


Acquired Brain Injuries and Intimate Partner Violence: A Situational Analysis of Help Seeking Barriers in Rural Northern New England

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Amanda St Ivany¹ , Donna L. Schminkey²,
and Michelle L. Munro-Kramer³

Abstract

Nurses care for women experiencing non-fatal strangulation and acquired brain injuries whether or not it is disclosed. Situational analysis was used to analyze 23 interviews from Northern New England with survivors, healthcare workers, and violence/legal advocates to explore overlapping relationships between violence, acquired brain injuries, non-fatal strangulation, and seeking care. Findings included the concepts of paying social consequences and the normalization of violence. Non-fatal strangulation was described as increasingly related to violence and other areas. Repetitive acquired brain injuries can impair functioning needed to address violence and healthcare providers and advocates are generally unaware of the impact of acquired brain injuries. A lack of resources, training, and tools for acquired brain injury screening were barriers in recognizing and responding to it, causing hidden symptoms. This study adds to the literature examining intimate partner violence in rural areas; specifically intimate partner violence-related acquired brain injuries in rural areas.

Keywords

physical, abuse, sexual, brain injury, vision

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Intimate partner violence (IPV) is a global public health concern that crosses social and geographic divides (World Health Organization [WHO], 2013). Intimate partner violence encompasses physical, sexual, psychological, and economic abuse that is used by a past or current partner to maintain power and control (Centers for Disease Control and Prevention [CDC], 2013; Postmus et al., 2018). A growing body of research has linked IPV to substantial acute and long-term health, social, and economic consequences (Campbell, 2002; Voth Schrag et al., 2019; WHO, 2013). These outcomes have the ability to disrupt the life course of the survivor as well as their family (Voth Schrag et al., 2019). However, IPV does not occur in isolation—the prevalence of and response to IPV are influenced by numerous ecological factors at the individual, family, community, and societal level (Heise et al., 2002).

IPV in Rural America

In rural regions, approximately one out of four women report experiencing lifetime IPV victimization compared to approximately one in six men (Breiding et al., 2009). These rates

are similar to those living in non-rural areas of the United States, with the exception that rural survivors may be experiencing more chronic and severe IPV that may be related to factors such as higher rates of unemployment and substance abuse among rural perpetrators (Edwards, 2014). These chronic and more severe forms of IPV contribute to higher rates of IPV-related homicide in rural regions of the United States (Gallup-Black, 2005).

Additionally, rural regions have fewer healthcare and social service resources for survivors of IPV leading to poorer psychosocial and physical health outcomes (Edwards, 2014). Resources in rural communities are often less accessible, available, and of lower quality (Edwards, 2014). Rural women are often hampered by the physical distance and their

¹Dartmouth Hitchcock Medical Center, Lebanon, NH, USA

²James Madison University, Harrisonburg, VA, USA

³University of Michigan, Ann Arbor, USA

Corresponding Author:

Amanda St Ivany, Department of Pediatrics, Dartmouth Hitchcock Medical Center, 1 Medical Center Drive, Lebanon, NH 03722, USA.
Email: Amanda.R.St.Ivany@dartmouth.edu



geographical isolation which make it more difficult to access healthcare at an emergency department, safety at a shelter, and mental health services (Bhandari et al., 2008; Choo et al., 2011; Riddell et al., 2009). A study conducted by Peek-Asa et al. (2011) found that women in rural Iowa had to travel three times the distance to IPV resources than those in urban areas (Peek-Asa et al., 2011). Iyengar and Sabik (2009) demonstrated substantial unmet needs for services among rural IPV survivors facing resource constraints and availability of services such as transitional housing and non-residential services (e.g., counseling, job training, safety planning, and legal support). In rural regions, IPV service providers also suffer from a lack of funding that limits supplies, resources, and personnel (Pruitt, 2008). Taken together, these unique barriers create a culture where it is more difficult for rural survivors of IPV to access high quality, comprehensive post-assault healthcare.

