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Abstract

This study examined effects of impairments in physical and mental health on the risk of intimate partner violence (IPV) victimization in a nationally representative sample of U.S. adults (≥ 18 years). A total of 34,563 adults completed interviews in two waves of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). Physical and mental health impairments, as well as IPV victimization, were assessed using validated surveys in the total sample and by gender. In the total sample, physical health impairments at Wave 1 (odds ratio [OR] = 1.22, 95% confidence interval [CI] = [1.04, 1.42], $p < .05$) and mental health impairments at Wave 1 (OR = 1.67, 95% CI = [1.45, 1.91], $p < .001$) were significantly associated with higher risk of IPV victimization at Wave 2, compared with

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those without reported impairments. Higher risk of later IPV victimization was also seen among females who reported physical health impairments ($OR = 1.26$, 95% CI [1.04, 1.53], $p < .05$) and mental health impairments ($OR = 1.93$, 95% CI = [1.63, 2.28], $p < .001$) compared with those who did not report similar limitations. Among males, higher risk of IPV victimization was significantly associated with mental health impairments ($OR = 1.48$, 95% CI = [1.19, 1.82], $p < .001$), compared with those without mental health impairments. Adults with physical and mental health impairments may benefit from targeted interventions aimed at preventing IPV.

Keywords

domestic violence, predicting domestic violence, abuse, victimization, disability

Introduction

Intimate partner violence (IPV)¹ is pervasive in the United States. Past-year IPV estimates range from 25% to 35.6% for women and 7.6% to 28.5% for men (Black et al., 2011; Tjaden & Thoennes, 2000). Of note, people with disabilities² may be even more susceptible to IPV, due to key risk factors, such as lower socioeconomic status (e.g., more poverty, less education and income), increased isolation, and increased dependency on others (Andrews & Veronen, 1993; Brownridge, 2006; Curry, Hassouneh-Phillips, & Johnston-Silverberg, 2001; Nosek, Foley, Hughes, & Howland, 2001). However, the burden of IPV among people with disabilities is difficult to estimate, as reports vary so widely. Past-year IPV prevalence estimates against U.S. adults with disabilities range from 2% to 70% among women and 36.7% among men (as reviewed by R. B. Hughes, Lund, Gabrielli, Powers, & Curry, 2011). In an international review, authors report a pooled prevalence rate of 37.8% of past-year IPV victimization across three studies (K. Hughes et al., 2012).

In addition, estimating the prevalence of disability status is sensitive to definitions used. In the 2005 Census Supplement, 18.7% of adults (≥ 18 years) reported disabilities based on activity, sensory or physical limitations, but excluded certain health conditions (e.g., arthritis, heart disease), mental health, and mild disabilities (Brault, 2008). By contrast, in the 2001-2005 National Health Interview Survey (NHIS), which defined disabilities by WHO standards, 29.5% of adults reported difficulty with basic actions (e.g., mobility, sensory, cognitive, or emotional difficulties) and complex activities (e.g., work and personal care limitations). The above estimates may not have captured people who used alternative forms of communication, were more

severely impaired and/or institutionalized (Altman & Bernstein, 2008; Bryen, Carey, & Frantz, 2003; Petersilia, 2001), and may, therefore, have underestimated the population prevalence of disabilities. What is clear, however, is that adults with disabilities comprise a significant proportion of the U.S. population, and documenting exposure to IPV among people with disabilities is of critical importance.

Limited data surveillance exists that provides national, state, or local information on victimization against people with disabilities (Rand & Harrell, 2009; Tyiska, 2001), but key studies have shown the following results among women with disabilities. In a 1997 national study, more than 60% of women with physical disabilities experienced IPV (e.g., physical, sexual, or emotional abuse) in their lifetime, at rates similar to women without disabilities (Young, Nosek, Howland, Chanpong, & Rintala, 1997). However, this landmark study cautioned generalizability of its results, as it examined physical disabilities only, used mail surveys rather than interviews with a low response rate, and used convenience samples, where 80% of the total sample was White (Nosek, Howland, Rintala, Young, & Chanpong, 2001; Young et al., 1997). Two large cross-sectional studies used Centers for Disease Control and Prevention's (CDC) Behavioral Risk Factor Surveillance Survey (BRFSS) data to show that women with disabilities were significantly more likely to have experienced lifetime IPV than those without disabilities (Barrett, O'Day, Roche, & Carlson, 2009; Smith, 2008). However, Barrett and colleagues (2009) had a low response rate in the seven states surveyed, and neither study was able to use longitudinal data or examine specific forms of disabilities (e.g., cognitive or physical disabilities). In general, there have been few large or population-based studies in the United States or worldwide examining interpersonal violence against a representative sample of women with multiple disability types (K. Hughes et al., 2012; Nosek, Foley, et al., 2001; Powers, Hughes, Lund, & Wambach, 2009).

Very little empirical work examining the relationship between disability and victimization has been conducted in men but suggests that men with disabilities face higher rates of abuse than men without disabilities (Cohen, Forte, Du Mont, Hyman, & Romans, 2006; Petersilia, 2001; Powers et al., 2008). In a Canadian cross-sectional study of people with activity limitations (AL), Cohen and colleagues (2006) used ALs as proxy measures for disabilities to include people who "reported difficulties with activities of daily living or persons who have a physical or mental condition or health problem that limits the kind of activities that they can perform." By emphasizing health limitations, this study encompassed a wider population of people with disabilities. Results showed that men with ALs experienced significantly higher rates of physical, emotional, and financial IPV compared with men without

ALs, using an epidemiologic sample (Cohen et al., 2006). Similar population-based studies should be conducted in the United States, using longitudinal data and including both genders.

