramps, and curbs - 150 meters
- Walk outdoors 4 blocks - 900 meters
- Walk up and down stairs
- Age appropriate walking distance for 2 minutes (2 Point Bonus)

Distance  meters

Total Score **67**

Walking aids:  
walker   
4 point cane   
1 point cane   
trous

To score Bonus:  
for age less than 70 years distance must be > 50 meters or greater  
for age 70 years or greater distance must be > 84 meters or greater

**67**  
**14**  
**=4.8**

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Activity Inventory Form filled out for Case Study Patient.

The patient was unable to flex shoulder to 90 and cannot perform supination and then pronation and therefore did not meet the criteria of stage 4. The patient was able to do all three activities in Stage 3.

Stage 4 of Hand

The patient could not perform opposition of thumb to little finger and was unable to perform finger abduction and therefore did not meet the criteria of Stage 5.

Activity Inventory for CMSA

The filled out form can be seen to the right. The patient was determined to be at Level 5. The patient needs supervision for the majority of activities during her stay in the hospital.

Postural

Sitting Observation

The patient sits leaning to the right side with her left arm in a flexed position against her chest.

Standing Observation

The patient is able to stand without assistance. The patient is slightly leaning to her stronger side, naturally alleviating some weight from her affected leg. The patient is unable/unwilling to relax her left arm to her side and instead holds it in a flexion position against her abdomen.



#### Vestibular/ Balance

The patient experiences dizziness frequently and loses balance with some movements of the head. The Romberg test was administered. We decided to postpone the administration of the Berg Balance test until the dizziness experienced by the patient was more under control and she had gotten a safer time on the Romberg.

#### Romberg Test <sup>[6]</sup>

The patient was able to stand feet together, eyes open with significant A-P sway for 30 seconds. Eyes closed: the patient took a recovery step and had to be assisted to regain balance after 10 seconds.

#### Timed Up and Go: <sup>[7]</sup>

The patient completed the TUG in 22 seconds which puts her at an increased risk of falls.

#### Gait

##### General Observation of Gait

- Wide base of support
- Hypertonicity (limited fluent movement and coordination of the ankle and knee)
- Slowed gait: decreased cadence
- Greater time in double leg stance
- Hemiparesis: diminished arm swing on the left side, shorter step length on the left side.
- Decreased initial contact heel strike, decreased knee extension on heel strike and in terminal stance on the left side.
- Out toeing of the left foot to compensate for limited DF

#### Rancho Los Amigos LOCF <sup>[8]</sup>

Determined at 4 days post intake to be Level 4 characterized by non-purposeful behaviour, incoherent verbalizations, limited and sporadic attention to the environment. Upon beginning treatment patient was Level V (confused inappropriate).

#### Cognitive and Behavioural Changes

The patient shows signs of perseveration and confabulation. Confabulation is observed with respect to how the injury occurred. The patient shows some aggressiveness not typical to her pre-injury behaviour (confirmed by her mother). The patient has difficulty attending to environment and tasks. Memory deficits result in problems retaining information provided to the patient the day before. The patient seems to recall some information a couple of hours after being given it. The Galveston Orientation and Amnesia Test (GOAT) <sup>[9]</sup> was administered by the neuropsychologist and the patient received a score of 66. According to Levin, O'Donnell and Grossman <sup>[9]</sup> post-traumatic amnesia (PTA) ends when the patient receives a score greater than 75 for two consecutive trials, 24 hours apart, therefore PTA remains evident in this patient. The onsite neuropsychologist reported a score of 30/56 on the Agitated Behaviour Scale (moderate agitation) <sup>[10]</sup>.

#### Clinical Impression

The patient admitted to the hospital after sustaining a moderate TBI as a result of IPV. Imaging results show a small contusion in the right parietal/temporal lobe area where the blow is suspected to have occurred. The patient presented with left-sided hemiparesis with spasticity that is worse in the UE, post-traumatic amnesia, cognitive behavioural changes (confabulation, confusion, perseveration, attention deficit) and cortical sensation deficits which are affecting mobility and performance of ADL's and recreation activities such as yoga and walking.