Acquired Brain Injuries from Violence

There is growing evidence of the need for lifetime brain injury screening in women experiencing IPV related to the repeating nature of brain injuries, which may be particularly salient in rural regions given the more severe and chronic forms of IPV (Edwards, 2014). Two studies found 75% to 87% of women experience multiple traumatic brain injuries related to IPV (Valera & Kucyi, 2017; Ziemann et al., 2017). Many interventions aimed at interrupting the cycle of IPV involve a need for safety planning, executive function, and prioritization that are often impaired as a result of traumatic brain injury, yet without universal traumatic brain injury screening in most IPV settings these important modifications are not being made (Blinded for review). Non-fatal strangulation is defined as placing something around someone's neck to restrict their breathing and potentially disrupt oxygenated blood to the brain. An umbrella term that combines both of these concepts is called acquired brain injury (ABI), the term we will continue to use moving forward in most cases unless traumatic brain injury is specifically referenced by a participant (Haag et al., 2019). In order to understand the impairments to memory and executive function caused by ABIs, it is imperative to have a basic knowledge of the neurobiology of such trauma.

Neurobiology of Repeating Acquired Brain Injuries

Evidence exists that women experiencing IPV frequently experience hits to the head as well as multiple strangulation attempts potentially causing ABIs (Haag et al., 2019). The force and ensuing struggle exerted during physical or sexual violence involving chokeholds, suffocation, strangling, or smothering can induce both hypoxic or anoxic brain injury due to the restriction of blood and oxygen

supply with the potential to create direct physical trauma to neural tissue like that seen in ABI. Non-fatal strangulation is often a recurrent event; Wilbur and colleagues found that 46% of their participants had experienced strangulation more than three times (Wilbur et al., 2001). The damage from repetitive incidents (i.e., assaults and trauma) is cumulative, leading to progressive degeneration in neurological functioning that can be measured over many years (Mainwaring et al., 2018). However multiple forms of ABI are often missed in head injury screening questions, especially related to IPV.

Pathophysiology of Hypoxic Brain Injury

Hippocampal damage is a likely outcome of non-fatal strangulation, especially if it is repetitive. The hippocampus, which is responsible for regulating emotions, spatial navigation, learning, and memory formation appears to be one of the most sensitive neural structures to hypoxia (Hossmann, 1999). Thus, when strangulation occurs during IPV, the brain is injured because of the decrease in supply of oxygenated blood to these tissues. Injured cells may experience damage to DNA, leading to irregular protein production, and to epigenetic changes that profoundly change the cell's function. Finally, injured cells stimulate inflammatory mechanisms that try to contain and repair damage. If the degree of cellular injury is mild, these acute inflammatory processes can help restore functional neuronal circuitry; these neuroplastic processes can therefore lead to recovery (Ling et al., 2017). But, if there are repetitive insults to the tissue, chronic inflammation interferes with the rebuilding of circuitry and cellular repair, leading to degeneration and decreased brain function from structural damage.

Acquired brain injuries potentially change the neural circuitry in the brain and increase the risk that an IPV survivor will eventually experience dysregulated mood, problems with memory and attention, and other behavioral and cognitive issues. Every IPV survivor who experiences repetitive ABI is unique; there is no one pattern, one degree of severity, or expected recovery profile. A single instance of non-fatal strangulation or head injury can cause injury to the neural tissue and disruption of the blood-brain barrier; yet, it is these types of physical violence that are common in IPV and may be going unassessed, leading to compounding neurological damage. Hours, days, or months after the initial event, secondary injury can occur due to the complications and tissue damage from those primary injuries.

Gaps in the Literature

It is clear from the evidence that there are unique barriers in rural regions of the United States that impact a survivor's ability to access high quality care. However, there has been no investigation into providers and survivors' understanding of different forms of physical abuse, such

as non-fatal strangulation, which have the potential to cause long-term ABIs in rural regions of the United States. The research supports more severe and chronic forms of abuse in rural regions, as well as higher rates of intimate partner homicide. This study aims to fill that gap by addressing the research question, “What is the situation around IPV and ABI in rural Northern New England in the United States?”

Methods

Design

We conducted a situational analysis using the following steps: (1) recruitment, (2) interviewing, (3) reflexivity, (4) open coding, (5) focused coding, (6) creation of situational maps, (7) memo writing to track analytic direction and theoretical developments, and (7) final integration of concepts to describe the situation. Situational analysis is a subset of constructivist grounded theory, guiding the study from conceptualization and study design through recruitment, analysis, and write-up. Situational analysis posits that “everything is data” (Charmaz, 2014; Clarke et al., 2017). Constructivist grounded theory values the perspectives and experiences of the researcher and posits that multiple realities are possible, instead of one objective reality as in positivist methodologies (Singh & Estefan, 2018). Ethical approval was given from Dartmouth-Hitchcock Medical Center IRB, STUDY 00031706.