Four key issues have limited understanding of the public health burden of IPV among women and men with disabilities. First, with a few notable exceptions (Casteel, Martin, Smith, Gurka, & Kupper, 2008; Curry et al., 2001; Martin et al., 2006; Young et al., 1997), large-scale or epidemiologic studies using diverse samples have not been conducted, especially in the United States. Instead, most studies rely on small, homogeneous, and/or convenience samples (Gilson, Cramer, & DePoy, 2001; Powers et al., 2002; Young et al., 1997) that may result in bias or limited generalizability, and do not represent the diversity of people with disabilities (e.g., by age, race/ethnicity, or disability type; Lightfoot & Williams, 2009; Powers et al., 2009). Furthermore, experts (e.g., Petersilia, 2001; Powers et al., 2009) point out that studies often exclude males (Brownridge, 2006; Martin et al., 2006; Nosek, Foley, et al., 2001). Second, victimization studies among persons with disabilities can be difficult to interpret, due to variation in the definitions of disability and IPV. Third, most studies are not longitudinal, which prevents establishing temporality between disability and victimization (Cohen et al., 2006; K. Hughes et al., 2012; Nosek, Foley, et al., 2001; Young et al., 1997). Fourth, studies often use caregivers or staff for proxy interviews, although both may be unaware of ongoing abuse or may be perpetrators themselves (Curry et al., 2001; Nosek, Foley, et al., 2001; Petersilia, 2001; Powers et al., 2009).

In this study, “physical or mental health impairments” are examined as key aspects of disabilities that capture functional health and quality of life, and to encompass a wider range of people with disabilities in the general population. To address the limitations of prior research, we examine the association between physical and mental health impairments and IPV victimization, using longitudinal data from a nationally representative sample. To our knowledge, this is the first epidemiologic study to analyze the independent effects of physical and mental health impairments on later IPV victimization among adults, and by gender, in the United States.

Method

Sample

This study used data from the National Epidemiologic Survey of Alcohol and Related Conditions (NESARC), conducted from 2001 to 2005 (Grant & Dawson, 2005; Grant & Kaplan, 2005). NESARC used face-to-face interviews with computer assistance at respondents’ homes and a multi-stage

sampling design to generate a nationally representative sample of U.S. adults above 18 years of age (Grant & Kaplan, 2005; Ruan et al., 2008; Stetser, Shepherd, & Moore, 2002). The sample included 43,093 respondents at Wave 1 (2001-2002; 81.2% of all eligible) and 34,653 adults at Wave 2 (2004-2005; 86.7% of Wave 1 respondents; 70.2% of all eligible; Grant & Kaplan, 2005; Ruan et al., 2008; Stetser et al., 2002). Wave 1 respondents who were excluded from Wave 2 met the following criteria: 4% were institutionalized, severely physically or mentally impaired, or on active military duty for all of Wave 2; and 3.3% were deceased, deported, or out of the country (Grant & Kaplan, 2005).

Measures

Outcomes

IPV victimization in the past year assessed at Wave 2. At Wave 2, respondents who reported being in a relationship were asked about IPV victimization in the past year. Six questions from the Conflict Tactics Scales (CTS) were summed to assess whether respondents' had experienced one or more of the following by their partner: (a) pushed, grabbed, or shoved them; (b) slapped, kicked, bit, or punched them; (c) threatened them with a weapon like a gun or knife; (d) cut or bruised them; (e) forced sex; and/or (f) caused injury requiring medical care (Straus & Gelles, 1990). Low prevalence of individual IPV items was reported so we combined these five items into "Yes or No IPV victimization," based on whether one or more of the above experiences had occurred.

Predictors

Physical and mental health impairments at Wave 1. In this study, we assessed physical or mental health impairments using the validated Short Form-12, Version 2 (SF-12v2) at Wave 1. The SF-12v2 has been commonly used in population surveys and health settings to capture health functioning and quality of life (Gandek et al., 1998; Sanderson & Andrews, 2002). It is designed to generate an overall physical component score to assess physical health impairments that included physical functioning (e.g., limitations to moderate activities), role physical functioning (e.g., impairment due to health condition), bodily pain, and vitality. The survey also generates an overall mental component summary score to measure mental health, social functioning, and emotional functioning (Grant et al., 2008; Hasin, Stinson, Ogburn, & Grant, 2007).

Each SF-12v2 component score was treated as a continuous variable with a mean of 50 in the general population ($SD = \pm 10$, range = 0-100), where lower scores indicated more impairment (Grant et al., 2008; Hasin et al., 2007). We defined impairment as scores below the mean (0-49), as in prior studies (e.g., Grant et al., 2008; Sanderson & Andrews, 2002) and established by Ware, Kosinski, and Keller (1995). We accordingly dichotomized the overall physical component score as “Yes or No physical health impairments,” and the overall mental component score as “Yes or No mental health impairments.” It should be noted that scores below the median do not indicate a 50% prevalence rate.

Demographic covariates at Wave 1. Respondents reported categories of age, gender, and race/ethnicity as single items. Although no composite score for socioeconomic status was measured in NESARC, various indicators of socioeconomic position were captured via self-reported education, annual household income, and past-year poverty (i.e., a dichotomous score based on whether the individual had received welfare, aid, and/or food stamps; Lynch & Kaplan, 2000).