#### Problem List

The problem list for this patient was structured to mimic the ICF Framework.

##### BSF:

- Decreased cortical sensation (R side)
- Increased spasticity and hypertonicity on Right side (UE>LE)
- Difficulty coordinating R-UE movements (especially above 90 degrees shoulder flexion)
- Impaired static-standing and dynamic balance
- Loss of ROM and strength in all joints of UE (resting flexion).

##### Activity Limitations:

- Difficulty grasping small objects (R side)
- Difficulty attending to environment and easily distracted.



- Slowed gait speed with shuffling steps

Participation Restrictions:

- Increased risk of falls
- Inability to participate in activities that help manage depression (yoga and walking).

Intervention

Short-Term Goals

1. Incorporate use of 4 wheeled walker to immediately improve posture, balance and decrease TUG to 18s.
2. Maintain/improve ROM to prevent contractures within the upper and lower extremities until decreased is observed.
3. Increase L shoulder and elbow flexion MMT to a 3 within 3 weeks.
4. Educate patient and mother about safe transitions and proper guarding during ambulation within 1 week.
5. Educate patient and mother on proper positioning and posture while seated and laying to protect the right side within 1 week.
6. Decrease patient reported shoulder pain within 2 weeks through use of ROM and heat if patient is deemed cognitively capable.

Long-Term Goals

1. Independent with ADLs within 5 weeks.
2. Able to ambulate independently with a quad cane within the home/patient room within 5 weeks.
3. Able to ambulate for 10mins at a community level pace with 4ww within 5 weeks.
4. Improve postural to be able to sit without support from pillows within 5 weeks.
5. Improve L shoulder flexion MMT to a 3+ within 5 weeks.
6. Be able to return to modified yoga practice in the community within 5 weeks.

Management

Within this case study, the patient will be receiving therapy from a PT, OT, and occasionally nurses while in inpatient rehab. Additionally, due to the patients current cognitive state and history of depression and anxiety the patient will also be working with a Psychologist and social worker. In addition to PT and OT treatment the patient will be working with a social worker and a psychologist to help with these issues. The aim will be to complete 3 hours of therapy 5 days per week, keeping patient fatigue and cognitive state at the forefront of this decision. The focus of the physical rehabilitation will be helping the patient to become independent with ADL's and to ambulate with a gait aid independently within the home. When treating a patient with a TBI related to IPV, there are many factors to keep in mind. The ABI Research Lab has developed a tool kit to guide practitioners in the assessment and treatment of these patients. Little things such as completing activities in a quiet room, listening to and validating the patient's feelings, keepings meetings short and incorporating breaks can make a big difference in the patient's comfort level and treatment outcomes<sup>[11]</sup>. The patient will receive treatment within a closed environment, and when capable, direct treatment by way of choosing what she would like to start with. OT treatment will be focusing on hand and sensation improvement in the patient, and PT treatment will focus on ambulation, posture, balance and gross movements of the arm. The social worker and psychologist will be attending to help mental health needs and processing the effects of her trauma. Below is an overview of specific treatments completed within a 5 week inpatient stay:

Education

- The patient and her mother will be educated by the PT on:
  - Safe transfers from the bed to a chair and vice versa.
  - Proper posture while seated and the use of pillows for support.
  - Positioning for the weakened right side while in sitting and laying and the use of pillows for support.

Gait

- Patient will ambulate with a rollator walker for 10mins daily with rests as needed, progress to using a quad cane and increasing time as the patient's balance and endurance improves throughout treatment.

Balance





- For balance, the Romberg test will be used as practice initially. As the patients cognitive ability improves, the Berg Balance Scale will be added. It was noted she had deficits in single leg balance on the right hand side and during items requiring movement of the head.

- Seated balance will also be practiced in conjunction with upper extremity ROM activities (acting as internal perturbations).

Flexibility

- The PT will perform ROM activities daily with a focus on regaining movement in the right upper extremity and maintaining/improving the ROM in the lower extremity as well as work to prevent contractures and address the shoulder pain she is experiencing<sup>[12]</sup>.