Recruitment

Keeping in line with situational analysis we recruited a broad sample of participants to explore all dimensions of the situation of ABI from IPV to capture what is known and highlight gaps in knowledge (Charmaz, 2014; Clarke et al., 2017). We purposefully recruited a broad sample of participants to illuminate theoretically relevant aspects and dimensions of this gap in the literature. We designed the recruitment strategy for maximum protection of the identity of survivors of IPV. Participants were recruited via fliers, online advertisements (e.g., Craigslist), word of mouth, and snowball sampling throughout a Northern New England state.

Recruitment started with healthcare providers and advocates (for the purposes of this study defined as anyone who works with women experiencing violence including detectives, police officers, and victims’ advocates). Inclusion criteria for the survivor category was identifying as a woman ages 18 to 55 years old; answering yes to the questions “has your head or neck been injured by someone trying to hurt you? If yes, would you consider that person a partner or someone you are in a relationship with?”; and living or receiving services in a rural Northern New England state. Survivor participants started by sharing one or two sentences about their ABI, and the primary investigator followed up by

stating they were sorry to hear about the ABI, was it from someone trying to hurt them.

Only one participant was lost to follow up, meaning she was eligible for the study but trying to connect over the phone after initial contact proved to be too difficult. All other potential participants said they did not have that experience and expressed they were glad the research was taking place. No ineligible participants were distressed that they did not qualify for the study. Once participants were determined eligible, a time was set for the interview to take place over the phone or in person, depending on what was more convenient for the participant.

Interviewing

At the beginning of each interview, verbal consent was obtained for the interview and recording. The interviewer began by stating the need to protect patient confidentiality, so no names were used and no information was given that could be used to identify anyone in the interviews (including specific details of cases, charges, abuse, or medical conditions). Advocates were encouraged to speak generally about women’s experiences as a collective rather than focusing on specific details of individual stories. This is especially important in rural communities with small population sizes (i.e., under 10,000 people) because of the interconnected nature of social networks. To protect confidentiality, no identifying information was collected (i.e., age, race, education level). While interview questions did not focus on heterosexual relationships, most participants described relationships and violence as men perpetrating violence against women.

Interviews were conducted by the first author (ASI) or a study nurse (KB). Interviews were digitally recorded and uploaded to a transcription service. All interviews were only identified by study id number. Data saturation was achieved with 23 interviews for all categories except for survivors; however, we were unable to continue recruitment due to halting of research at the institution relating to COVID-19. After the iterative analysis and data collection of 10 interviews it became clear that having the distinct categories of advocate, survivor, and healthcare provider did not make sense because many participants fell into more than one category (i.e., advocate and survivor).

Most interviews lasted 20 to 30 minutes and participants were given a \$50 gift card at completion of the interview. During the interviews, the interviewer offered a list of local IPV resources to all survivor participants but no women requested these resources, as they were no longer in the relationship. To reflect the nature of the interviews, we call women experiencing IPV whatever the interviewee called them depending on their role (e.g., advocates use the terminology survivor, healthcare providers use the term patient, and law enforcement/legal uses the term victim).

Analysis

Reflexivity

The analysis process involved a three-step process including reflexivity, open and focused coding, situational mapping, and ongoing memos. In step one, all authors reflected on their personal experiences and relationship with the research question and data.

ASI grew up in a small, rural Midwestern town and has lived in the Rocky Mountain west, the mid-Atlantic, and the northeast. They have experienced isolated rural communities and large urban areas. Their co-workers have told them that they cannot disclose abuse because it will be outing the abuser, who has a high status in a tight-knit community. They have seen how women will not leave abusive relationships in rural areas because of love for a partner and lack of other housing or employment options. As a violence researcher they feel it is imperative to elucidate the differences between urban and rural areas especially as it relates to access to resources (both at an individual and systems level) and the isolation that is possible in rural areas that is not possible in urban areas.

MMK is a certified nurse-midwife, family nurse practitioner, and nursing faculty member at a large public university in the Midwest. She grew up in a poor, rural Midwestern town with approximately 1,000 people. She received healthcare at a federally qualified health center that was staffed by healthcare providers working short stints to pay off their loans for school. She has had high school classmates experience IPV and intimate partner homicide within her small town, that have struggled to access resources and have faced community scrutiny about their desire to seek help. MMK's research focuses on violence prevention (particularly IPV and sexual violence among youth), barriers to care, and comprehensive care access and options.

