American Journal of Criminal Justice (2025) 50:228–252
https://doi.org/10.1007/s12103-024-09789-1

The Impact of the Covid-19 Pandemic on Domestic Violence Injury: Insights from the National Crime Victimization Survey (NCVS)

Auzeen Shariati[1] · **Yasemin Irvin-Erickson**[1]

Accepted: 16 December 2024 / Published online: 27 December 2024

Abstract
This study examined the consequences of domestic violence (DV) in light of the multiple changes to the lifestyles and routine activities of households during the Covid-19 pandemic using incident-level data from the National Crime Victimization Survey. Through logistic regressions, we first examined odds of injury among DV victims. We then examined odds of severe injury among DV victims who experienced injury. We compared the pre-pandemic odds of these injurious outcomes to these odds in two distinctive periods during the Covid-19 pandemic — March 2020-March 2021 and April 2021-December 2022. Study results suggest that the risk of both "any injury" and "severe injury" was higher between March 2020-March 2021 in comparison to the pre-pandemic period. Findings further suggest that the risk and severity of DV victims' injury after April 2021 were not significantly different from the pre-pandemic era. Implications for policy and practice are discussed.

Keywords Domestic violence · Intimate partner violence · Covid-19 pandemic · Injury · National crime victimization survey (NCVS)

Introduction

Following the alarming rates of the Covid-19 infection in March 2020, confinement measures (i.e., lockdown and stay-at-home orders) were established in the United States (US) and across the world to curb the spread of the virus. Although these measures were essential to save lives, unique concerns were raised over a "shadow pandemic" of domestic violence (DV) in the midst of the Covid-19 outbreak (UN Women, 2021). The subsequent widespread business closures, remote work policies, and online learning models imposed drastic changes to the routine activities

✉ Auzeen Shariati
asharia@gmu.edu

[1] George Mason University, 337B Enterprise Hall, 4400 University Drive, Fairfax, VA 22030, USA

of households and families. Research on "crime and disaster" has well documented the mechanisms that explain increases in DV victimization in the aftermath of natural catastrophes. The conditions accompanying disasters (i.e., unemployment, lack of income, and restricted living conditions) put vulnerable household members at higher risk of DV (Buttell et al., 2021; Frailing et al., 2015; Zahran et al., 2009). In the context of the Covid-19 pandemic, it was anticipated that the isolation caused by the inevitable change of household lifestyles and increased exposure to abusive family members and intimate partners would increase the risk of DV and limit victims' opportunities to seek medical attention or legal help.

Research focusing on the experiences of DV survivors in the earlier phases of the global pandemic has shed light on the intersectionality of DV with structural inequities — such as racism, poverty, xenophobia, and disability—which would, in turn, create unique challenges for marginalized DV survivors (Irvin-Erickson & Shariati, 2024a, b; Ragavan et al., 2022; Sweet, 2024). Yet, there has been a critical disconnect between these findings and the guidance offered by the national preparedness plans and safety protocols published by the key US public health agencies including the Centers for Disease Control and Prevention (CDC). The main focus of these guiding protocols has been on preventing the spread of the virus and controlling the disease with little to no consideration given to informing the general public and victim support agencies about ways to prevent and/or respond to DV in light of the unique challenges caused by the Covid-19 pandemic, particularly for marginalized populations. Thus, it has become increasingly important to understand the dynamics and complexities of sudden and long-term disruptions to public life including pandemics and plan for interdisciplinary partnerships to effectively respond to the compounding consequences of DV and such disruptions.

Background

A Critical Gap in the Study of DV Consequences in Relation to the Covid-19 Pandemic

The existing body of research on the Covid-19 pandemic's impact on DV has mainly focused on the extent and patterns of DV in relation to the global pandemic, with the majority of these studies showing that DV incidents increased in frequency (Evans et al., 2021; Henke & Hsu, 2022; Hsu & Henke, 2021; Leslie & Wilson, 2020; Piquero et al., 2020; Olding et al., 2021; Rebbe et al., 2022; Rhodes et al., 2020; Singh & Duncan, 2022) during the initial lockdown period. However, a number of studies found no evidence of an increase (Ashby, 2020; Campedelli et al., 2020; Malpede & Shayegh, 2022), or an early decrease (Miller et al., 2022; Muldoon et al., 2021; Sorenson et al., 2021) in DV incidents during the lockdowns. Some studies, however, observed rising DV patterns following the removal of stay-at-home restrictions (Leigh et al., 2022; Shariati & Guerette, 2022; Wright et al., 2022). Nonetheless, two systematic reviews of the literature which synthesized information from research studies based on official police records or hotline data found strong

evidence for an increase in DV incidents in the US and globally during the initial lockdown periods (Kourti et al., 2023; Piquero et al., 2021).

The growing body of research on the impact of the Covid-19 pandemic on DV has provided invaluable insights into how the Covid-19 pandemic, and the pandemic's impact on households' lifestyles and routine activities, affected the risk of DV. Yet, there is a significant gap in the literature focused on the impact of the Covid-19 pandemic on DV consequences. While a handful of studies to date explored the nature and extent of physical injuries and mental health problems endured by DV victims during the initial lockdown periods (Gosangi et al., 2021; Haag et al., 2022; Olding et al., 2021; Rhodes et al., 2020), no studies to date have examined the association between pandemic-induced restrictions and the injuries inflicted on DV victims beyond the initial lockdown periods of the Covid-19 pandemic or using non-clinical and national data from victims.

Theoretical Expectations Regarding the Covid-19 Pandemic's Impact on the Consequences of DV Victimization

Opportunity theories which explain the occurrences of criminal events as a product of variations in criminal opportunities, have been predominantly used to explain the effects of Covid-19 restrictions on changes in criminal behavior. Lifestyle-routine activities theory (L-RAT) is a theoretical approach that can be particularly helpful in explaining changes in DV patterns as a result of pandemic-induced lifestyle changes. L-RAT is an integration of Routine Activities Theory (Cohen & Felson, 1979) and Lifestyle Exposure Theory (Hindelang et al., 1978) which helps to explain variations in offending and victimization by investigating the influence of aggregate patterns of activities on the availability of criminal opportunities. (McNeeley, 2015)

Routine Activities Theory (RAT) was proposed by Cohen and Felson (1979) to explain increases in crime rates in the US after World War II despite expectations that the nation's overall economic prosperity will likely reduce crime. Cohen and Felson (1979) argued that macro-level changes in the American society (i.e., dispersion of activities away from suburban residences, women's increased presence in the labor market, and changes in technology and transportation) generated more opportunities for property crimes in the postwar period. RAT's main premise is that crime is most likely to occur when three necessary elements (a likely offender, a suitable target, and an absence of capable guardianship) converge in time and space. The convergence of these elements is a product of people's routine activities that structure their daily lives (e.g., their school/work schedules, family commitments, daily commutes, etc.). When a likely offender identifies a suitable target in the absence of capable guardians, crime will be more likely to take place (Cohen & Felson, 1979). Further, macro-level changes in people's normal daily activities —during widespread crises such as political unrest, conflicts, wars, disasters, endemics, and pandemics — can serve to amplify or diminish the convergence of these three elements.

Similarly, Lifestyle Exposure Theory (Hindelang et al., 1978) views victimization through the lens of opportunity theories maintaining that the risk of victimization varies across people given differences in their lifestyles. Certain behaviors,

vocational activities, and leisure habits elevate the risk of victimization by increasing exposure to high-risk people and places during high crime periods. This theory further takes into account other intervening mechanisms that explain additional levels of variation in one's risk of victimization including the type of activities engaged in or the amount of time spent in a potentially risky environment (Pratt & Turanovic, 2016).

The COVID-19 pandemic and its associated public health measures disrupted social structures, caused economic repercussions, and drastically altered the operations and service delivery models of criminal justice and victim support agencies (Irvin-Erickson & Shariati, 2024b; Lersch & Hart, 2022; Shariati & Guerette, 2022; Wood et al., 2022). The operational changes within criminal justice and victim services included reprioritizing resources due to budgetary and staffing limitations and transitioning to remote delivery of non-emergency services, particularly during early stages of the global pandemic. From an L-RAT's standpoint, it is reasonable to expect that the risk of DV victimization may increase with greater convergence of vulnerable individuals with likely offenders during times of uncertainty and isolation while opportunities for help-seeking are also limited. Guided by the above-mentioned theoretical frameworks, it is also plausible to anticipate that the consequences of DV including physical injuries might have been aggravated during the early stages of the Covid-19 pandemic, as vulnerable household members were bound to spend longer hours with their potentially abusive family members due to pandemic regulations and fear of the Covid-19 virus while access to effective guardianship (i.e., formal and informal social controls such as the police, victim support agencies, and individual's support network) was limited or nonexistent.

A recent study based on National Crime Victimization Survey (NCVS) data comparing the reporting of DV to the police by survivors and third parties before and during different phases of the pandemic found that the odds of victim-reporting of DV was significantly higher during the initial lockdown period between March and May 2020 and the odds of third-party reporting of DV was significantly higher after the first year of the pandemic in comparison to the pre-pandemic odds (Irvin-Erickson & Shariati, 2024a). These findings provide support for assumptions based on L-RAT indicating that the patterns of DV were affected by the lockdown environment and that the guardianship against DV got stronger after relaxing of social distancing measures after the first year of the pandemic.