- As the patient’s ability to follow directions and focus on a task improves, an 8 minute chair yoga video will be added to her program. This will be completed as a warm-up for the beginning of her therapy session for something fun and calming for her.

Strength

- Lower body strength:

- Kitchen sink exercises daily.
- Implicit sit to stand practice EX. Reaching for a high-5 requiring patient to stand from a seated position to reach.
- This will also be improved through walking practice.

- Upper Body Strength

- Starting with active assisted (by the left arm) seated flexion on a physio ball, with progression to an angled active assisted slide and finally working towards AROM against gravity to progress.
- There will be a focus on high repetitions and using the same height dimensions as the cupboards in her mother’s house for task-specific training<sup>[12]</sup>

- Hand function

- The OT will be focusing on the patient’s hand function, and will be using the Constraint Induced Therapy technique to improve use of the right arm<sup>[13]</sup>. It will include 2 hours of intensive practice per day.

Outcome

In this case study, the patient was in the inpatient hospital unit for a total of 42 days (5 weeks) and experienced a number of improvements over the course of their stay. During ambulation they progressed to using a quad cane while on stable ground, and can now ambulate for 10 minutes without needing to break while using the quad cane. She will be using the rollator walker while out in the community and while using the walker she is able to ambulate for 15 minutes. Her TUG score while using a quad cane improved to 15s (down from an initial score of 22s unaided).

Upon assessment it was noted the patient had increased spasticity The patient exhibited improvements in strength and range of motion in both the upper and lower extremity on the right side. ROM was as exhibited in the chart below:

Upper Extremity			Lower Extremity		
	Initial Score	Discharge Score		Initial Score	Discharge Score
AROM			AROM		
Shoulder Flexion	60°	120°	Hip flexion	100°	120°
Elbow Extension	-30°	-4°	Hip Extension	5°	15°
Supination	50°	76°	Ankle DF	-5°	11°
Pronation	75°	90°	Ankle PF	45°	56°
MMT Scores			MMT Scores		
Shoulder flexion	2+	3+	Hip Flexion/Ext	3+/2+	4-/4
Elbow flexion	2+	4-	Knee Flex/Ext	2+/2+	3+/4



Wrist flexion	2+	3+	Ankle DF/PF	3+/3+	4/4-
Grasp	2+	3			

Upon discharge the patient scored a 6.2 on the CMSA activity scale (up from an initial score of 4.8). The patient will continue to work on upper extremity ROM and strength while in home physiotherapist to help with her return to work goal. The patient's posture has improved requiring cueing to sit without a lean only when she is tired. With walking, posture improved immediately with the addition of a walking aid. For balance, the patient has improved greatly, she is now able to complete a Romberg test and can maintain tandem stance for 17s with eyes closed. Once balance improved a Berg Balance was completed. Her baseline score was 37/56, and she improved to 49/56 upon discharge.

Over the course of the 5 weeks the patients cognitive functioning improved greatly as well. It was reported that she moved into Stage 7 of the Ranchos Los Amigos LOCF. Additionally, she was scored on the GOAT twice more before discharge receiving a score of 76 and 78, signalling an end to post traumatic amnesia which was confirmed subjectively from the interdisciplinary team.

#### Discharge Plan

Discharge planning is a vital step when considering where a patient who has experienced IPV, due to safety concerns regarding sending the patient back to where they were living previously. This is an interdisciplinary task requiring the expertise of the PT, OT, Social worker, psychologist, nursing team, and the patient. Within this case study, the interprofessional team observed that she was able to ambulate safely, was functional with many ADLs and her cognitive functioning was at a level that they felt confident to discharge. Due to safety concerns regarding her home, she was discharged to her mother's home. She will have a home assessment completed by an OT to help the patient learn to function in her new environment while coping with her continued deficits. The patient will be completing home physiotherapy, with a focus on the upper extremity and attending chair yoga sessions once a week at her local YMCA. The patient will continue to work with a social worker from the hospital who connected her to the "Women at theCentre" facility, with the goal of enrolling the patient into a group meetings which are created for women who have experienced IPV, such as the C6 program<sup>[14]</sup>. With the social worker she has also completed a safety planning booklet to help her feel safe in her new environment and prevent and event like this from happening again. The patient will also continue working with a psychologist and will be receiving a therapy dog to help manage her depression and anxiety and help around the house,