DLS has over 30 years' experience providing women's health care as a nurse and certified nurse-midwife and is now a faculty member at a mid-sized University. Her family is from eastern Pennsylvania; she was raised in suburban Virginia. Her midwifery practices have been in rural and suburban environments in the south and mid-Atlantic states. She has worked in health personnel shortage areas and provided care to a diverse population of women in clinic, hospital, and home visit settings. She has family members, friends, co-workers, students, and patients who have experienced IPV and other forms of family and sexual violence. She is embarrassed to admit the many years in her adult life and clinical practice where, due to lack of knowledge, she missed clues and cries for help related to violence. Once she developed awareness and skills related to IPV, the standard policies and practice of referring someone to mental health care and the legal system seemed wholly inadequate. The sacred trust involved in disclosures of violence within the confidential space of "the exam room," alongside the healthcare and legal systems inability to effectively protect many vulnerable

people and help them reach long-term safety propels her research interests in IPV.

Open and Focused Coding

Data were collected and analyzed as an iterative process. Members of the research team met regularly to discuss recruitment and analysis. In step two, analysis began with open coding followed by focused coding, leading to several emerging and initial themes identified to address the research question: normalizing violence, normalizing reality, clinical responses, clinical pathways, cultural narrative, cycle of violence, and personal level violence.

Situational Maps

In step three, to address the overall goal of understanding IPV in rural communities, situational maps were completed by each author independently. The authors used situational mapping to highlight relationships between themes, codes, human, and non-human actors specifically identified in the situation of inquiry thus far (see Figure 1 for an example of the situational map used for relational analysis). The authors then met to share and compare situational maps, a process that expanded the data to illuminate new concepts and connections. During the mapping process, the authors consulted our memos and discussed our personal experiences of growing up in rural communities, challenges of disclosing any information to healthcare personnel, and the social pressure on healthcare providers to settle down and become a part of the community. This resulted in relational views of how these concepts overlapped with one another and allowed the authors to clearly explicate these relationships with exemplar quotes from participants, but did not change any of the themes from open and focused coding.

Memos

As part of an iterative process throughout data analysis all authors kept written reflexive memos using Microsoft products (no qualitative software was used) and scanned images of situational maps. Analytic memos were kept throughout the coding process to track theoretical developments and methodological insights. For example, these memos included insights about research participants, the community under study, and the situation of interest. Those of us who did not become part of the community discussed the advantage of the social disconnect from a provider perspective. In particular, we discussed the nature of disclosing and screening for IPV in small, connected communities where even screening may be perceived as a threat and disclosing abuse may identify the abuser and have high social consequences. Taken together all products of analyses (maps, memos, coding) focused our key findings on the central tenant of the situation that women are living with repeated ABIs from multiple



Figure 1. What is the situation surrounding TBI/strangulation from IPV/sexual violence in rural areas?

sources because there are no consistencies across service providers (or clinical pathways) to provide adequate responses, thus compromising the health and safety of rural women who have experienced IPV.

Findings

Sample Characteristics

A total of 23 interviews were conducted, with five survivor participants from community based recruitment who did not meet eligibility criteria (i.e., head injury not related to IPV). Participants encompassed a wide range of social services that assist survivors of IPV. They included: (1) 11 healthcare providers (i.e., sexual assault nurse examiner; $n=6$), nurse practitioner ($n=3$), physician ($n=1$), physician's assistant ($n=1$); (2) five advocates (i.e., domestic violence advocate; $n=5$); and (3) four participants were affiliated with the criminal justice system (i.e., law enforcement officers; $n=2$, prosecutor; $n=1$, defense attorney; $n=1$). Three participants were in the survivor category. It is important to note that one of the healthcare personnel also identified as a survivor. While participants were recruited under a specific designation it important to consider that many likely fit into two categories, often Sexual Assault Nurse Examiner or advocate and survivor.