Our study seeks to fill the critical knowledge gap in the literature regarding the impact of the Covid-19 pandemic on the adverse consequences of DV by comparing the odds of victim injuries before and after the pandemic using data from National Crime Victimization Survey (NCVS). Specifically, we observe the pre-pandemic odds of "any injury" (vs. no injury) and "severe injury" (vs. minor injury) and compare them to these odds in two distinctive phases of the Covid-19 pandemic: (1) pandemic phase I (March 2020-March 2021) during which varying levels of social distancing requirements were in place in most states and localities of the US, and (2) pandemic phase II (April 2021-December 2022) during which pandemic-related restrictive measures were relaxed with the wider availability of Covid-19 vaccines and treatments and the updated guidance from the CDC on April 2, 2021 on the safety of travel for vaccinated individuals. Unpacking these differences can provide

invaluable insights for public health measures and programming efforts to prevent and/or mitigate the harmful impacts of DV at different phases of a broad range of catastrophic events.

Literature Review

Domestic Violence and its Consequences

According to the Violence Against Women Act, DV includes any use or attempted use of physical abuse, sexual abuse, or any other pattern of coercive behavior to gain or maintain power and control over a current or past spouse or intimate partner or a nonintimate family member (Congressional Research Service, 2022). This pattern often includes physical, sexual, emotional, psychological, or financial actions, or threat of actions, and it can affect people of all socio-economic and educational backgrounds. In the US, over 10 million adults experience DV annually (Black et al., 2011). It is also estimated that 1 in 4 women and 1 in 10 men experience some type of violence by an intimate partner during their lifetime (Smith et al., 2018).

DV victimization can result in physical injury, psychological trauma, and social isolation (Campbell, 2002; Wu et al., 2010). There is an extensive body of research suggesting that DV victims are at high risk of lifelong physical and mental health problems, such as chronic pain, gastrointestinal problems, gynecological diseases, depression, and suicidal thoughts (Campbell, 2002; Ellsberg et al., 1999, 2008; Roberts et al., 1999; Stubbs & Szoeke, 2022). Empirical research further suggests that DV victims can experience major socio-emotional problems, which entail increased relationship problems, disruptions at school or work, and elevated levels of emotional distress. According to a study conducted by the Bureau of Justice Statistics (BJS), based on data from the 2009–2012 iterations of the NCVS, victims of intimate partner violence are more likely than victims of stranger violence to experience socio-emotional problems, and that females are more likely than males to experience these problems (Langton & Truman, 2014). Another large-scale population-based study, which was conducted by World Health Organization (WHO) in ten countries, examined physical and mental health consequences of IPV experiences of females. The study findings were consistent across all study settings suggesting that participants who experienced IPV at least once in their life reported significantly more emotional distress, suicidal thoughts, and suicidal attempts than non-abused participants (Ellsberg et al., 2008). Potential long-lasting physical and mental health consequences of DV victimization call for early identification of those at high risk of victimization and use of effective intervening strategies before violence continues to escalate and leads to serious lethal or nonlethal outcomes.

Domestic Violence Consequences During the Covid-19 Pandemic

Some studies in the past four years based on clinical data and subnational level data collection from survivors and victim service providers have investigated

the extent and nature of DV consequences following the Covid-19 outbreak. The majority of these studies were based on short-term analyses of the frequency and severity of physical injuries caused by DV during the early phases of the pandemic. For instance, some clinical studies focusing on interpersonal violence during the initial lockdown period have reported significant increases in frequency (Olding et al., 2021; Rhodes et al., 2020) and severity of injuries (Gosangi et al., 2021; Ross et al., 2023) in relation to DV incidents in comparison to previous years. However, there is also evidence on a sharp decline in emergency department admissions for DV during the early months of the pandemic (Muldoon et al., 2021).

There is also a growing body of research focusing on the potential link between adverse life circumstances generated by the Covid-19 pandemic (i.e., stress, anxiety, depression, social isolation, and loss of income) and occurrence and/or escalation of DV based on data collected from DV survivors or service providers suggesting a reciprocal relationship between DV and life stressors (Beland et al., 2021; Cannon et al., 2021; Drieskens et al., 2022; Sabri et al., 2020; Sharma & Bora, 2020). Two qualitative studies which explored experiences of DV survivors residing in shelters suggested that financial stressors during Covid-19 increased tension in survivors' relationships which, in turn, increased the risk of domestic abuse (Chiaramonte et al., 2022; Ravi et al., 2022). Moreover, several studies based on data from surveys or qualitative interviews with DV survivors have revealed heightened risk of mental health issues (Haag et al., 2022; Tripathi et al., 2022), more severe distress symptoms (Sediri et al., 2020) and lower resilience (Buttell et al., 2021) for individuals experiencing DV after the Covid-19 pandemic.

Literature on the adverse consequences of DV victimization in the aftermath of the global pandemic has yet to shed light on the extent and nature of physical health outcomes of DV victimization. Given the paucity of scholarly research on longer term consequences of Covid-19 pandemic on DV, this study attempted to narrow this critical gap in prior literature by comparing the odds of physical injury experiences of DV survivors before the pandemic to those experiences during two distinctive phases of the Covid-19 pandemic.

The Current Study

This study aims to answer two key research questions: (1) how do the odds of "any injury" among survivors of DV before the Covid-19 pandemic compare to these odds during two distinct phases of the Covid-19 pandemic? (2) how do the odds of "severe injury" among survivors of DV before the Covid-19 pandemic compare to these odds during two distinct phases of the Covid-19 pandemic? While examining the impact of the pandemic environment on the aforementioned outcomes among DV survivors in the US, we controlled for several victim-, offender-, and incident-related correlates of DV and its aggravated consequences that were commonly tested in the previous literature.

Methods

Data

The study data were derived from the 2017–2022 iterations of the NCVS. The BJS's NCVS is the nation's leading survey of victimization which collects information on non-fatal personal crimes (rape or sexual assault, robbery, aggravated and simple assault, and personal larceny) and household property crimes (burglary, motor-vehicle theft, and other theft). The survey is administered to persons aged 12 years and older from a nationally representative sample of households in the US. Eligible household members are asked to recall the victimizations experienced in the previous 6 months. Selected households remain in the sample for three years and are surveyed every six months for a total of seven times over the course of three years. The interviews capture information about offender characteristics, victim characteristics, incident characteristics, injuries suffered, and post-incident socio-emotional difficulties (Addington & Lauritsen, 2021; Turanovic & Pratt, 2019). The NCVS data we used in our study is based on interviews conducted between January 2017 and December 2022 and therefore captures any victimization incidents experienced by respondents between July 2016 and December 2022.

This study focused on the NCVS data from 2017 to 2022 because at the time of the writing of this article, the 2022 iteration of the NCVS was the most recent dataset made publicly available by the BJS, and that the 2017 and later iterations of the NCVS include critical new demographic information on the sexual identity, citizenship, and disability status of victims, in addition to other demographic information.

The NCVS collects information on victim-offender relationship. With this information, we were able to identify all incidents perpetrated by victims' intimate partner or other relatives.

In this study, we operationalized intimate partner DV incidents as all violent crime incidents considered by the NCVS where the offender was an intimate partner (i.e., current/ex-spouse, current/ex-boyfriend/girlfriend) whereas we operationalized non-intimate DV incidents as all violent crime incidents by a non-intimate relative (i.e., parent/stepparent, child/stepchild, brother/sister, or other family member). For the purposes of our study, we included the following personal crimes reported by NCVS under the definition of violent crimes: rape or sexual assault, robbery, and aggravated and simple assault. We included incidents by both single and multiple offenders in our analysis and limited our analysis to only cases involving victims who were 18 years old or older as the dynamics of DV including intimate partner violence and outcomes of such victimization can vary significantly between minor and adult victims.

We identified a total number of 2,406 violent DV incidents involving adult victims from the 2017–2022 iterations of the NCVS. We downloaded the NCVS data (BJS, 2023) from the Inter-university Consortium for Political and Social Research website. From the 2,406 cases of violent DV incidents, 1,051 (44%)

resulted in "any injury", of which 170 (16%) led to "severe injury". The incidents included violent DV incidents between former and current intimate partners as well as violent DV incidents between non-intimate relatives.

Variables

Dependent Variables

The dependent variables of the study are two adverse outcomes reported by DV victims: any injury and severe injury.

Any Injury was a dichotomous measure of whether the victim experienced any type of injury (coded as 1) or no injury at all (coded as 0). Injuries included rape, attempted rape, sexual assault injuries, a stab wound, a gunshot wound, broken bones, internal injuries, un-consciousness, bruises, black eye, cuts, scratches, swelling, and chipped teeth.