Analysis Plan

We conducted analyses using SUDAAN software to account for correlated responses secondary to NESARC's nested sampling design (Research Triangle Institute International, 2008; Stetsler et al., 2002). Using bivariate analyses, we tested variables that were significantly associated with impairment types and IPV victimization to be included in the final models (Table 1).³ NESARC algorithms included weights in Wave 2 to adjust for attrition and to ensure that there were no significant differences in age, race/ethnicity, and measures of socioeconomic position between Wave 2 respondents and non-respondents (Grant et al., 2009). In addition, we tested for differences between Wave 2 respondents and those missing IPV data.

We used multi-variable logistic regression analyses to assess whether adults with physical health impairments were more likely to experience IPV victimization than those who did not report similar limitations, and whether adults with mental health impairments were more likely to experience IPV victimization than those without these impairments. Analyses were conducted in the full sample, and separately for males and females. OR and 95% CI were calculated from a series of regression models that estimated the association between physical and mental health impairments and later IPV victimization. Adjusted models included age, race-ethnicity, and measures of socioeconomic position (i.e., income, education, and poverty) as potential

Table 1. Bivariate Analysis Examining Predictors and Key Covariates With IPV Victimization in NESARC.

Variable	Total (N = 9,027)	Females (n = 6,246)	Males (n = 2,781)
	OR [95% CI]	OR [95% CI]	OR [95% CI]
Physical health impairments			
Yes	1.06 [0.91, 1.22]	1.18 [0.98, 1.41]†	0.95 [0.77, 1.18]
No (ref.)	—	—	—
Mental health impairments			
Yes	1.83 [1.60, 2.09]***	2.20 [1.85, 2.61]***	1.54 [1.26, 1.89]***
No (ref.)	—	—	—
Sex			
Female	0.94 [0.83, 1.05]	—	—
Male (ref.)	—	—	—
Race/ethnicity			
White (ref.)	—	—	—
Black	2.41 [2.08, 2.80]***	2.38 [1.96, 2.88]***	2.45 [1.93, 3.10]***
Latino	1.76 [1.50, 2.08]***	1.62 [1.34, 1.97]***	1.88 [1.46, 2.43]***
Asian/Pacific Islander	1.04 [0.61, 1.79]	0.55 [0.31, 1.00]*	1.52 [0.77, 3.01]
Native American	1.81 [1.23, 2.66]**	2.30 [1.45, 3.66]**	1.29 [0.64, 2.61]
Age			
18-35 years	5.43 [3.91, 7.54]***	5.83 [3.52, 9.64]***	5.33 [3.44, 8.26]***
35-49 years	3.72 [2.66, 5.21]***	4.58 [2.73, 7.67]***	3.20 [2.05, 5.00]***
50-64 years	1.63 [1.11, 2.40]*	1.75 [0.99, 3.10]†	1.58 [0.97, 2.58]†
65+ years (ref.)	—	—	—
Education			
Less than high school diploma	2.22 [1.75, 2.82]***	3.07 [2.23, 4.22]***	1.77 [1.25, 2.49]**
High school graduate/ GED	1.83 [1.49, 2.26]***	2.50 [1.91, 3.28]***	1.46 [1.10, 1.95]*
Some college or associates	1.84 [1.51, 2.25]***	2.40 [1.84, 3.15]***	1.54 [1.16, 2.04]**
College graduate or more (ref.)	—	—	—
Annual household income			
<\$10,000	2.35 [1.72, 3.21]***	3.05 [1.95, 4.76]***	1.87 [1.17, 2.97]**
\$10,000-\$29,999	2.15 [1.68, 2.74]***	2.65 [1.79, 3.92]***	1.84 [1.36, 2.50]**
\$30,000-\$49,999	1.61 [1.24, 2.09]**	1.89 [1.24, 2.87]**	1.45 [1.05, 2.00]*
\$50,000-\$64,999	1.52 [1.16, 2.00]**	1.87 [1.21, 2.90]**	1.31 [0.94, 1.85]
\$70,000-\$99,999	1.02 [0.77, 1.36]	0.84 [0.50, 1.40]*	1.15 [0.80, 1.66]
≥\$100,000 (ref.)	—	—	—
Past-year poverty			
Yes	2.62 [2.20, 3.11]***	3.41 [2.78, 4.17]***	1.54 [1.05, 2.24]*
No (ref.)	—	—	—

Note. IPV = intimate partner violence; NESARC = National Epidemiologic Survey on Alcohol and Related Conditions; OR = odds ratio; CI = confidence interval; GED = general education development.

†p < .10. *p < .05. **p < .01. ***p < .001.

confounders (Rothman, Greenland, & Lash, 2008). In final models, authors examined the impact of physical and mental health impairments simultaneously, while controlling for the above key covariates.

We also conducted subscale analyses in the total sample and by gender. The SF-12v2 subscales for physical functioning, physical role functioning, bodily pain, and mental health were examined to demonstrate their independent relationship with IPV victimization.

Results

Demographics

Table 2 presents demographics for the total sample and separately for females and males.

In addition, key information for those missing IPV victimization data is reported below (complete information provided on request). Among all respondents, those missing IPV items were more likely to report older age (OR for ≥ 65 years vs. all other ages = 3.94, 95% CI = [3.56, 4.35], $p < .001$) and measures of lower socioeconomic position (OR for some high school or less vs. all other education levels = 2.80, 95% CI = [2.50, 3.13], $p < .001$; OR for annual income $\leq \$10,000$ vs. all other income levels = 9.71, 95% CI = [8.03, 11.75], $p < .001$; OR for those reporting past-year poverty vs. no reported poverty = 1.54, 95% CI = [1.34, 1.77], $p < .001$), compared with those not missing data. Those missing IPV data were also more likely to report physical health (OR = 2.19, 95% CI = [2.06, 2.34], $p < .001$) and mental health impairments (OR = 1.46, 95% CI = [1.36, 1.56], $p < .001$). The same trends were seen for males and females who were missing IPV data.

