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Research News – At the Intersection of Intimate Partner Violence and Brain Injury

November 2024

Here are highlights from three recent research papers (2023 and 2024) at the intersection of intimate partner violence and brain injury. The co-authors include two Canadian researchers who are well-known among those of us working in this area, Paul van Donkelaar at the University of BC and Lin Haag at Wilfred Laurier University.

A clear theme emerging from these papers is just how much more work needs to be done to understand the immediate and long-term impacts and scope of brain injury caused by intimate partner violence, as well as how brain injuries are impacting survivors of intimate partner violence who are also living with legacies of trauma, emotional abuse, mental health challenges, disability and repeated assaults over many years – all of which in turn increase their risk of living in poverty.

The possibility of post-brain injury stroke occurring days or even weeks after an assault is also emerging in the literature, raising the stakes for early diagnosis and treatment even while most survivors currently can't count on either of those things happening.

Another concern identified in these papers is the homogeneity of the small number of IPV-BI studies that currently constitute our knowledge of the issue. Those studies have almost exclusively involved cisgender women in heterosexual relationships, underlining the need to broaden research to include the diverse populations that in many cases are at higher risk of intimate partner violence.

Study findings in these three papers reinforce the urgent need for consistency in assessment and approach to IPV-BI at the level of health professionals in particular, rather than the "all over the map" (or not at all) approach that is currently most common.

The prospect of a national strategy on brain injury - now inching closer to reality through the considerable efforts of long-time advocate Janelle Breese-Biagioni and MP Alistair MacGregor (Cowichan-Malahat-Langford) – would mark the start of bringing consistency, clarity, professional expertise and evidence-based intervention to bear on this critically important issue.

Intimate Partner Violence-Related Brain Injury: Unmasking and Addressing the Gaps - 2024

This study identified important gaps in research and clinical practice in IPV-BI. The study looked into five themes: study design; non-fatal strangulation as a form of brain injury; biomarkers for diagnosis; the impact of IPV-BI years after the assault/s; and brain injury as a risk factor in the perpetrators of intimate partner violence.

Learning 1: Brain injury from intimate partner violence is not an isolated event, and often takes place against a backdrop of psychological trauma, mental health issues, and stigma.

As such, it is a distinct form of brain injury, significantly different from brain injuries incurred in any other way. People experiencing IPV-BI typically are not injured just once, but multiple times over an extended period. Individuals frequently have limited support from partners or a social network to turn to, and fear that reporting an injury could trigger another round of violence.

> Gap: Identification and screening of IPV-BI. Distinct from other kinds of brain injuries, an IPV-BI is not commonly screened for by health care professionals owing to the complexities in the person's life as noted above. As a result, many injuries go undetected and untreated.
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> Gap: Accounting for cumulative lifetime trauma in IPV-BI outcomes. Exposure to potentially traumatic events such as IPV-BI is widespread, with 70 per cent of adults in a World Health Organization reporting at least one instance in their lifetime, and the average being 4.5. With IPV-BI specifically, exposure to the same type of incident increases the odds of mental health issues developing, and the repeated physical violence triples the likelihood of post-traumatic stress disorder.
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> Gap: Ability to access services. Survivors require a safe environment to access health and social support, and share their experiences. But seeking help is impacted by societal perceptions and stigma around IPV; normalization of violence; and other factors including race, language barriers, socio-economic status, education, health insurance status, and disability. Training and education could inform first responders, law enforcement and community service workers, leading to more identification and follow-up for survivors of IPV-BI
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> Gap: Experiences of people in sexual and gender minorities. Most understanding of IPV-BI today comes from studies of cisgender women. No IPV-BI studies exist that specifically include sexual and gender minorities, even though emerging evidence indicates higher rates of IPV in this population.

Learning 2: Non-fatal strangulation was reported in a study of women seeking services for IPV in 68 per cent of the cases, and is also a signal that the violence is increasing and may result in homicide.

Yet only half of these women showed physical signs of being strangled. In addition, the constellation of symptoms that occur after a brain injury caused by non-fatal strangulation are different than those from blunt-force brain injury. The impact on cognitive function can be significant, affecting working memory, executive function, attention and reasoning.

As well, a handful of case reports have demonstrated a correlation between non-fatal strangulation and subsequent stroke, even though only 39 per cent of the victims of those strokes showed any stroke-like symptoms immediately after the injury. There is evidence that a delayed stroke may occur anywhere from two weeks to several months after the incident, possibly because injured brain cells may survive for days before permanent death.

> Gap: Lack of immediate assessment after non-fatal strangulation. Assessment is challenging if it does not occur until many years after the injury, due to the complexities of untangling the impact of the injury at that point from overall psychological health, experiences of trauma, and repeated exposure to violence.
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> Gap: Understanding of the impact of repeated non-fatal strangulations. The evidence that there is on this issue has found that women experiencing multiple incidents were three times more likely to have suffered from diminished cognitive, neurological, sensory-motor and/or psychological functioning due to cumulative impact.

Learning 3: Better tools and assessments are needed for diagnosis of IPV-BI. Further research using neuro-imaging techniques is needed to characterize how the different mechanisms of injury in IPV-BI affect the brain.