Severe Injury was a dichotomous measure of whether the victims with injury experienced a severe injury or a minor injury and was based on the answers to the following NCVS question which was asked to survey participants who indicated that they experienced a victimization incident: "What were the injuries you suffered, if any?". For the purposes of this study, based on the possible answers to this question and in line with the previous literature (see Gallagher, 2005; Harrell, 2012; Hayes & Powers, 2022), we operationalized severe injuries as rape, attempted rape, or sexual assault injuries, stab wounds, gunshot wounds, broken bones or teeth being knocked out, internal injuries, and losing consciousness as a result of a physical attack. We operationalized minor injuries as bruises, black eye, cuts, scratches, swelling, chipped teeth, and other minor injuries indicated by the survivor.

Independent Variable

Covid-19 Pandemic Stage – we created a Covid-19 pandemic variable to capture the varying levels of DV victims' injury following the introduction of the widespread pandemic-induced restrictions compared with the pre-Covid era. In response to the rise of Covid-19 cases in the US, federal travel restrictions and quarantine measures were established in March 2020 to reduce the risk of infection with Covid-19. Subsequently, the CDC issued guidelines for health care, travel, and social distancing measures which also informed the pandemic phases considered in this study. March 1, 2020 marks the beginning of the Covid-19 pandemic period as many states started to issue stay-at-home orders on this date, or shortly after. Although some states and localities lifted some of their restrictions in late April-May 2020, different levels of social distancing requirements were still in effect until March 2021. April 2021 was a major turning point in the pandemic timeline as Covid-19 vaccines became widely available to people in the US and with the CDC's new guidance on travel suggesting that fully vaccinated individuals can travel safely. Based on these major turning points, we created a pandemic stage variable to capture violent DV incidents

in three different phases: pre-pandemic (July 2016-February 2020), pandemic phase I (March 2020-March 2021), and pandemic phase II (April 2021– December 2022).

Control Variables

Based on the previous literature, we controlled for a series of victim demographics, offender-related variables, and incident characteristics in our models. These variables may condition one's likelihood of enduring physical injuries, regardless of the pandemic situation, but are not of primary focus for the current analysis. Consistent with prior studies suggesting the differential susceptibility of various demographic groups to physical injury resulting from violent victimization (Berrios & Grady, 1991; Hayes & Powers, 2022; Thompson et al., 2003; Walton-Moss et al., 2005), we controlled for the following victim demographic variables: ***sex*** (male; female), ***racial/ethnic identity*** (White, Non-Hispanic (NH); Not White, NH), ***educational attainment*** (some high school or less; some college credit or more), ***disability status*** (no disability; at least one form of disability), ***immigration status*** (US-born citizen, Immigrant), ***sexual orientation*** (straight; sexual minorities; refused to answer), ***household income*** (less than $25,000; $25,000-$49,999; $50,000–74,999; $75,000 or more), ***age*** in years.

We also controlled for previously identified offender-related predictors of violent victimization including ***offender sex*** (male; female), ***offender age*** (Younger than 30 years old; 30 years old or older), ***number of offenders*** (single offender; multiple offenders) and ***relational distance to the victim*** (non-intimate relatives; current or former spouse; current or former boy/girlfriend) (Apel et al., 2013; Hayes & Powers, 2022; Melde & Rennison, 2008; Sorenson et al., 2021). In instances involving multiple offenders, we coded offender sex as male if any of the offenders were male; we coded offender age according to the age category of the youngest offender involved. These decisions were based on the previous literature showcasing the risk and severity of incidents involving younger and male offenders. In cases involving multiple offenders, we coded the relational distance to the victim according to the intimacy of relationship with the offenders involved and we considered intimate partners whether an ex- or current spouse or partner as the most intimate relationship. Accordingly, in cases involving both non-intimate family members and intimate partners, the relational distance was coded as either current or former spouse or current or former boyfriend depending on the respondent's description of how well the victim knows the offender.

Additionally, a series of incident-level variables were accounted for in our models to capture the potential effect of situational factors that may be driving the risk and severity of DV injuries. Evidence suggests that certain situational circumstances can increase target suitability and/or reduce effective guardianship thereby elevating the risk and severity of violent victimization (Daday et al., 2005; Wilkinson & Hamerschlag, 2005). Accordingly, the study controlled for ***time of incident*** (daytime between 6 am and 6 pm; nighttime between 6 pm and 6 am; don't know), ***weapon presence*** (no weapon; handgun or other gun; knife or other sharp object; blunt object, or other weapon), ***location of incident*** (private (i.e., in or near respondent's home); public), ***presence of eyewitnesses*** (no/don't know; yes), ***aggressive***

self-protection including attacking or threatening to attack an offender with or without a weapon (no; yes).

Analytical Approach

We ran two binary logistic regression models to estimate the impact of the pandemic stages on the risk and severity of injuries endured by DV victims. Model 1 focused on all violent DV incidents to estimate the relationship between pandemic stages and "any injury" endured by victims, and Model 2 only included violent DV incidents which resulted in an injury to test the association between pandemic stages and "severe injury" resulting from DV incidents.

As mentioned earlier, the two models also measured the impact of a series of victim characteristics, a number of offender characteristics, and several incident-related factors on the outcomes measured. We conducted tests of collinearity (bivariate correlations, tolerance, and variance inflation factors) which suggested no issues of multicollinearity in the models. In our analysis, we used adjusted incident weights to account for series victimizations in which the victim is not able to remember the details of a series of DV incidents in the past 6 months, to make the data nationally representative (especially considering the necessity of weights to make the 2020 NCVS data comparable to the data from other years due to changes in BJS field activities during 2020), and to account for and to avoid the issue of inflation of p-values in our analysis. Specifically, we created these adjusted weights using the NCVS's SeriesIWeight (incident weights adjusted for series crimes) by factoring in the sample size in our models, Model 1 ($n = 2{,}406$) and Model 2 ($n = 1{,}051$).

Some variables contained non-substantial amounts of missing values. The highest percentage of missing data was observed for "offender age", with approximately 3% missing in each model. In line with common practices in analyzing NCVS data, we used multiple imputation to replace missing data with plausible values from the observed data. This process resulted in the imputation of 191 cells in the "any injury" model and 57 cells in the "severe injury" model. For the "any injury" model, the number of imputed values was as follows: educational attainment ($n = 8$), immigration ($n = 8$), disability ($n = 18$), offender age ($n = 82$), offender sex ($n = 14$), number of offenders ($n = 2$), and weapon presence ($n = 59$). And, in the "severe injury" model, the imputed values were: educational attainment ($n = 3$), immigration ($n = 6$), disability ($n = 9$), offender age ($n = 30$), and offender sex ($n = 9$) based on observations from our dataset.

Results

Of the 2,406 cases of violent DV included in analyses, 43% ($n = 1{,}051$) resulted in some type of injury, of which 16% ($n = 170$) involved a severe physical injury and 84% (881) involved a minor physical injury. Table 1 presents the total number of DV incidents occurred in each study period along with the number of incidents resulting in "any injury" and "severe injury" and the percentage of incidents leading to

Table 1 Physical injury associated with DV incidents across Covid-19 pandemic stages

	All DV	Any Injury	Severe Injury
Pandemic Stages	N	N (%)	N (%)
Pre-pandemic (July 2016-February 2020)	1,512	650 (43%)	96 (6%)
Pandemic Phase I (March 2020-March 2021)	334	157 (47%)	35 (10%)
Pandemic Phase II (Apr 2021-Dec 2022)	560	244 (43%)	39 (7%)
Total	2,406	1,051	170

the aforementioned outcomes relative to the total number of DV incidents in each period.

Of the 2,406 cases of DV included in the "any injury" model, 1,512 occurred in the pre-pandemic period of which 43% ($n=650$) involved an injury. There was a noticeable spike in this proportion between March 2020 and March 2021; of 334 cases of DV in this period, 47% ($n=157$) involved an injury. After April 2021, this proportion declined to its pre-pandemic state; of 560 cases of DV, 43% ($n=244$) resulted in an injury. A similar trend was observed in the "severe injury" model; from the 1,512 DV cases occurred in the pre-pandemic period, 6% ($n=96$) resulted in a severe injury. This proportion increased between March 2020 and March 2021; from 334 cases of DV, 10% ($n=35$) involved a severe injury. Last, from the 560 DV incidents occurred post-April 2021, 7% ($n=39$) led to a severe injury. In summary, both indicators of physical injury increased in their percentage relative to the total number of DV between March 2020 and March 2021 compared to the pre-pandemic period. After April 2021, both indicators reverted to levels consistent with those observed prior to the pandemic.

Table 2 presents the weighted sample characteristics of the DV incidents included in our analyses. Looking at victim demographic characteristics, majority of the victims of the DV incidents included in both models were white (63%), female (~81%), from lower income categories (~60%), had some college experience or a higher educational degree (~60%), and self-identified as straight (86%) and US-born citizens (94%). Approximately 28% of the victims had one or more disabilities. The average age of the victims who endured any type of injury was 39 years while the victims experiencing a severe injury were slightly younger (37).