General Overview

The central tenet of the situation of ABI from IPV is in this rural environment is that there is missing language and

communication that can lead to detection of ABI, leading to a lack of clinical pathways and clinical responses. These factors coalesce to lead to repeated head injuries and neurological insults impacting women's lives and safety. Participants described a rural landscape where all systems of support were stretched or non-existent for women experiencing IPV. Cases of extreme isolation were described for women and a lack of options for safety and anonymity for reporting IPV that involved the possibility of retribution, defined as paying social consequences, when disclosing abuse. For questions related to ABIs specifically, participants who were working as nurses in emergency departments had experience thinking about trauma that could result in brain injury but otherwise traumatic brain injury screening and consideration were lacking in awareness and response, especially in the legal system. When asked about strangulation from IPV or sexual violence, most participants were more aware of the dangers in the acute phase due in large part to recent advocacy by the statewide domestic violence coalition and strangulation recently becoming a felony in the state where the research took place. Survivors were described, and described themselves, as coming from all walks of life and socioeconomic status. Perpetrators were described as having challenges with communication, noting "their mildest form of communicating is yelling. . . and it escalates from there to hitting, throwing, and now strangling." Some living conditions were described as so remote that "no one would happen to drop by," adding an extra level of anxiety for the safety of women and families.

Violence was transmitted through families and across generations with some family names associated with crimes and violence in the community and legal system.

Cultural Narratives of Small Communities

The underlying and often unspoken cultural narratives of rural communities played a central role in the situation. A central tenet of the situation was the *in vivo* code of “rising up to be rough,” which we defined as this concept that violence is desired, needed, or normalized as part of heterosexual relationships. This included men being described as not being able to achieve sexual arousal without violence. One Sexual Assault Nurse Examiner described how a patient’s “partner many times previously had postured like they were going to be engaging in strangulation as part of their dominance over the person, like a hostile dominance.”

Another element of the situation in rural communities is the cycles of violence, often through families and generations. A nurse practitioner who moved to a rural location from an urban area described her surprise at the generational violence as well as extreme loyalty to family. A participant in the legal system said, “You could name the families where you could predict there was going to be some sort of interpersonal crime of violence occurring in that family. And it would happen routinely, over and over again.” Some communities have sexual assault response teams, which allows for “an opportunity for law enforcement, prosecutors, Department of Children Youth and Families, everyone to sit down and talk about how to keep victim survivors safe in the community” as described by a prosecutor.

Paying Social Consequences

There were two extremes of the situation of choosing whether or not to disclose IPV; influenced by weighing priorities, normalizing violence, and increasing non-fatal strangulation not related to IPV. One end of the spectrum is isolation and the other is community knowledge, which can lead to paying social consequences. It is difficult to remain anonymous in rural areas, and it can also be a struggle to maintain professional boundaries when working with survivors. As one participant in the legal system noted, “There are other people who dive right into a . . . survivor's life, which is really not appropriate either, because. . . survivors have a right to privacy. They're not public property.”

Normalizing, Not Interrupting the Cycle of Violence

The concept of normalizing violence is related to downplaying of head injuries, “rising up to be rough,” and weighing priorities. The more normal the violence, the less consequence to the behavior, which one survivor echoed when describing her experience with IPV as nothing exceptional.

[She thought] that being beaten was common, but what brought her [in] was the concern for the baby, because she actually did not want to report, she wanted to just be examined, she wanted to have the information noted but not actually report it.

When asked about how women experiencing strangulation present for care, they were described by a prosecutor, “medically speaking, how do folks present? They don't seem to present with any great variation from other types of domestic violence cases.”

Advocates described the challenging balance between normalizing violence, offering help, and “giving up,” requiring consistent patience when working with survivors of IPV.

You offer it, you offer it, you offer it. You don't stop offering it. You don't throw human beings away. . . And I hope that at some point, someone will take those chances, those opportunities. If they don't, then, you know, maybe next week, hopefully, they will.

Increasing Non-Fatal Strangulation

Participants described an increase in non-fatal strangulation, yet they provided varying perspectives on why. Participants hypothesized the following areas as contributing to increasing non-fatal strangulation including strangulation in consensual sex and the participants who were parents of adolescents stated they have seen it increasing in schools, giving an example of kids playing “the choking game” where they put their hands around someone else’s neck until they lose consciousness. Those in the legal system thought it was related to increased screening related to the felony charge, with an attorney describing strangulation as a way to “slap someone with a felony.”

One common thread in the responses to questions about non-fatal strangulation was the emerging concept of “choking” in consensual sex. This element was described as being related to the changing sexual expectations in heterosexual relationships stemming from pornography and was described as just “part of the bag.” One participant described her personal experience (not related to IPV) of meeting someone through online dating and during their first sexual experience he put his hands around her neck and seemed surprised when she asked what he was doing and told him to stop. An attorney described the trend as, “what's really frightening is that you've got 18, 19, 20 year olds coming in, and they are using strangulation as a form of communication with their partners.”