#### Discussion

Overall, this fictional 33-year old female patient who sustained a moderate traumatic brain injury through IPV to her right parietal and temporal lobe displayed motor, sensory and cognitive deficits as a result. Through a thorough physiotherapy assessment, in conjunction with the inter professional team findings, a detailed and appropriate treatment plan was formed with her physical, cognitive and emotional status at the forefront. As well, this rehabilitation program had a plan to help her not only progress in her physical functioning but also was designed with her personal goals in mind, like returning to practicing yoga, and included her mother in the education of her condition and treatment. The physiotherapy specific management of this patient included gait and balance training, flexibility and strength exercises tailored to her deficits, education on safe transfers and ambulation and education and use of appropriate gait aids. These physiotherapy interventions were all performed while the patients' cognition, fatigue level and emotional status was monitored by the PT. The interprofessional team also worked with the patient on sensation rehabilitation, cognitive affects and mental health support. Through a physical and cognitive assessment, as well as with a safety plan in action, this patient was appropriately discharged to her mother's house with the commencement of home care rehabilitation. She will begin a home-based treatment plan with a PT, OT, social worker and psychologist as she progresses with her rehabilitation. Not only is this patient supported in returning to her hobbies like practicing yoga within her community, she is also introduced to the resources within her community for women who are survivors of IPV with the help of her social worker and received access to a therapy dog from her psychologist to cope with her anxiety, depression and daily functioning.

The broader implication of this case study was to bring awareness to the physiotherapy community of the presence of female patients who sustained TBI due to intimate partner or domestic violence who are seen by this profession. This case study wanted to highlight the underrepresentation of women who sustain a TBI



through IPV within the health care system and provide resources to health care professionals to increase their understanding of how to better identify risks and signs of IPV and domestic abuse. As well, this case study hopefully exemplifies not only the physical deficits caused by IPV, but also the mental and emotional consequences that will likely arise from this form of abuse. The involvement of an interprofessional team that includes social workers and psychologists providing care for these survivor's mental health is vital to their overall rehabilitation. However, a goal of this study was to help physiotherapist determine their role in treating those with TBI or of any injury due to IPV. Patient centred care is the key principle in rehabilitation which includes their social and emotional status, so treating patients in this population should involve attention to these aspects of their life. The International Classification of Functioning, Disability and Health (ICF)<sup>[15]</sup> model illustrates the importance of the environmental and personal factors that have an influence on the health condition of patients. When forming treatment programs for patients who are survivors of intimate partner violence, the framework for designing an appropriate plan may highlight the contextual factors to a greater extent than usual. This potentially includes active listening with non-judgment communication, patient advocacy, support in their decisions and providing guidance to resources for women in their community. In summation, IPV is a major public health concern affecting women, unfortunately there is a lack of IPV education and screening practices within many health care professions.<sup>[16]</sup> In hopes of bringing awareness to this issue within the physiotherapy community, this case was created in line with a realistic presentation of a survivor of IPV that a physiotherapist would likely see within a hospital setting. Ultimately, provided within this case presentation are resources for both the patient and the physiotherapist to better understand, identify and help recover from IPV.

#### Relevant Resources for Reader

Provided below is a list of resources for HCPs to assist in screening women for involvement in IPV, as well as tools to provide patients who may be struggling to cope.

#### For HCPs

1. Online Training Modules for Identifying Domestic Violence
2. Toolkit for Screening for Brain Injury from IPV

#### For Survivors

1. Toolkit for a Survivor of TBI from IPV
2. College of Physiotherapists of Ontario's Resources for People Experiencing Abuse and Sexual Assault
3. WomenatthecentrE - A Non-profit Organization for Survivors of Violence

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