Majority of the perpetrators of the DV incidents included in both models were aged 30 or older (~62%), males (~80%), and single offender (~96%). 65% of incidents resulting in "any injury" were committed by a former or current spouse or boy/girlfriend of victims while this percentage was higher for incidents leading to a "severe injury" (73%).

Looking at the situational characteristics, the majority of the DV incidents included in both models took place in a private setting (~84%) where eyewitnesses were lacking or not noticed by victims (68%), did not involve the use of aggressive self-protection strategies (~90%) and did not occur during daytime (~59%). Last, 80% of incidents leading to "any injury" took place in the absence of a weapon while this percentage was lower for incidents resulting in "severe injury" (73%).

Table 2 Descriptive statistics of weighted domestic violence incidents included in the analyses

Variables	Any injury vs. No injury ($n = 2,406$) *N* (%) or mean	Severe injury vs. Minor injury ($n = 1,051$) *N* (%) or mean
Victim characteristics		
Age (in years)	39	37
Sex: male	480 (20%)	183 (17%)
Sex: female	1,926 (80%)	868 (83%)
Sexual orientation: straight	2,078 (86%)	900 (86%)
Sexual orientation: sexual minorities	230 (10%)	110 (10%)
Sexual orientation: refused/blank	98 (4%)	41 (4%)
Racial/ethnic identity: white, NH	1,515 (63%)	660 (63%)
Racial/ethnic identity: not white-NH	891 (37%)	391 (37%)
Educational attainment: high school degree or less	986 (41%)	422 (40%)
Educational attainment: some college or more	1,420 (59%)	629 (60%)
Disability: no disability	1,708 (71%)	768 (73%)
Disability: one or more disabilities	698 (29%)	283 (27%)
Immigration status: US-born citizen	2,261 (94%)	991 (94%)
Immigration status: immigrant	137 (6%)	60 (6%)
Household income: less than $25,000	954 (40%)	428 (41%)
Household income: $25,000-$49,999	677 (28%)	307 (30%)
Household income: $50,000-$74,999	298 (12%)	131 (12%)
Household income: $75,000 or more	476 (20%)	185 (17%)
Perpetrator characteristics		
Age: 29 or younger	890 (37%)	411 (39%)
Age: 30 or older	1,516 (63%)	640 (61%)
Sex: male	1,901 (79%)	863 (82%)
Sex: female	505 (21%)	188 (18%)
Number of offenders: single offender	2,286 (95%)	1024 (97%)
Number of offenders: multiple offenders	120 (5%)	27 (3%)
Relational distance: non-intimate relative	846 (35%)	283 (27%)
Relational distance: current or ex-spouse	599 (25%)	271 (26%)
Relational distance: current or ex-boy/girlfriend	961 (40%)	497 (47%)
Incident characteristics		
Public: no	1,962 (82%)	906 (86%)
Public: yes	444 (18%)	145 (14%)
Weapon presence: no weapon or don't know	1,925 (80%)	765 (73%)
Weapon presence: gun	168 (7%)	65 (6%)
Weapon presence: knife or sharp object	168 (7%)	66 (6%)
Weapon presence: blunt object	73 (3%)	73 (7%)
Weapon presence: other weapon	72 (3%)	82 (8%)
Aggressive self-protection: no	2,205 (92%)	923 (88%)

Table 2 (continued)

Variables	Any injury vs. No injury ($n = 2,406$) *N* (%) or mean	Severe injury vs. Minor injury ($n = 1,051$) *N* (%) or mean
Aggressive self-protection: yes	201 (8%)	128 (12%)
Eyewitness presence: no eyewitness or don't know	1,564 (65%)	714 (68%)
Eyewitness presence: yes	842 (35%)	337 (32%)
Time of incident: day	1,061 (44%)	396 (38%)
Time of incident: night	1,153 (48%)	550 (52%)
Time of incident: don't know	192 (8%)	105 (10%)

Regression Findings

Our multivariate model predicting "any injury" revealed several interesting findings (see Table 3). The pandemic variable emerged as a significant predictor of "any injury", such that DV victimization incidents that occurred during the first year of the Covid-19 pandemic (March 2020-March 2021) were significantly more likely to result in any type of injuries compared to the pre-pandemic period ($OR = 1.33$, $SE = 0.05$, $p < .001$). Our analysis did not detect any significant differences in the DV survivors' odds of experiencing "any injury" in the last study period (April 2021 or after) in comparison to the pre-pandemic odds.

Several control variables were associated with experiencing "any injury" among survivors of DV. From victim demographics, victim age was inversely associated with experiencing "any injury", suggesting that victims' likelihood of experiencing "any injury" following their DV victimization declined as age increased ($OR = 0.98$, $SE = 0.001$, $p < .001$). Likewise, victims with household income over $75,000 a year were less likely to experience "any injury" ($OR = 0.76$, $SE = 0.05$, $p < .001$).

Looking at offender characteristics, incidents perpetrated by offenders aged 30 years or older ($OR = 0.79$, $SE = 0.04$, $p < .001$) were significantly less likely to result in "any injury" compared with incidents involving offenders aged 29 years or younger. In addition, incidents committed by multiple offenders were associated with a lower likelihood of "any injury" among survivors ($OR = 0.43$, $SE = 0.1$, $p < .001$). Last, incidents perpetrated by current or ex-spouse ($OR = 0.05$, $SE = 0.26$, $p < .001$) and current or ex-body/girlfriend ($OR = 0.19$, $SE = 0.26$, $p < .001$) were more likely to result in "any injury" than incidents committed by non-intimate relatives.

In terms of incident characteristics, DV incidents in public spaces were less likely to result in experiencing "any injury" among survivors in comparison to incidents that took place in private settings ($OR = 0.47$, $SE = 0.05$, $p < .001$). Using no weapon presence or don't know as the reference category, incidents featuring the presence of a gun ($OR = 1.22$, $SE = 0.07$, $p < .01$), knife or sharp object ($OR = 1.70$, $SE = 0.07$, $p < .001$), blunt object ($OR = 3.26$, $SE = 0.1$, $p < .001$), and other weapon ($OR = 2.42$,

Table 3 Logistic regression model explaining DV "any injury" ($n = 2,406$)

Variables	B (SE)	OR (95% CI)
Independent Variable: Pandemic stage		
Pre-Pandemic (July 2016-February 2020)	Reference	—
Pandemic phase I (March 2020-March 2021)	0.28 (0.05)***	1.33 (1.19–1.48)
Pandemic phase II (April 2021 or after)	− 0.02 (0.04)	0.97 (0.89–1.05)
Victim characteristics		
Age (in years)	− 0.01(0.001)***	0.98 (0.985–0.991)
Sex: male	Reference	—
Sex: female	0.06 (0.05)	1.07 (0.97–1.18)
Sexual orientation: straight	Reference	—
Sexual orientation: sexual minorities	0.03 (0.06)	1.03 (0.91–1.17)
Sexual orientation: refused to answer	0.04 (0.09)	1.04 (0.86–1.26)
Racial/ethnic identity: white, NH	Reference	—
Racial/ethnic identity: not white, NH	0.01 (0.03)	1.01(0.94–1.09)
Educational attainment: high school degree or less	Reference	—
Educational attainment: some college or more	0.01 (0.03)	1.01 (0.94–1.09)
Disability: no disability	Reference	—
Disability: one or more disabilities	− 0.07 (0.04)	0.92 (0.85–1.01)
Immigration status: US-born citizen	Reference	—
Immigration status: immigrant	0.009 (0.07)	1.009 (0.86–1.17)
Household income: less than $25,000	Reference	—
Household Income: $25,000–$49,999	− 0.01 (0.04)	0.98 (0.89–1.07)
Household Income: $50,000–$74,999	0.06 (0.06)	1.06 (0.94 − 1.20)
Household Income: $75,000 or more	− 0.26 (0.05)***	0.76 (0.69–0.84)
Perpetrator characteristics		
Age: 29 or younger	Reference	—
Age: 30 or older	− 0.23 (0.04)***	0.79 (0.72–0.85)
Sex: male	Reference	—
Sex: female	− 0.06 (0.05)	0.93 (0.84–1.03)
Number of offenders: single offender	Reference	—
Number of offenders: multiple offenders	− 0.83 (0.10)***	0.43 (0.35–0.52)
Relational distance: non-intimate relative	Reference	—
Relational distance: current or ex-spouse	0.55 (0.05)***	1.74 (1.56–1.93)
Relational distance: current or ex-boy/girlfriend	0.62 (0.05)***	1.85 (1.68–2.05)
Incident characteristics		
Public: no	Reference	—
Public: yes	− 0.74 (0.05)***	0.47 (0.43–0.52)
Weapon presence: no weapon or don't know	Reference	—
Weapon presence: gun	0.2 (0.07)**	1.22 (1.06–1.41)
Weapon presence: knife or sharp object	0.53 (0.07)***	1.70 (1.48–1.96)
Weapon presence: blunt object	1.18 (0.10)***	3.26 (2.67–3.99)
Weapon presence: other weapon	0.88 (0.11)***	2.42 (1.94–3.03)
Aggressive self-protection: no	Reference	—

Table 3 (continued)

Variables	B (SE)	OR (95% CI)
Aggressive self-protection: yes	0.87 (0.06)***	2.39 (2.09–2.73)
Eyewitness presence: no eyewitness or don't know	Reference	—
Eyewitness presence: yes	0.06 (0.04)	1.07 (0.98–1.16)
Time of incident: day	Reference	—
Time of incident: night	0.24 (0.03)***	1.27 (1.18–1.37)
Time of incident: don't know	0.56 (0.07)***	1.76 (1.53–2.02)

NH = Non-Hispanic; *OR* = Odds ratio, *CI* = Confidence Interval ***$p < .001$, **$p < .01$

SE = 0.11, $p < .001$), were associated with higher likelihood of "any injury". Incidents involving the use of aggressive self-protective behaviors were significantly more likely to result in "any injury" (*OR* = 2.39, *SE* = 0.06, $p < .001$). Finally, incidents that occurred during nighttime or those in which victims could not recall the time were more likely to result in "any injury" compared to incidents occurring during daytime.