Prevalence of Impairment Types and IPV Victimization

In the present sample, 30% ($n = 10,389$) of all respondents, 32.6% (6,539) of females, and 26.1% (3,710) of males met criteria for physical health impairments at Wave 1 (Table 2). In addition, 28.8% (9,982) of respondents, 32.3% (6,488) of females, and 23.9% (3,334) of males met criteria for mental health impairments at Wave 1. Of note, 10.6% (4,040) of respondents reported both physical and mental health impairments in the total sample, as well as 13.5% (2,709) of females and 9.1% (1,331) of males (Table 2).

In the present sample, 4.6% (1,597) of all adults, 4.4% (890) of females, and 4.9% (713) of males reported past-year IPV victimization at Wave 2 (Table 2). Of note, among those who reported IPV victimization, individuals

Table 2. Distribution of Key Covariates, Physical and Mental Health Impairments, and Outcomes Among Non-Institutionalized Adults, Females, and Males in Wave I of NESARC.

Variable	Total (N = 34,653)	Females (n = 20,089)	Males (n = 14,564)
	n (%)	%	%
Demographics at Wave I			
Age (M)	(45 years, SE = 0.17)	(46 years, SE = 0.20)	(44 years, SE = 0.20)
18-34 years	29.5	29.7	29.2
35-49 years	29.6	28.5	31.1
50-64 years	21.6	21.2	22.1
≥65 years	17.3	18.6	15.6
Missing	2.0	2.1	1.9
Race/ethnicity			
White	58.2	56.3	60.8
Black	19.0	21.2	15.9
Latino	18.3	18.1	18.7
Asian/Pacific Islander	2.8	2.7	2.9
Native American	1.7	1.7	1.7
Missing	0	0	0
Marital status			
Married or partnered	53.1	49.4	58.2
Divorced or separated	15.9	17.5	13.7
Widowed	8.8	12.6	3.6
Never married	22.2	20.5	24.5
Missing	0	0	0
Education			
Less than high school diploma	16.6	16.9	16.2
High school graduate/GED	28.7	29.3	27.9
Some college or associates	30.2	30.8	29.4
College graduate or more	24.5	23.0	26.5
Missing	0	0	0
Annual household income			
<\$10,000	10.8	13.7	6.8
\$10,000-\$29,999	29.0	31.3	25.7
\$30,000-\$49,999	24.0	22.9	25.6
\$50,000-\$69,999	15.3	14.0	17.0
\$70,000-\$99,999	11.2	9.9	13.1
≥\$100,000	9.7	8.2	11.7
Missing	0	0	0
Past-year poverty			
Yes	8.7	12.1	4.1
No	91.3	87.9	95.9
Missing	0	0	0

(continued)

Table 2. (continued)

Variable	Total (N = 34,653)	Females (n = 20,089)	Males (n = 14,564)
	n (%)	%	%
Disability Status at Wave 1			
Physical health impairments			
Yes	30.0	32.6	26.1
No	67.6	65.0	71.1
Missing	2.4	2.5	2.4
Mental health impairments			
Yes	28.8	32.3	23.9
No	68.8	65.2	73.8
Missing	2.3	2.5	2.2
Both health impairments			
Yes	10.6	13.5	9.1
No	83.6	81.6	86.3
Missing	5.8	4.9	4.6
Outcome			
IPV victimization in the past year at Wave 2			
Yes	4.6	4.4	4.9
No	68.8	64.5	76.0
Missing	26.0	31.1	19.0
Partner pushed, grabbed, or shoved you in the past year			
Yes	4.1	3.9	4.3
No	69.9	65.0	76.7
Missing	26.0	31.0	19.0
Partner slapped, kicked, bit, or punched you in the past year			
1. Yes	2.0	1.8	2.3
2. No	72.0	67.2	78.6
Missing	26.0	31.0	19.0
Partner threatened you with a weapon in the past year			
Yes	0.5	0.4	0.6
No	73.5	68.5	80.4
Missing	26.0	31.0	19.0
Partner cut or bruised you in the past year			
Yes	0.9	1.0	0.7
No	73.4	68.0	80.3
Missing	26.0	31.1	19.0
Partner forced sex from you in the past year			
Yes	0.6	0.8	0.5
No	73.5	68.2	80.4
Missing	26.0	31.1	19.1
Partner injured you to the level that required medical care in the past year			
Yes	0.3	6.3	0.2
No	73.9	68.6	80.8
Missing	26.0	31.0	19.0

Note. NESARC = National Epidemiologic Survey on Alcohol and Related Conditions; GED = general education development; IPV = intimate partner violence.

were most likely to report that their partner had “pushed, grabbed, or shoved” them in the past year or that their partner had “slapped, kicked, bit, or punched” them in the past year (Table 2).

Among individuals reporting physical health impairments at Wave 1, 4.3% (1,490) of all respondents, 4.1% (823) of women, and 4.7% (684) of men experienced past-year IPV victimization at Wave 2. Among individuals with mental health impairments at Wave 1, 6.4% (2,217) of all respondents, 6.5% (1,306) of women, and 6.1% (888) of men experienced past-year IPV victimization at Wave 2.