A Lack of ABI Screening, Awareness, and Resources

While the focus of the study was on ABI and non-fatal strangulation, it was clear after several interviews that ABI overall, and specifically ABI related to IPV, is not being addressed

in rural Northern New England. There are no standardized screening practices and very limited knowledge, specifically of head injuries and strangulation as a form of violence and trauma. It was described by one participant as a “vacuum of knowledge” in relation to family violence and violence prevention. One nurse-midwife stated, “I think that women don't generally think of strangulation and head injury when they think of injuries. So if you ask somebody if they've experienced trauma, that's usually not the type of report that you get back.” Providers also discussed challenges to adding TBI screening to their practice and were cognizant that sometimes screening can be triggering.

I feel like on some levels that sort of detail work really has to have a purpose. And I don't see sort of the point of going back over things when you get the general picture and you're more concerned about moving forward with somebody. So I basically ask questions if they have meaning in terms of my clinical care of a patient or if she has a need to tell me something, but not sort of probe just for the purpose of making chart notes.

One palliative care nurse practitioner described her screening practice as asking the patient to “tell me about your pain.” She asks this question multiple times with responses generally starting with physical pain and leading to emotional pain. She felt this was a more effective way of understanding someone's lifetime history of violence than asking other questions about feeling unsafe in the home.

Strangulation recently became a felony within the past 10 years in Northern New England and education and awareness is high among advocates, including those in the legal system (detectives and attorneys). The state-wide domestic violence coalition has done extensive training and public education campaigns around strangulation related to IPV. Nurses who worked in emergency departments described the need for more discharge traumatic brain injury education materials noting, “We tell people not to drive tractors but not to watch out for abusive relationships.”

Weighing Priorities

The concept of weighing priorities was present within multiple dimensions related to providing clinical care, lacking resources to respond to the violence, and balancing doing advocacy work with burnout from emotionally taxing work. Clinicians described weighing the priorities during already very busy patient visits, and expressed concern about survey fatigue and screening for something with no resources to offer.

you can't screen [for] things that you don't have an intervention for, because then what do you do when they're coming in for a nosebleed that has nothing to do with this, and you have that 10-minute slot, and now it's a two-hour appointment. And so, I mean I think the [universal head injury screening] goal is incredible. I worry about how it comes out.

Another priority to weigh is the concept of “problem lists” in primary care, a list of a patient's medical conditions and diagnoses. As described by one healthcare provider, if “[I'm] seeing someone this afternoon that has a problem list with 32 things. And that speaks volumes. . . about what you can anticipate. . . It's just another way of how people are defined by certain characteristics in a chart.”

This concern for lack of resources spanned the health-care and legal participants, with participants from both groups noting “Because if you have nothing to offer, what's the incentive to come forward, and seek help, and to cooperate in investigations, or even prosecutions?” Weighing priorities extended to those working with survivors of IPV as well, due to lack of value for the work. A member of the sexual assault team describes the challenges: “It's just pretty discouraging, sometimes, just to try to keep your own team members moving in the right direction because the work is just so grueling.”

Hidden Symptoms

The concept of hidden symptoms was defined as the ways having an ABI can impact the perception of and experiences of the survivor. When asked about considering traumatic brain injuries as part of courtroom history, a prosecutor stated they did not consider any type of brain injury when considering “victim survivor” behavior stating, “I think, you sort of hit the nail on the head, it's not something that we think about very much.”

Consequences

The overarching tenet of the situation was the risks of making the invisible visible. This was described in having a head injury being used against a survivor either by the abuser, in the courtroom, or in the previously mentioned problem list. However, the defense attorney pointed out that the only way an ABI diagnosis could be admitted as evidence from the medical record was if it was provided to the court in the requested medical records.

Discussion

This situational analysis uncovered that ABI related to IPV is often overlooked in rural regions of the United States, due to a number of confounding factors, consistent with the personal experiences of the authors. Healthcare providers, advocates, and survivors all noted that the unique cultural narratives of rural regions; the normalization of violence; and the lack of resources, training, and tools for routine screening as barriers in recognizing and responding to ABI. There is also a lack of understanding that the choices or actions made by the people who are experiencing violence can be compromised or impaired by the consequences of ABI; their brains are not working optimally.

But the system has no way of taking that into account when trying to provide care.