Table 4 presents the results from our second regression model, explaining "severe injury" resulting from DV incidents. Our analysis indicated that survivors' odds of experiencing "severe injury" in the aftermath of a DV incident were significantly higher during the first year of the pandemic (March 2020-March 2021) compared to the pre-pandemic period (*OR* = 2.15, *SE* = 0.26, $p < .01$). There were not any significant differences in the odds of severe injury resulting from DV incidents which took place before the pandemic and those occurred after April 2021.

In terms of victim's characteristics, victim age was a significant predictor of severe physical injury suggesting that odds of severe injury decreased as age increased (*OR* = 0.98, *SE* = 0.01, $p < .05$). Victims with disabilities were significantly more likely to experience severe injuries compared to victims without disabilities (*OR* = 2.19, *SE* = 0.22, $p < .001$). Household income was also a significant correlate of severe injury resulting from DV victimization. DV survivors within the second annual household income category ($25,000-$49,999) were less likely to experience severe physical injury compared to victims in the reference group who earned less than $25,000 a year (*OR* = 0.48, *SE* = 0.26, $p < .01$).

With regard to offender's characteristics, relational distance between the offender and victim emerged as a significant predictor of severe injury. Specifically, the odds of severe injury were significantly higher if offenders were victims' former or current spouse (*OR* = 2.44, *SE* = 0.35, $p < .05$) compared to these odds if offenders were victims' non-intimate relatives.

Several incident characteristics were associated with experiences of severe injury among survivors of DV. With no weapon presence or don't know serving as the reference category, incidents involving presence of a gun were associated with lower likelihood of severe injury (*OR* = 0.21, *SE* = 0.63, $p < .05$). Similarly, blunt instruments (*OR* = 0.16, *SE* = 0.73, $p < .05$) and other weapons (*OR* = 0.33, *SE* = 0.44, $p < .05$) also decreased the odds of severe injury while knives/sharp objects did not emerge as a significant predictor of severe injury. Last, incidents that involved

Table 4 Logistic regression model explaining DV "severe injury" ($n = 1,051$)

Variables	B (SE)	OR (95% CI)
Independent Variable: Pandemic stage		
Pre-Pandemic (July 2016-February 2020)	Reference	—
Pandemic phase I (March 2020-March 2021)	0.76 (0.26)**	2.15 (1.30–3.56)
Pandemic phase II (April 2021 or after)	−0.14 (0.23)	0.86 (0.55–1.35)
Victim characteristics		
Age (in years)	−0.02 (0.01)*	0.98 (0.96 – 1.0)
Sex: male	Reference	—
Sex: female	0.62 (0.39)	1.87 (0.87–3.99)
Sexual orientation: straight	Reference	—
Sexual orientation: sexual minorities	0.06 (0.30)	1.06 (0.60–1.91)
Sexual orientation: refused to answer	0.51 (0.40)	1.66 (0.77 – 3.60)
Racial/ethnic identity: white, NH	Reference	—
Racial/ethnic identity: not white, NH	0.10 (0.20)	1.11 (0.75–1.65)
Educational attainment: high school degree or less	Reference	—
Educational attainment: some college or more	0.01 (0.19)	1.01 (0.69–1.48)
Disability: no disability	Reference	—
Disability: one or more disabilities	0.78 (0.22)***	2.19 (1.43–3.33)
Immigration status: US-born citizen	Reference	—
Immigration status: immigrant	0.47 (0.38)	1.61 (0.76–3.37)
Household income: less than $25,000	Reference	—
Household income: $25,000–$49,999	−0.74 (0.26)**	0.48 (0.29–0.79)
Household income: $50,000–$74,999	0.20 (0.29)	1.22 (0.70–2.14)
Household income: $75,000 or more	0.04 (0.26)	1.04 (0.62–1.74)
Perpetrator characteristics		
Age: 29 or younger	Reference	—
Age: 30 or older	−0.06 (0.23)	0.94 (0.59–1.48)
Sex: male	Reference	—
Sex: female	−0.24 (0.39)	0.78 (0.36–1.69)
Number of offenders: single offender	Reference	—
Number of offenders: multiple offenders	−2.05 (1.55)	0.13 (0.01–2.68)
Relational distance: non-intimate relative	Reference	—
Relational distance: current or ex-spouse	0.89 (0.35)*	2.44 (1.23–4.84)
Relational distance: current or ex-boy/girlfriend	0.62 (0.34)	1.85 (0.96–3.59)
Incident characteristics		
Public: no	Reference	—
Public: yes	−0.63 (0.30)*	0.53 (0.29–0.97)
Weapon presence: no weapon or don't know	Reference	—
Weapon: gun	−1.54 (0.63)*	0.21 (0.06–0.73)
Weapon: knife or sharp object	0.68 (0.36)	1.98 (0.97–4.04)
Weapon: blunt object	−1.86 (0.73)*	0.16 (0.04–0.65)
Weapon: other weapon	−1.12 (0.44)*	0.33 (0.14–0.77)
Aggressive self-protection: no	Reference	—

Table 4 (continued)

Variables	B (SE)	OR (95% CI)
Aggressive self-protection: yes	−0.98 (0.37)**	0.38 (0.18–0.77)
Eyewitness presence: no eyewitness or don't know	Reference	—
Eyewitness presence: yes	−0.43 (0.25)	0.65 (0.40–1.05)
Time of incident: day	Reference	—
Time of incident: night	0.34 (0.22)	1.41 (0.92–2.16)
Time of incident: don't know	0.12 (0.34)	1.13 (0.58–2.23)

NH = Non-Hispanic; *OR* = Odds ratio, *CI* = Confidence Interval***$p < .001$, **$p < .01$, *$p < .05$

aggressive self-protective behaviors were significantly less likely to lead to severe injury ($OR = 0.38$, $SE = 0.37$, $p < .01$).

Discussion and Conclusion

Numerous studies to date have investigated the extent and patterns of DV in the aftermath of the COVID-19 pandemic compared to the pre-pandemic era. However, none have specifically examined the potential impact of the pandemic on the consequences of DV using a nationally representative and non-clinical sample in the United States. This is a critical gap in the literature due to two reasons. First, despite the alarming findings of early studies on the physical health outcomes of DV in the aftermath of the Covid-19 pandemic, the existing body of scholarly research does not offer much guidance on preventing and/or responding to the consequences of DV considering the unique challenges brought by the widespread pandemic. Second, the emerging research on DV victims' behavior and experiences suggests that formal reporting and help-seeking behaviors of DV survivors appear to have been influenced not only by the uncertainty surrounding the pandemic (Bullinger et al., 2021; Demir & Park, 2022) but also by the sociopolitical climate during the first year of the pandemic (Irvin-Erickson & Shariati, 2024a). Given this critical disconnect, our study sought to unpack the Covid-19 pandemic's influence on two adverse consequences of DV in light of the unique pandemic-induced changes to the lifestyles and routine activities of households during the Covid-19 pandemic.

The study findings revealed that the odds of experiencing "any injury" (vs. no injury) in relation to DV incidents were significantly higher during the initial 13-month period following the start of the global pandemic (March 2020-March 2021) compared to the pre-pandemic period. Similarly, when the analysis was limited to those who experienced an injury, the odds of severe injury (vs. minor injury) was significantly higher between March 2020-March 2021. These findings can be explained by the critical changes in the lifestyles and routine activities of households during the first year of the pandemic which seriously affected individuals' social interactions, financial stability, and mental health, creating an environment conducive to DV. This finding can be further contextualized by the unprecedented barriers to reporting of DV incidents and help-seeking behaviors of DV survivors during the early stages of the pandemic which have likely served to escalate episodes of

conflict and aggression, resulting in more severe outcomes. This corroborates previous literature that suggests the risk and severity of physical injuries endured by DV survivors after the Covid-19 pandemic have increased during times of strict quarantine and social distancing measures in comparison with prior years (Gosangi et al., 2021; Ross et al., 2023; Thiel et al., 2022).