Thoughtful use of different modalities and sequences (CT angiography, MRI) that are sensitive to potential abnormalities at various points in time post-injury may provide a more comprehensive understanding of pathological changes over time. It is important to keep in mind that alterations in brain structure may not represent acute injury, but the accumulation of repetitive injuries, highlighting the importance of a thorough life history to help interpret findings.

> Gap: Identification of biomarkers in body fluids such as blood and saliva. Biomarkers have considerable potential to provide relatively non-invasive, objective and sensitive indicators of the impacts of various forms of IPV-BI.

Learning 4: We don't know nearly enough about the cumulative, long-term impacts of multiple brain injuries from IPV sustained over many years.

Evidence from other traumatic brain injury research, such as sports-related concussions, demonstrates that exposure to repetitive trauma to the brain can have devastating long-term effects. While the work has yet to be done on IPV-BI, there is some evidence that it is associated with an increased risk of dementia.

> Gap: Characterization and assessment of IPV-BIs that occurred in a survivor's life months or years earlier. Because of the distinct issues faced by a survivor of a brain injury caused by intimate partner violence – fear, stigma, inability to access medical professionals, possibly no visible signs of injury – years may go by before a survivor seeks assessment. An understanding of what impacts might be seen during assessment of a survivor who may have suffered her injuries years before is vital. This work is equally vital to inform the true prevalence of IPV-BI.
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> Gap: Inclusion of IPV-BI as a factor for follow-up in autopsy, both to inform studies of the late effects of IPV-BI and to inform understanding of prevalence rates. Confirmation of chronic

traumatic encephalopathy (CTE), for instance – a progressive, degenerative brain disease found in people with histories of repetitive head injuries - can only be done through a post-mortem analysis.

Learning 5: A personal history of concussions and persistent post-concussive symptoms are predictive of that person engaging in intimate partner violence.

This finding was identified in a recent study of veterans. Aggression after a brain injury is associated with mental health problems, depressive symptoms and substance abuse, and can be associated with increased anger, aggressiveness and emotional dysregulation.

Gap: Understanding of brain injury and associated neurological changes that may increase the risk for a person to become violent toward their partner. Brain research in the domain of engagement in IPV is still scarce, despite the need to identify underlying issues that could serve as targets for treatment. There are initial indications that engaging in IPV is associated with specific brain differences, including smaller amygdala volume and altered prefrontal and limbic structure and function.

Exploring the intersection of brain injury and mental health in survivors of intimate partner violence: A scoping review - 2023

This review of 28 articles relevant to the issue of the impact of IPV-BI on survivors' mental health found highly variable methods for identifying the intersection of mental health and IPV-BI, and all focused primarily on cisgender women in heterosexual relationships. However, half of the articles reported significantly higher rates of mental health challenges in IPV survivors who had experienced brain injury as part of their assault/s, as compared to those who hadn't.

Conclusion: Brain injury and mental health issues are highly prevalent among IPV survivors, but there is little research into the implications of this on our health care systems and processes. Future research should explore healthcare-related needs and experiences to inform policy and practice, and to better represent the diversity of IPV survivors.

Screening for Brain Injury Sustained in the Context of Intimate Partner Violence (IPV): Measure Development and Preliminary Utility of the Brain Injury Screening Questionnaire IPV Module – October 2023

There are currently no validated tools for screening of brain injury related to IPV that meet World Health Organization guidelines for this population. The work of this study compares results in identifying IPV-BI when an IPV-informed module accompanies the Brain Injury Screening Questionnaire, as compared to the use of BISQ alone.

IPV-related injuries are often unreported, but evidence suggests that survivors are more likely to report when asked directly. This study was a trial of the new Brain Injury Screening Questionnaire IPV (BISQ-IPV) module.

Researchers culled items from existing IPV and TBI screening tools and sought two rounds of stakeholder feedback regarding content coverage, terminology, and safety of administration in developing the BISQ-IPV module. The module is a seven-item self-report measure using contextual cues (being shoved, shaken, strangled) to query lifetime history of IPV-related head/neck injury, and was introduced into the Late Effects of TBI study to investigate rates of IPV-specific head/neck injury.

This work found significantly higher rates of self-reported brain injury among female survivors of IPV. While eight per cent of the sample overall reported a brain injury caused by IPV, the rate was 20 per cent among female survivors. And while 15 per cent of the overall sample reported IPV-related head or neck injury events that did not result in loss or alteration of consciousness, the incidence was more than double, 34 per cent, for women.

Key findings:

Strangulation in IPV is a woman's issue

No men reported non-fatal strangulation (NFS). One woman reported inferred brain injury secondary to non-fatal strangulation, and six per cent of women reported NFS events.

The addition of the IPV module changed responses

The study compared reporting of violent brain injuries when people were assessed using BISQ on its own, and when they were assessed using the BISQ-IPV module ahead of the core BISQ being administered. Researchers found that nine per cent of those completing the core BISQ alone reported violent traumatic brain injury (not necessarily IPV-caused), but when they had completed the BISQ-IPV module and then completed the core BISQ, that number more than doubled to 19 per cent.

These findings suggest that standard brain injury screening tools are inadequate for identifying IPV-BI, and that and structured cueing of IPV-related contexts yields greater reporting of both IPV- and non-IPV-related violent brain injury. When not queried directly, IPV-BI remains a hidden variable in traumatic brain injury research studies.