The small, close-knit communities that are often attractive to many individuals who live in small, rural regions of the United States are also potential barriers when it comes to recognizing and responding to IPV. System level responses to IPV are often limited by the interests of perpetrators, and this is especially true in rural areas. Other researchers have also noted that these private, remote, and close-knit characteristics of rural communities—that may be seen as helpful when recognizing and responding to IPV—are the very scripts that prove to be barriers (Banyard et al., 2018). These unique characteristics of rural communities may require specialized interventions targeted at engaging with patients in the privacy of their home. Bacchus et al. (2016) examined a perinatal home visiting intervention called DOVE (Domestic Violence Enhanced Home Visit) and found that participants valued the ability to discuss IPV experiences and support within the confines of their own homes. However, the study also noted the importance of rigorous, well thought out protocols to ensure the safety of the patient and home visitor.

Our study also elicited this notion of violence as currency, where to increase the currency of violence you have to escalate the violence, rising up to be rough. This idea of rising up rough may be somewhat unique to rural communities in which many individuals are self-sufficient and their occupations often involve physical labor (e.g., farming, construction, forestry, or factory-based labor). However, the normalization of violence and notion of violence as currency appears to be more widespread. This was illustrated by participants when they noted that some individuals accept violence as normal and only seek care when worried about other outcomes (e.g., the pregnant mother concerned about her unborn child).

Strangulation from IPV is so common that many survivors do not feel it is exceptional when experienced during IPV, and it is possible that if the proper screening questions directly asking about strangulation events are not used it will be missed. Smirl et al. (2019) found that using a screening tool in survivors of IPV, the Brain Injury Severity Assessment, with specific questions about strangulation captured a higher number of total ABIs compared to a sports concussion screening tool. There is also an alarming increase in glamorized violence illustrated in pornography and social media challenges like the “choking game” (Stanley et al., 2018; Zibane, 2020). It is clear that widespread changes related to gender norms, normalization of violence, and a clearer understanding of the neuropsychological sequelae of strangulation are needed (Bichard et al., 2020).

Finally, healthcare providers and advocates in rural regions were hindered by the combination of lack of universal screening and the understanding that the compounding impacts of repeated head injuries can lead to hidden symptoms of ABI that often go untreated. For our participants, it

was a great leap to understand that even a mild head injury could cause lasting brain damage, sometimes severe when compounding. The underlying neurological insults also result in patients who may be seen as “uncooperative” due to memory deficits, short attention spans, and dysregulated mood. A greater understanding of the ways that survivors are exhibiting symptoms of ABI, and not just being difficult, could improve interactions with healthcare providers and advocates. There is also a clear need for universal trauma-informed care (Befus et al., 2019), where the entire system could benefit from more empathy toward survivors, safer law enforcement, and less burnout among healthcare providers and advocates.

One unanticipated challenge to recruitment of survivors was related to the way women’s shelters and advocacy agencies operate in rural areas. Unlike urban areas with a centralized residential shelter where women first seek services and may live for weeks or months at a time (see St Ivany et al., 2018 for successful recruitment strategy), in this specific region most shelters are advocacy agencies that have one building which may offer support groups and in person services. Survivors are spread out among several safe houses and often placed in hotel rooms with advocacy services given over the phone. Even with supportive shelter staff offering information on study participation, the initial moment of contact in crisis mode was not an easily receptive time for study information, and adding study contact info to an already busy advocacy call is ineffectual. When online recruitment postings went up asking for women living with an ABI, a potential participant contacted the primary investigator within a few hours; demonstrating that survivors were interested in talking but may not have been able to participate during active IPV situations.

Limitations

This study was limited by a small sample size taken from one geographic location; however, the in-depth qualitative exploration of IPV and ABI combine for a rich description of IPV-related ABI in rural regions of the United States. It also poses many new questions that have not been adequately addressed in the literature. The next area of research that is essential to extend these findings is a greater understanding that it is not just the IPV-related events that can be causing brain damage, but all neurological insults across a lifetime. Furthermore, there is a lack of a unified term for this phenomenon: traumatic brain injury from IPV, ABI from IPV, head injury, partner inflicted brain injury. Lacking a unified term prohibits a more unified path toward making progress for interventions.