The analysis further revealed that the odds of "any injury" and "severe injury" in the 21-month period following the relaxing of social distancing requirements (April 2021-December 2022) were not statistically different from these odds in the pre-pandemic period. This suggests that the increased probability and severity of physical injuries were limited to the times of strict public health regulations on movement and social interactions, and were not consistent throughout the Covid-19 pandemic. This finding seems to be best explained by the easing of strict pandemic confinement measures starting from April 2021, which allowed people to resume their normal lifestyles and reduced barriers to victim help-seeking, thereby reverting the risk and severity of injuries to their pre-pandemic levels.

Several control variables emerged as significant predictors of the injurious outcomes of DV victimization. Victim age was inversely correlated with experiencing both any injury and severe injury resulting from DV victimization. This is in contrary to the "vulnerability hypothesis" arguing that people who are physically weaker tend to experience more severe outcomes as a result of their victimization (see Felson, 1996; Apel et al., 2013). Thus, the negative association between age and injury observed by this study was an interesting finding which may be explained by the complexity of the mechanisms through which the pandemic-driven lifestyle changes have altered victims' vulnerabilities resulting in elevated risk of physical injuries for younger victims who have presumably undergone more excessive social and financial stressors during times of uncertainty and isolation. Alternatively, it is possible that older survivors of DV who had been identified as "at risk individuals" were already connected with harm reduction resources and services resulting in their lower likelihood of severe injuries.

In line with prior literature, survivors' disability status significantly increased the odds of severe injury (Hayes & Powers, 2022). From the RAT's standpoint, this might be explained by the perceived attractiveness of individuals with disabilities to likely perpetrators who may view their targets as less capable of help-seeking and/or reporting victimization. Also, consistent with prior research, victims' higher annual household income served as a protective factor against experiencing any injury following DV victimization (Walton-Moss et al., 2005). The finding on the relationship between annual household income and injury severity, however, was less straightforward. DV survivors within the second-tier income category ($25,000-$49,999) who likely exhibit the characteristics of essential workers (particularly those paid at the minimum hourly rate) had a significantly lower risk of experiencing severe injury compared to survivors in the lowest income category (<$25,000) while the risk of severe injury for the two higher income categories (likely teleworkers) was not significantly different from the reference group. The macro-level forces associated with pandemic-related restrictive measures have likely had different implications for the structure of routine activities of frontline workers compared to non-essential workers. It might

be the case that, given the impracticality of remote work arrangements for essential workers, the initial residential quarantines and subsequent social distancing measures did not serve to significantly increase the convergence of likely perpetrators of abuse with their vulnerable household members living in the next income group.

With respect to offender characteristics, consistent with prior research, offender age was inversely correlated with experiencing any injury (Kelsay et al., 2017). Also, in line with previous literature, relational distance to the victim significantly altered the probability and severity of physical injuries (Bachman et al., 2002; Heller et al., 1983; Kyriacou et al., 1999; Weaver et al., 2004). In the "any injury" model, offenders who were victims' current or ex-spouse and current or ex-boy/girlfriends had a higher likelihood of inflicting an injury than offenders who were victims' non-intimate relatives. In the "severe injury" model, only perpetrators who were victims' current or ex-spouse were significantly more likely than non-intimate relatives to inflict a severe injury on their victims. Last, multiple offenders had a lower likelihood of inflicting an injury on their victims. This finding in contrary to the broader body of research on risk factors of physical injuries resulting from violent victimization, and the opportunity to untangle this relationship in the context of DV remains for future research.

Findings on incident-level factors also offered some interesting insights. Incidents featuring aggressive self-protective behaviors were more likely to result in an injury but less likely to result in a severe injury. Regarding the finding on "any injury", an explanation which may be particularly relevant to DV (where the motivation is likely the perpetrator's desire to exert control over a vulnerable family member), is that "fighting back" physically may increase tension and exacerbate the resulting injurious outcomes (See Powers & Simpson, 2012). The finding on the severity of injuries, however, can be explained from the RAT perspective; victim's resistance can serve to increase the risk associated with violence perpetration for the would-be assailant, add a layer of capable guardianship, and reduce target suitability resulting in lower likelihood of severe injury (Guerette & Santana, 2010). Likewise, incidents taking place in public spaces were less likely to result in any injuries and severe injuries. From the RAT perspective, this might be explained by the presence of capable guardianship in public spaces, serving as bystanders. The presence of bystanders who could potentially intervene during episodes of excessive conflict and aggression would increase the cost of violent behavior (risk of arrest and prosecution) and therefore decrease the likelihood of engaging in such behavior. Additionally, consistent with prior research, incidents that occurred during nighttime and incidents that victims did not recall their time of occurrence were more likely to lead to an injury (Kelsay et al., 2017). Last, we found that the presence of a weapon significantly increased the odds of any injury but decreased the likelihood of severe injuries. While it is reasonable to expect that the presence of a weapon could potentially escalate the intensity of domestic conflicts and thereby elevate the risk of more severe outcomes, the observed negative association between weapon presence and injury severity remains unsettled. One potential explanation is that given the dynamics of DV incidents, which often involve a pattern of abusive behavior by known individuals, DV victims' awareness of the presence of weapons could

prevent confrontation between the assailants and victims, potentially leading to less severe outcomes.

Despite the study's contributions to the collective understanding of the impact of the pandemic on adverse consequences arising from DV, several limitations remain. First, NCVS is a self-report household-based survey which may be limited in its generalizability given that individuals residing in DV shelters, safe houses, and correctional facilities are not included in the sample. Likewise, given the nature of incident-based surveys, some important factors are not included in NCVS questionnaires. Although NCVS adequately measures crime severity and person/household characteristics, it does not include some relevant contextual factors such as personal histories, relationship dynamics, and social network that could be helpful in understating how risk factors of DV injury studied here, may be mediated through other contextual (including personal or environmental) variables. For instance, knowing about distal risk/protective factors in both victims and perpetrators (e.g., history of being abused in childhood, watching domestic abuse in the primary family, and attitudes toward conflict, aggression and violence) as well as proximal situational circumstances giving rise to episodes of anger and violence could have provided a more nuanced understanding of DV victimization and its consequences.

In spite of these limitations, the present study fills a critical gap in the existing research on the consequences of DV in light of the unique challenges caused by a widespread public health pandemic which significantly altered households' lifestyle and routine activity patterns. Unlike the majority of research examining DV and Covid-19 which focuses on a short period after stay-at-home orders were issued, this study advances the literature by utilizing DV data from a longer Covid-19 pandemic period. Additionally, these results use data from a large, nationally representative survey to enhance existing research, suggesting that the risk and severity of physical injuries incurred by DV victims increased following the Covid-19 outbreak (March 2020-March 2021). In our study we found no statistically significant differences between the odds of two adverse consequences of DV victimization — any injury and severe injury —in the pre-pandemic period and after the first year of the pandemic (April 2021-December 2022). This finding suggests that the increased probability and severity of DV injury during the first year of the pandemic (March 2020-March 2021) were likely driven by the situational circumstances caused by prolonged exposure to abusive family members — an unintended consequence of public health efforts aimed at curbing the Covid-19 pandemic — combined with financial strain and reduced access to resources essential for preventing victimization and re-victimization. The study findings further helped with the identification of other predictors of adverse physical health consequences of DV victimization in light of the Covid-19 pandemic lifestyle changes. Although further applications are needed, these findings suggest that opportunity theories, notably L-RAT, provide a viable theoretical basis for explaining how changes to households' lifestyles and routine activities driven by widespread public health pandemics impact the risk and severity of physical health outcomes of DV.

This study underscores the need for scholars and practitioners to consider the aggravated negative impacts of a large-scale societal adversity (in this case the Covid-19 pandemic) and the unintended consequences of responses to this adversity

for DV survivors. The results indicated that the risk and severity of injury among DV survivors during the Covid-19 pandemic increased in the first year of the pandemic which coincides with stricter public health regulations (lockdowns and stay-at-home orders). These public health measures, designed to mitigate the risk of COVID-19 transmission, combined with the broader macro-level impacts of the pandemic, led to increased exposure to abuse and diminished access to critical victim services, such as healthcare, safe housing options, and legal support. This combination likely exacerbated tensions and conflicts, ultimately increasing the risk and severity of physical injuries among victims.

For policy and practice, these are helpful findings which can inform the formulation of preemptive strategies, including screening and identification of at-risk populations, as well as the development of policies aimed at preventing DV and addressing its immediate, short-term, and long-term consequences during future large-scale public health crises. With this knowledge, policymakers and practitioners must take a holistic approach to emergency preparedness planning through identifying and mitigating the historical and structural barriers to DV help-seeking and developing interventions tailored to the needs of DV survivors during times of serious disruptions to the functioning of communities.