In contrast, among respondents in the sample who did not report physical health impairments at Wave 1, 3.2% (1,108) in the total sample, 3% (602) women, and 3.6% (524) males reported past-year IPV victimization at Wave 2. Among respondents in the sample who did not report mental health impairments at Wave 1, 2.7% (936) in the total sample, 2.2% (441) women, and 3.3% (481) males reported past-year IPV victimization at Wave 2.

Models of Disabilities and Risk of IPV Victimization

Among all respondents, the presence of physical impairments at Wave 1 increased risk of IPV victimization at Wave 2, when controlling for differences in age, race/ethnicity, income, education, and poverty (Table 3). The presence of mental health impairments at Wave 1 also increased the risk of IPV victimization among all Wave 2 respondents, when controlling for the same confounders (Table 3). Similar results were seen when adjusting for both disability types and key covariates (Table 3).

Among females, the presence of physical and mental health impairments at Wave 1 increased risk of IPV victimization at Wave 2, when controlling for differences in the above demographics (Table 4). However, for men, a significantly increased risk for IPV was seen only with mental impairments, when including both impairment types in the final model, adjusting for both disability types and key covariates (Table 5).

Results were in a similar direction and magnitude for all subscales. Among all respondents and females, results achieved a slightly higher magnitude and level of significance for all physical scales. Among males, results achieved a slightly higher magnitude and level of significance associated with more physical pain and higher IPV victimization risk ($p = .06$ vs. not significant).

Discussion

This article documents a significant association between physical and mental health impairments and subsequent reports of IPV victimization after

Table 3. Impact of Physical and Mental Health Impairments on IPV Victimization, Controlling for Key Covariates, Among All Non-Institutionalized Adults (N = 34,653) in NESARC.

Variable	Model 1: Physical Health Impairments	Model 2: Mental Health Impairments	Model 3: Both Impairments
	OR (95% CI)	OR (95% CI)	OR (95% CI)
Physical health impairments			
Yes	1.22 [1.04, 1.42]*	N/A	1.19 [1.01, 1.39]*
No (ref.)	—	N/A	—
Mental health impairments			
Yes	N/A	1.67 [1.45, 1.91]***	1.63 [1.42, 1.88]***
No (ref.)	N/A	—	—
Race/ethnicity			
White (ref.)	—	—	—
Black	1.86 [1.60, 2.17]***	1.87 [1.61, 2.18]***	1.86 [1.59, 2.16]***
Latino	1.24 [1.02, 1.50]*	1.22 [1.00, 1.47]*	1.24 [1.02, 1.51]*
Asian/Pacific Islander	1.05 [0.62, 1.80]	0.96 [0.54, 1.70]	0.98 [0.55, 1.75]
Native American	1.56 [1.05, 2.32]*	1.49 [1.01, 2.19]*	1.50 [1.01, 2.24]*
Age			
18-35 years	3.72 [2.85, 4.84]***	3.47 [2.67, 4.51]***	3.65 [2.78, 4.78]***
35-49 years	2.84 [2.17, 3.71]***	2.67 [2.04, 3.49]***	2.71 [2.05, 3.57]***
50-64 years	1.24 [0.89, 1.72]	1.22 [0.88, 1.69]	1.21 [0.87, 1.69]
65+ years (ref.)	—	—	—
Education			
Less than high school diploma	1.55 [1.19, 2.03]**	1.60 [1.23, 2.09]***	1.54 [1.18, 2.01]**
High school graduate or GED	1.47 [1.17, 1.84]**	1.53 [1.20, 1.93]***	1.48 [1.18, 1.86]**
Some college or associates	1.45 [1.18, 1.78]***	1.48 [1.20, 1.83]***	1.45 [1.17, 1.80]***
College graduate or more (ref.)	—	—	—
Annual household income			
<\$10,000	1.30 [0.94, 1.81]	1.21 [0.86, 1.69]	1.19 [0.85, 1.66]
\$10,000-\$29,999	1.44 [1.11, 1.88]**	1.37 [1.04, 1.79]*	1.36 [1.05, 1.78]*
\$30,000-\$49,999	1.17 [0.90, 1.53]	1.15 [0.88, 1.51]	1.13 [0.87, 1.48]
\$50,000-\$64,999	1.19 [0.90, 1.57]	1.17 [0.88, 1.55]	1.16 [0.88, 1.53]
\$70,000-\$99,999	0.89 [0.67, 1.19]	0.89 [0.66, 1.19]	0.89 [0.66, 1.19]
≥\$100,000 (ref.)	—	—	—
Past-year poverty			
Yes	1.40 [1.14, 1.70]**	1.44 [1.18, 1.75]***	1.37 [1.12, 1.67]**
No (ref.)	—	—	—
Missing	9,572	9,655	10,283

Note. IPV = intimate partner violence; NESARC = National Epidemiologic Survey on Alcohol and Related Conditions; OR = odds ratio; CI = confidence interval; GED = general education development.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4. Impact of Physical and Mental Health Impairments on IPV Victimization, Controlling for Key Covariates, Among All Non-Institutionalized Adult Females (n = 20,089) in NESARC.