Implications for Nursing

Nurses are well-situated to both assess for a lifetime history of head injury in their clients and educate people about the

H	Have you ever Hit your Head or been Hit on the Head?
	• This question should include any potential incidents that may have occurred at any age.
E	Were you ever seen in the Emergency room, hospital, or by a doctor because of an injury to your head?
	• There is recognition that not all individuals with a serious head injury can afford or seek hospital-based care.
L	Did you ever Lose consciousness or experience a period of being dazed and confused because of an injury to your head?
	• An alteration in consciousness
P	Do you experience any of these Problems in your daily life since you hit your head?
	• Headaches Anxiety Difficulty concentrating Difficulty reading, writing, calculating Poor judgment Changes in relationships • Dizziness Depression Difficulty remembering Difficulty performing at job/school work Poor problem solving
S	Any significant Sicknesses?
	• To rule out other causes of acquired brain injury (e.g., brain tumor, meningitis, etc.)
The original HELPS TBI screening tool was developed by M. Picard, D. Scarisbrick, R. Paluck, 9/91, International Center for the Disabled, TBI-NET, U.S. Department of Education, Rehabilitation Services Administration, Grant #H128A00022.	

Figure 2. Helps brain injury screening tool.

dangers of cumulative ABI in both community and clinical environments. It is appropriate for nurses across practice settings to utilize a simple screening tool like the HELPS (see Figure 2) to assess for lifetime history of head injury from all sources. Nurses also need to educate people about the importance of preventing future head injuries (i.e., non-fatal strangulation) to protect neurological health. Additionally, there are opportunities for nurses to both improve communication among health care team members concerning patients' risk factors and history of potential ABIs and to take action to support patients who appear to have compromised abilities to self-advocate due to ABIs. Finally, given that between 25% and 40% of nurses have experienced IPV (Bracken, 2010; Forbes, 2019), it is important for nurses to acknowledge and process their own trauma and support one another using principles of trauma and violence informed care employing strategies such as those found in the EQUIP program (Browne et al., 2015).

The missing language and communication difficulties highlighted in our study may be compounded by current iterations of many electronic health record programs. Information that nurses previously may have recorded on a paper charts' "sticky notes" now may be lost under a "screening" tab (e.g., the strangulation assessment that is locked under the Sexual Assault Nurse Examiner Exam) and not flagged for review by health care providers who access the chart in the future. Nurses can contribute to developing and adopting systems of

recording information about cumulative life experiences related to potential head injury in ways that are easily recognized and understood by the next person who accesses the chart.

It is also critical for nurses to acknowledge that ABIs may affect patients' behaviors and ability to follow through with plans of care. Healing from ABI from IPV does not happen in a linear fashion and will remain a process rather than a destination for most people who have endured the trauma of violence. When a patient exhibits angry outbursts, forgotten appointments, or lack of follow-through with a plan of care, they should be met with support rather than judgment. While there is much debate about the usefulness of universal screening for IPV, the potential damage from a lifetime of head injuries from multiple sources of trauma (e.g., sports, work, accidents, violence, and military service) suggest that nurses should implement *universal precautions* surrounding the potential for ABI history in all patients, especially those who have experienced IPV.

Conclusions

Repetitive brain injury can impair functioning in ways that make it more difficult for IPV survivors to get help/escape/ implement safety plans, and healthcare providers and advocates are generally unaware of these issues and how they are related to a lifetime history of ABI. We posit that there are

not enough resources available to address secondary damage from ABI related to IPV and this is exacerbated in rural areas. Researchers, clinicians, and policy makers need to implement universal ABI precautions to further explore the consequences of lifetime accumulation of repetitive hits to the head to adequately respond to IPV survivors who have potentially experienced these types of repetitive injuries. Currently, the systems designed to respond to IPV (i.e., legal, healthcare, and social services) will continue to overlook the accumulating damage from ABI. The hidden symptoms contributing to the unknown burden of ABI, survivors and communities normalizing violence, and limited time for routine head injury screening all coalesce to lead to an unknown disease burden of ABI from IPV.

Declaration of Conflicting Interests

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ORCID iD

Amanda St Ivany  <https://orcid.org/0000-0001-5306-5308>

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Author Biographies

Amanda St Ivany, PhD, RN is a Research Scientist in Pediatrics at Dartmouth-Hitchcock in Lebanon, New Hampshire, USA.

Donna L. Schminkey, PhD, MPH, MSN, CNM, RN is an Associate Professor in the Department of Nursing at James Madison University in Harrisonburg, Virginia, USA.

Michelle L. Munro-Kramer, PhD, CNM, FNP-BC is an Assistant Professor at the University of Michigan School of Nursing in Ann Arbor, Michigan, USA.