A key lesson from the COVID-19 experience is that public health emergencies can lead to the development of reprioritization policies, limiting access to certain medical and non-medical services, such as elective medical procedures, mental health support, and criminal legal services. While these regulatory measures are deemed necessary during the peak of these adversities, they inadvertently compound the challenges faced by DV survivors. Therefore, integrating DV to national emergency preparedness plans and developing DV harm reduction policies based on lessons learned from the Covid-19 pandemic are critical to ensuring that essential resources are allocated to DV emergency responses. This will in turn enable public officials and victim service providers to more intentionally engage in risk assessment, planning, programing, and resource positioning, in the event of future long-lasting, public health crises such as pandemics, epidemics, natural hazards, and other catastrophes. Availability of appropriate DV screening tools in healthcare and law enforcement settings and raising awareness among first-responders and victim service providers are also critical to the timely allocation of resources to at-risk individuals.

References

Addington, L. A., & Lauritsen, J. L. (2021). Using national data to inform our understanding of family and intimate partner violence victimization: A review of a decade of innovation. *Feminist Criminology*, *16*(3), 304–319.

Apel, R., Dugan, L., & Powers, R. (2013). Gender and injury risk in incidents of assaultive violence. *Justice Quarterly*, *30*(4), 561–593.

Ashby, M. P. (2020). Initial evidence on the relationship between the coronavirus pandemic and crime in the United States. *Crime Science*, *9*(1), 6.

Bachman, R., Saltzman, L. E., Thompson, M. P., & Carmody, D. C. (2002). Disentangling the effects of self-protective behaviors on the risk of injury in assaults against women. *Journal of Quantitative Criminology*, *18*, 135–157.

Beland, L. P., Brodeur, A., Haddad, J., & Mikola, D. (2021). Determinants of family stress and domestic violence: Lessons from the COVID-19 outbreak. *Canadian Public Policy*, *47*(3), 439–459.

Berrios, D. C., & Grady, D. (1991). Domestic violence. Risk factors and outcomes. *Western Journal of Medicine*, *155*(2), 133.

Black, M. C., Basile, K. C., Breiding, M. J., Smith, S. G., Walters, M. L., Merrick, M. T., Chen, J., & Stevens, M. R. (2011). *The national intimate Partner and sexual violence survey (NISVS): 2010 Summary Report*. National Center for Injury Prevention and Control, Centers for Disease Control and Prevention.

Bullinger, L. R., Carr, J. B., & Packham, A. (2021). COVID-19 and crime: Effects of stay-at-home orders on domestic violence. *American Journal of Health Economics*, *7*(3), 249–280.

Buttell, F., Cannon, C. E. B., Rose, K., & Ferreira, R. J. (2021). COVID-19 and intimate partner violence: Prevalence of resilience and perceived stress during a pandemic. *Traumatology*, *27*(1), 20–28.

Campbell, J. C. (2002). Health consequences of intimate partner violence. *The Lancet*, *359*(9314), 1331–1336.

Campedelli, G. M., Aziani, A., & Favarin, S. (2020). Exploring the immediate effects of COVID-19 containment policies on crime: An empirical analysis of the short-term aftermath in Los Angeles. *American Journal of Criminal Justice*, *46*(5), 704–727.

Cannon, C. E. B., Ferreira, R., Buttell, F., & First, J. (2021). COVID-19, intimate partner violence, and communication ecologies. *American Behavioral Scientist*, *65*(7), 992–1013.

Chiaramonte, D., Simmons, C., Hamdan, N., Ayeni, O. O., López-Zerón, G., Farero, A., Sprecher, M., & Sullivan, C. M. (2022). The impact of COVID-19 on the safety, housing stability, and mental health of unstably housed domestic violence survivors. *Journal of Community Psychology*, *50*, 2659–2681.

Cohen, L. E., & Felson, M. (1979). Social change and crime rate trends: A routine activity approach. *American Sociological Review*, *44*(4), 588–608.

Congressional Research Service. (2022). *The 2022 violence against Women Act*. VAWA) Reauthorization.

Daday, J. K., Broidy, L. M., Crandall, C. S., & Sklar, D. P. (2005). Individual, neighborhood, and situational factors associated with violent victimization and offending. *Criminal Justice Studies*, *18*(3), 215–235.

Demir, M., & Park, S. (2022). The effect of COVID-19 on domestic violence and assaults. *Criminal Justice Review*, *47*(4), 445–463.

Drieskens, S., Braekman, E., Ridder, K. D., et al. (2022). Domestic violence during the COVID-19 confinement: Do victims feel more socially isolated? *Archives of Public Health*, *80*, 39. https://doi.org/10.1186/s13690-021-00765-3

Ellsberg, M., Caldera, T., Herrera, A., Winkvist, A., & Kullgren, G. (1999). Domestic violence and emotional distress among Nicaraguan women: Results from a population-based study. *American Psychologist*, *54*(1), 30.

Ellsberg, M., Jansen, H. A., Heise, L., Watts, C. H., & Garcia-Moreno, C. (2008). Intimate partner violence and women's physical and mental health in the WHO multi-country study on women's health and domestic violence: An observational study. *The Lancet*, *371*(9619), 1165–1172.

Evans, D. P., Hawk, S. R., & Ripkey, C. E. (2021). Domestic violence in Atlanta, Georgia before and during COVID-19. *Violence and Gender*, *8*(3), 140–147.

Felson, R. B., & Messner, S. F. (1996). To kill or not to kill? Lethal outcomes in injurious attacks. *Criminology*, *34*, 519–545.

Frailing, K., HarperJr, D. W., & Serpas, R. (2015). Changes and challenges in crime and criminal justice after disaster. *American Behavioral Scientist*, *59*(10), 1278–1291.

Gallagher, C. A. (2005). Injury recurrence among untreated and medically treated victims of violence in the USA. *Social Science & Medicine*, *60*(3), 627–635.
Gosangi, B., Park, H., Thomas, R., Gujrathi, R., Bay, C. P., Raja, A. S., & Khurana, B. (2021). Exacerbation of physical intimate partner violence during COVID-19 pandemic. *Radiology*, *298*, E38–E45.
Guerette, R. T., & Santana, S. A. (2010). Explaining victim self-protective behavior effects on crime incident outcomes: A test of opportunity theory. *Crime & Delinquency*, *56*(2), 198–226.
Haag, H. L., Toccalino, D., Estrella, M. J., Moore, A., & Colantonio, A. (2022). The shadow pandemic: A qualitative exploration of the impacts of COVID-19 on service providers and women survivors of intimate partner violence and brain injury. *The Journal of Head Trauma Rehabilitation*, *37*(1), 43–52.
Harrell, E. (2012). *Violent victimization committed by strangers, 1993–2010*. US Department of Justice, Office of Justice Programs, Bureau of Justice Statistics.
Hayes, B. E., & Powers, R. A. (2022). Heterogeneity of disabilities and the consequences of victimization: Findings from a nationally representative sample. *Justice Quarterly*, *39*(5), 1059–1078.
Heller, M. S., Ehrlich, S. M., & Lester, D. (1983). Victim-offender relationships and severity of victim injury. *Journal of Social Psychology*, *120*(2), 229–234.
Henke, A., & Hsu, L. (2022). COVID-19 and domestic violence: Economics or isolation? *Journal of Family and Economic Issues*, *43*(2), 296–309.
Hindelang, M. J., Gottfredson, M. R., & Garofalo, J. (1978). *Victims of personal crime: An empirical foundation for a theory of personal victimization*. Ballinger.
Hsu, L. C., & Henke, A. (2021). COVID-19, staying at home, and domestic violence. *Review of Economics of the Household*, *19*(1), 145–155.
Irvin-Erickson, Y., & Shariati, A. (2024a). The impact of the Covid-19 pandemic and the murder of George Floyd on victim and third-party reporting of domestic violence to the police in the US. *Journal of Criminal Justice*, *90*, 102141.
Irvin-Erickson, Y., & Shariati, A. (2024b). Covid-19 Pandemic's impact on socio-emotional problems experienced by victims of violence with disabilities. *Disability and Health Journal*, *18*(1), 101710.
Kelsay, J. D., Tillyer, M. S., Tillyer, R., & Ward, J. T. (2017). The violent victimization of children, adolescents, adults, and the elderly: Situational characteristics and victim injury. *Violence and Victims*, *32*(2), 342–361.
Kourti, A., Stavridou, A., Panagouli, E., Psaltopoulou, T., Spiliopoulou, C., Tsolia, M., Sergentanis, T. N., & Tsitsika, A. (2023). Domestic violence during the COVID-19 pandemic: A systematic review. *Trauma Violence & Abuse*, *24*(2), 719–745.
Kyriacou, D. N., Anglin, D., Taliaferro, E., Stone, S., Tubb, T., Linden, J. A., Muelleman, R., Barton, E., & Kraus, J. F. (1999). Risk factors for injury to women from domestic violence. *The New England Journal of Medicine*, *341*(25), 1892–1898.
Langton, L., & Truman, J. (2014). *Socio-emotional impact of violent crime*. US Department of Justice, Office of Justice Programs, Bureau of Justice Statistics.
Leigh, J. K., Peña, L. D., Anurudran, A., & Pai, A. (2022). Are you safe to talk? Perspectives of service providers on experiences of domestic violence during the COVID-19 pandemic. *Journal of Family Violence*, *38*(2), 215–225.
Lersch, K., & Hart, T. C. (2022). COVID-19, violent crime, and domestic violence: An exploratory analysis. *International Criminology*, *2*(1), 5–18.
Leslie, E., & Wilson, R. (2020). Sheltering in place and domestic violence: Evidence from calls for service during COVID-19. *Journal of Public Economics*, *189*, 104241.
Malpede, M., & Shayegh, S. (2022). Staying home saves lives, really! *Letters in Spatial and Resource Sciences*, *15*(3), 637–651.
McNeeley, S. (2015). Lifestyle-routine activities and crime events. *Journal of Contemporary Criminal Justice*, *31*(1), 30–52.
Melde, C., & Rennison, C. M. (2008). The effect of gang perpetrated crime on the likelihood of nonlethal victim injury. *American Journal of Criminal Justice*, *33*(2), 234–251. https://doi.org/10.1007/s12103-008-9044-0
Miller, A. R., Segal, C., & Spencer, M. K. (2022). Effects of COVID-19 shutdowns on domestic violence in US cities. *Journal of Urban Economics*, *131*, 103476.
Muldoon, K. A., Denize, K. M., Talarico, R., Fell, D. B., Sobiesiak, A., Heimerl, M., & Sampsel, K. (2021). COVID-19 pandemic and violence: Rising risks and decreasing urgent care-seeking for sexual assault and domestic violence survivors. *BMC Medicine*, *19*(1), 1–9.