Variable	Model 1: Physical Health Impairments	Model 2: Mental Health Impairments	Model 3: Both Impairments
	OR (95% CI)	OR (95% CI)	OR (95% CI)
Physical health impairments			
Yes	1.26 [1.04, 1.53]*	N/A	1.24 [1.01, 1.51]*
No (ref.)	—	N/A	—
Mental health impairments			
Yes	N/A	1.93 [1.63, 2.28]***	1.88 [1.58, 2.23]***
No (ref.)	N/A	—	—
Race/ethnicity			
White (ref.)	—	—	—
Black	1.63 [1.32, 2.01]***	1.68 [1.37, 2.07]***	1.65 [1.33, 2.04]***
Latino	1.07 [0.86, 1.33]	1.06 [0.85, 1.33]	1.09 [0.87, 1.37]
Asian/Pacific Islander	0.60 [0.34, 1.06]†	0.61 [0.34, 1.09]†	0.63 [0.35, 1.12]
Native American	1.85 [1.15, 2.99]*	1.68 [1.32, 2.15]*	1.69 [1.05, 2.73]*
Age			
18-35 years	3.46 [2.35, 5.09]***	3.35 [2.27, 4.95]***	3.55 [2.38, 5.29]***
35-49 years	3.31 [2.21, 4.94]***	3.20 [2.13, 4.83]***	3.26 [2.16, 4.94]***
50-64 years	1.27 [0.80, 2.01]	1.24 [0.78, 1.97]	1.27 [0.79, 2.02]
65+ years (ref.)	—	—	—
Education			
Less than high school diploma	1.87 [1.30, 2.71]**	1.92 [1.33, 2.78]***	1.77 [1.22, 2.55]**
High school graduate/GED	1.88 [1.38, 2.56]***	1.90 [1.39, 2.60]***	1.83 [1.34, 2.50]***
Some college or associates	1.78 [1.33, 2.39]***	1.75 [1.29, 2.36]***	1.70 [1.26, 2.29]***
College graduate or more (ref.)	—	—	—
Annual household income			
<\$10,000	1.54 [0.94, 2.54]†	1.36 [0.81, 2.28]	1.35 [0.81, 2.26]
\$10,000-\$29,999	1.69 [1.08, 2.65]*	1.51 [0.96, 2.28]†	1.55 [0.98, 2.45]†
\$30,000-\$49,999	1.38 [0.88, 2.16]	1.31 [0.83, 2.09]	1.34 [0.84, 2.13]
\$50,000-\$64,999	1.46 [0.92, 2.31]	1.43 [0.89, 2.30]	1.46 [0.91, 2.34]
\$70,000-\$99,999	0.74 [0.43, 1.25]	0.70 [0.41, 1.20]	0.74 [0.43, 1.26]
≥\$100,000 (ref.)	—	—	—
Past-year poverty			
Yes	1.80 [1.41, 2.29]***	1.82 [1.44, 2.30]***	1.77 [1.39, 2.25]***
No (ref.)	—	—	—
Missing	6,597	6,605	6,953

Note. IPV = intimate partner violence; NESARC = National Epidemiologic Survey on Alcohol and Related Conditions; OR = odds ratio; CI = confidence interval; GED = general education development.

†p < .10. *p < .05. **p < .01. ***p < .001.

Table 5. Impact of Physical and Mental Health Impairments on IPV Victimization, Controlling for Key Covariates, Among Non-Institutionalized Adult Males ($n = 14,564$) in NESARC.

Variable	Model 1: Physical Health Impairments	Model 2: Mental Health Impairments	Model 3: Both Impairments
	OR (95% CI)	OR (95% CI)	OR (95% CI)
Physical health impairments			
Yes	1.20 [0.96, 1.50]	N/A	1.16 [0.92, 1.46]
No (ref.)	—	N/A	—
Mental health impairments			
Yes	N/A	1.48 [1.19, 1.82]***	1.46 [1.17, 1.81]***
No (ref.)	N/A	—	—
Race/Ethnicity			
White (ref.)	—	—	—
Black	2.07 [1.63, 2.64]***	2.05 [1.62, 2.59]***	2.04 [1.60, 2.59]***
Latino	1.39 [1.03, 1.87]*	1.35 [1.00, 1.83]*	1.37 [1.01, 1.85]*
Asian/Pacific Islander	1.46 [0.73, 2.92]	1.29 [0.61, 2.72]	1.32 [0.62, 2.80]
Native American	1.20 [0.59, 2.44]	1.20 [0.60, 2.43]	1.23 [0.60, 2.49]
Age			
18-35 years	4.03 [2.71, 5.97]***	3.65 [2.48, 5.37]***	3.83 [2.56, 5.73]***
35-49 years	2.57 [1.71, 3.87]***	2.36 [1.59, 3.50]***	2.40 [1.59, 3.64]***
50-64 years	1.24 [0.91, 1.99]	1.23 [0.79, 1.91]	1.20 [0.76, 1.89]
65+ years (ref.)	—	—	—
Education			
Less than high school diploma	1.35 [0.91, 1.99]	1.36 [0.91, 2.02]	1.35 [0.91, 2.01]
High school graduate or GED	1.20 [0.87, 1.65]	1.29 [0.92, 1.80]	1.24 [0.89, 1.73]
Some college or associates	1.24 [0.92, 1.68]	1.31 [0.95, 1.79] [†]	1.28 [0.94, 1.76]
College graduate or more (ref.)	—	—	—
Annual household income			
<\$10,000	1.14 [0.69, 1.88]	1.10 [0.66, 1.83]	1.09 [0.66, 1.80]
\$10,000-\$29,999	1.34 [0.94, 1.89] [†]	1.33 [0.94, 1.88]	1.30 [0.92, 1.83]
\$30,000-\$49,999	1.07 [0.76, 1.52]	1.08 [0.76, 1.52]	1.03 [0.73, 1.46]
\$50,000-\$64,999	1.06 [0.74, 1.53]	1.03 [0.72, 1.48]	1.01 [0.70, 1.45]
\$70,000-\$99,999	1.01 [0.69, 1.49]	1.03 [0.70, 1.51]	1.00 [0.68, 1.48]
≥\$100,000 (ref.)	—	—	—
Past-year poverty			
Yes	0.87 [0.57, 1.34]	0.97 [0.64, 1.48]	0.88 [0.57, 1.35]
No (ref.)	—	—	—
Missing	2,793	2,781	3,055

Note. IPV = intimate partner violence; NESARC = National Epidemiologic Survey on Alcohol and Related Conditions; OR = odds ratio; CI = confidence interval; GED = general education development.

[†] $p < .10$. * $p < .05$. *** $p < .001$.

controlling for a wide range of possible confounders. Specifically, results show that females reporting physical health impairments were at greater risk of later IPV victimization, as were both males and females reporting mental health impairments. These findings add substantially to the existing literature,

introducing the first epidemiologic study using longitudinal data analysis, a diverse sample, and a strong comparison group of IPV victims versus non-victims. This study also presents one of the first analyses of the relationship between health status and IPV victimization in both males and females.

These findings support those from a small body of studies demonstrating that people with physical and mental health impairments experience higher levels of IPV victimization than people in good health (Barrett et al., 2009; Cohen et al., 2006; Young et al., 1997). Available evidence consistently shows that people with disabilities, especially women, are at higher risk of experiencing multiple forms of abuse compared with people without disabilities (Casteel et al., 2008; Gilson et al., 2001; Hassouneh-Phillips & Curry, 2002; Powers et al., 2008), where intimate partners most often perpetrate abuse (Brownridge, 2006; Casteel et al., 2008; Gilson et al., 2001; Hassouneh-Phillips & Curry, 2002). Few studies have examined the association between impairments and victimization risk among men (Cohen et al., 2006; Powers et al., 2008). Males may be less likely to be seen as victims (Powers et al., 2008), but our findings support the assertion that men with mental health impairments are at higher risk for IPV.

Results should be interpreted in the context of the following limitations. The SF-12v2 is not designed to measure specific disabilities but to assess general physical and mental health functioning. Using the SF-12v2, the prevalence rates of physical impairments fall within the range of disability prevalence reported in the 2003 BRFSS (CDC, 2003), the 2005 Census supplement (Brault, 2008), and the 2001-2005 NHIS (Altman & Bernstein, 2008). Rates reported in this sample are closest to the NHIS, where both surveys utilize expansive definitions of disabilities and corresponding measures for widespread use (Altman & Bernstein, 2008; Ware et al., 1995, 1996).

Additional limitations include the following. This study is limited by the use of retrospective self-report in a face-to-face interview. IPV victimization may have been underreported due to recall or social desirability bias. Random measurement error (e.g., capturing false negatives) may have resulted in an attenuated relationship between the exposure and outcome (Rothman et al., 2008).

In addition, as the NESARC is a general population survey administered in households, people with severe impairments requiring inpatient care or institutionalization may also have been underrepresented. Furthermore, people with more severe impairments may have been excluded in Wave 2, due to lack of access or special accommodations in NESARC (e.g., no proxy interviews used; Casteel et al., 2008; Grant & Dawson, 2005; Wilson & Brewer, 1992). On average, NESARC participants missing information on IPV victimization reported lower socioeconomic status, where those with less

income, less education, and more poverty may be more vulnerable to severe impairments (Heaphy, Mitra, & Boudin, 2011) and/or IPV risk (Aldarondo, 1998; Browne & Bassuk, 1997; Cunradi, Caetano, & Schafer, 2002). These missingness patterns could cause systematic bias (e.g., those who elected not to endorse IPV victimization were more likely to have disabilities) that would result in an underestimation of the relationship between health status and IPV victimization (Rothman et al., 2008).⁴ The existing literature suggests that people with more severe disabilities (e.g., cognitive or multiple disabilities) may be both at higher risk of victimization and less likely to report abuse than those with less severe or no disabilities (Casteel et al., 2008; Petersilia, 2001; Wilson & Brewer, 1992).

There were also some limitations to the measures used. The measures used in NESARC were not able to capture types of disabilities (e.g., types of chronic conditions or cognitive disabilities) or types of disability-specific abuse. As partners often act as caretakers, abuse targeting the disabilities (e.g., withholding food, medication, or care) is also common (Curry et al., 2001; Hassouneh-Phillips & Curry, 2002; Powers et al., 2009). However, the SF-12v2 is a broad and brief assessment tool with an established cut-point for general population use (Gandek et al., 1998; Sanderson & Andrews, 2002; Ware et al., 1996). In addition, the CTS assessed victimization across a range of IPV types in both short- and long-term relationships (Straus & Gelles, 1990).

Conclusion

This study shows the stringent need to assess and address the relationship between physical and mental health impairments and IPV victimization. Practice implications include comprehensive screening in medical, legal, and community-based settings for IPV victimization among men and women with disabilities. Experts call for individually tailored and culturally appropriate services, as well as coordinated community responses, to prevent, identify, and assist people with disabilities who are in abusive relationships (Lightfoot & Williams, 2009; Powers et al., 2009; Young et al., 1997).

Further research is needed to inform the prevention of and interventions against IPV in people with disabilities, as well as other forms of interpersonal violence they may experience (e.g., physical assault, sexual assault, or disability-specific abuse). The current literature suggests that people with disabilities experience more severe and chronic forms of violence from a range of perpetrators (e.g., partners, family members, acquaintances, institutional personnel, and health care providers) than is expected in the general population, making them a crucial population for research and intervention (Brownridge, 2006; Hassouneh-Phillips & Curry, 2002; Powers et al., 2009).