Olding, J., Zisman, S., Olding, C., & Fan, K. (2021). Penetrating trauma during a global pandemic: Changing patterns in interpersonal violence, self-harm and domestic violence in the Covid-19 outbreak. *The Surgeon*, *19*(1), e9–e13.

Piquero, A. R., Riddell, J. R., Bishopp, S. A., et al. (2020). Staying home, staying safe? A short-term analysis of COVID-19 on Dallas domestic violence. *American Journal of Criminal Justice*, *45*, 601–635.

Piquero, A. R., Jennings, W. G., Jemison, E., Kaukinen, C., & Knaul, F. M. (2021). Domestic violence during the COVID-19 pandemic - evidence from a systematic review and meta-analysis. *Journal of Criminal Justice*, *74*, 101806.

Powers, R. A., & Simpson, S. S. (2012). Self-protective behaviors and injury in domestic violence situations: Does it hurt to fight back? *Journal of Interpersonal Violence*, *27*(17), 3345–3365.

Pratt, T. C., & Turanovic, J. J. (2016). Lifestyle and routine activity theories revisited: The importance of risk to the study of victimization. *Victims & Offenders*, *11*(3), 335–354.

Ragavan, M. I., Risser, L., Duplessis, V., DeGue, S., Villaveces, A., Hurley, T. P., & Randell, K. A. (2022). The impact of the COVID-19 pandemic on the needs and lived experiences of intimate partner violence survivors in the United States: Advocate perspectives. *Violence against Women*, *28*(12–13), 3114–3134.

Ravi, K. E., Rai, A., & Schrag, R. V. (2022). Survivors' experiences of intimate partner violence and shelter utilization during COVID-19. *Journal of Family Violence*, *37*(6), 979–990.

Rebbe, R., Lyons, V. H., Webster, D., et al. (2022). Domestic violence alleged in California child maltreatment reports during the COVID-19 pandemic. *Journal of Family Violence*, *37*, 1041–1048.

Rhodes, H. X., Petersen, K., Lunsford, L., & Biswas, S. (2020). COVID-19 resilience for survival: Occurrence of domestic violence during lockdown at a rural American college of surgeons verified level one trauma center. *Cureus*, *12*(8), e10059.

Roberts, G. L., Williams, G. M., Lawrence, J. M., & Raphael, B. (1999). How does domestic violence affect women's mental health? *Women & Health*, *28*(1), 117–129.

Ross, A. N., Duchesne, E., Lewis, J., Norman, P. A., Bartels, S. A., Walker, M., & Rocca, N. (2023). Urgent care-seeking and injury severity for intimate partner violence during COVID-19: A Canadian retrospective chart review. *Bmc Public Health*, *23*(1), 2169.

Sabri, B., Hartley, M., Saha, J., Murray, S., Glass, N., & Campbell, J. C. (2020). Effect of COVID-19 pandemic on women's health and safety: A study of immigrant survivors of intimate partner violence. *Health Care for Women International*, *41*(11–12), 1294–1312.

Sediri, S., Zgueb, Y., Ouanes, S., et al. (2020). Women's mental health: Acute impact of COVID-19 pandemic on domestic violence. *Archives of Women's Mental Health*, *23*, 749–756.

Shariati, A., & Guerette, R. T. (2022). Findings from a natural experiment on the impact of covid-19 residential quarantines on domestic violence patterns in New Orleans. *Journal of Family Violence*, *38*(2), 203–214.

Sharma, A., & Borah, S. B. (2020). COVID-19 and domestic violence: An indirect path to social and economic crisis. *Journal of Family Violence*, *37*, 759–765.

Singh, J. K., & Duncan, T. K. (2022). Examining the domestic violence crisis in Ventura County in the wake of the COVID-19 pandemic. *The American Surgeon*, *89*(11), 4353–4359.

Smith, S. G., Zhang, X., Basile, K. C., Merrick, M. T., Wang, J., Kresnow, M., & Chen, J. (2018). *The national intimate partner and sexual violence survey: 2015 data brief* – updated release. Atlanta: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention. Retrieved from https://stacks.cdc.gov/view/cdc/60893

Sorenson, S. B., Sinko, L., & Berk, R. A. (2021). The endemic amid the pandemic: Seeking help for violence against women in the initial phases of COVID-19. *Journal of Interpersonal Violence*, *36*(9–10), 4899–4915.

Stubbs, A., & Szoeke, C. (2022). The effect of intimate partner violence on the physical health and health-related behaviors of women: A systematic review of the literature. *Trauma Violence & Abuse*, *23*(4), 1157–1172.

Sweet, P. L. (2024). Clustered vulnerabilities: The unequal effects of COVID-19 on domestic violence. *American Sociological Review*, *89*(3), 421–448.

Thiel, F., Büechl, V. C., Rehberg, F., Mojahed, A., Daniels, J. K., Schellong, J., & Garthus-Niegel, S. (2022). Changes in prevalence and severity of domestic violence during the COVID-19 pandemic: A systematic review. *Frontiers in Psychiatry*, *13*, 874183.

Thompson, M. P., Saltzman, L. E., & Johnson, H. (2003). A comparison of risk factors for intimate partner violence–related injury across two national surveys on violence against women. *Violence against Women*, *9*(4), 438–457.

Tripathi, P., Dwivedi, P. S., & Sharma, S. (2022). Psychological impact of domestic violence on women in India due to COVID-19. *International Journal of Human Rights in Healthcare*, *16*(2), 146–161. https://doi.org/10.1108/IJHRH-12-2021-0208

Turanovic, J. J., & Pratt, T. C. (2019). *Thinking about victimization: Context and consequences*. Routledge.

UN Women (2021). *Measuring the Shadow Pandemic: Violence Against Women During COVID-19*. https://data.unwomen.org/publications/vaw-rga

Walton-Moss, B. J., Manganello, J., Frye, V., & Campbell, J. C. (2005). Risk factors for intimate partner violence and associated injury among urban women. *Journal of Community Health*, *30*, 377–389.

Weaver, G. S., Wittekind, C., Huff-Corzine, J. E., Corzine, L., Petee, J., T. A., & Jarvis, J. P. (2004). Violent encounters: A criminal event analysis of lethal and non- lethal outcomes. *Journal of Contemporary Criminal Justice*, *20*, 348–368.

Wilkinson, D. L., & Hamerschlag, S. J. (2005). Situational determinants in intimate partner violence. *Aggression and Violent Behavior*, *10*(3), 333–361.

Wood, L., Schrag, R. V., Baumler, E., Hairston, D., Guillot-Wright, S., Torres, E., & Temple, J. R. (2022). On the front lines of the COVID-19 pandemic: Occupational experiences of the intimate partner violence and sexual assault workforce. *Journal of Interpersonal Violence*, *37*, 11–12.

Wright, E. N., Miyamoto, S., & Richardson, C. (2022). The impact of COVID-19 restrictions on victim advocacy agency utilization across Pennsylvania. *Journal of Family Violence*, *37*, 907–913.

Wu, V., Huff, H., & Bhandari, M. (2010). Pattern of physical injury associated with intimate partner violence in women presenting to the emergency department: A systematic review and meta-analysis. *Trauma Violence & Abuse*, *11*(2), 71–82.

Zahran, S., Shelley, T. O. C., Peek, L., & Brody, S. D. (2009). Natural disasters and social order: Modeling crime outcomes in Florida. *International Journal of Mass Emergencies & Disasters*, *27*(1), 26–52.

Auzeen Shariati, PhD, is an Assistant Professor in the Department of Criminology, Law and Society at George Mason University. Her primary research interests are victimization and crime prevention.

Yasemin Irvin-Erickson, PhD, is an Assistant Professor in the Department of Criminology, Law and Society at George Mason University. Her major research interests lie in the areas of victimization and violence.