Future studies should also specify forms and severity of disability, as well as degree of impairment type in diverse samples, to better understand subgroup-specific risks so that interventions may be appropriately tailored (Curry et al., 2001; Hassouneh-Phillips & Curry, 2002; Powers et al., 2009). Researchers must overcome the challenges of engaging people with disabilities, as they are a hard-to-reach and often ignored population. Studies need to develop improved methods for outreach, access, and accommodations to administer surveys as seen with Oswald and colleagues (2009). Connecting research with practice could substantially reduce IPV risk for individuals with physical and mental health disabilities (Lightfoot & Williams, 2009; Powers et al., 2009).

Authors' Note

The National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) data are publicly available, and this study was approved by the Harvard School of Public Health Institutional Review Board. This article was written while Dr. Hahn was a doctoral candidate at the Harvard School of Public Health in the Department of Society, Human Development, and Health.

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Notes

1. According to the Centers for Disease Control and Prevention (CDC), intimate partner violence (IPV) includes four types of behavior: (a) physical abuse, when a person hurts or tries to hurt a partner by hitting, kicking, or other physical force; (b) sexual abuse, when one forces a partner into any sexual act without consent; (c) threats of physical or sexual abuse that include the use of words, gestures, weapons, or other means to communicate the intent to cause harm; (d) emotional abuse, when one threatens a partner with his or her possessions or loved ones, or harming a person's sense of self-worth, including stalking, name-calling, or intimidation (Saltzman, Fanslow, McMahon, & Shelley, 2002).

2. This study uses the World Health Organization (WHO) definition, where “disability” is an umbrella term for impairments (e.g., problems in body function or structure), activity limitations (e.g., difficulties in executing a task), and participation restrictions (e.g., limited engagement in social activities). Disability reflects the interaction between the person, his or her health condition, and environmental factors (e.g., stigma, marginalization, and lack of access; Van Brakel et al., 2006; WHO, 2011).
3. It should be noted that initial bivariate analyses did not yield associations with high levels of significance for physical health impairments in the total sample, and among females and males. However, we still chose to pursue this analysis to examine more fully the relationship between physical health impairments and IPV victimization in adjusted models, given that limited research indicates that physical disabilities or limitations are associated with victimization (Cohen, Forte, Du Mont, Hyman, & Romans, 2006; Young, Nosek, Howland, Chanpong, & Rintala, 1997) and due to the rare opportunity to study key health impairment types in this study.
4. For these reasons, we did not focus on people reporting more severe impairments or multiple health impairment types, as results could be misrepresentative of the true victimization risk for people with more severe or multiple health impairments who may not be well represented in the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC).

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Marie C. McCormick is a pediatrician with a second doctorate in health services research. In 1987, she joined the faculty of the Department of Pediatrics at Harvard Medical School in the Joint Program in Neonatology as the director of its Infant Follow-up Program and chief of the section of neonatal epidemiology and health policy. In 1991, she became professor and chair of the Department of Maternal and Child Health at the Harvard School of Public Health, and professor of Pediatrics. She is currently the Sumner & Esther Feldberg professor of maternal and child health in the Department of Social and Behavioral Sciences (formerly the Society, Human Development, and Health) at the Harvard School of Public Health, and professor of pediatrics at the Harvard Medical School. Her research has focused on the effectiveness of perinatal and neonatal health services on the health of women and children with a particular concern in the outcomes of very premature infants and the evaluation of programs to improve their outcomes, including the regional organization of service resulting in 250 articles, chapters, and commentaries. Her work has received national recognition through such awards as the Douglas K. Richardson Award from the Society of Pediatric Research (2006) and membership in the Institute of Medicine.

Jay G. Silverman's research focuses on the health-related consequences and prevention of gender-based violence against adolescent and adult women (e.g., intimate partner violence [IPV], sexual assault, sex trafficking) globally. His recent research has centered on implications of IPV for heterosexual HIV infection/sexually transmitted infection (STI) and for reproductive and child health. He has been PI on multiple federally funded studies of trafficking, violence, and HIV, and has published more than 90 peer-reviewed manuscripts on these forms of gender-based violence and the effects of this violence on the health of women and their children (with particular emphasis on girl children). He is also co-author of the practitioner guidebook titled *The Batterer as Parent* (Sage, 2002), for which he was awarded the 2004 *Pro Humanitate Literary Award for Most Outstanding Contribution to Child Welfare Practice* by the North American Resource Center for Child Welfare. He has served as

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Elise B. Robinson is a research associate in the Analytic and Translational Genetics Unit at Massachusetts General Hospital. She has a doctorate in psychiatric epidemiology from the Harvard School of Public Health and completed a mental health and developmental disabilities training fellowship at Children's Hospital Boston. Her research concentrates on behavior and cognition.

Karestan C. Koenen is a licensed clinical psychologist and epidemiologist who uses a developmental approach to examine the interplay of genetic and environmental factors in the etiology of stress-related mental disorders, such as posttraumatic stress disorder and depression. She has published more than 150 scientific articles and co-authored several books including *Treating Survivors of Childhood Abuse: Psychotherapy for the Interrupted Life* with Drs. Marylene Cloitre and Lisa Cohen. She has received more than 10 million dollars in research funding from the National Institute of Mental Health, the Robert Wood Johnson Foundation, and the Kaiser Family Foundation. She is also an experienced clinician who specializes in working with women with posttraumatic stress disorder.