Medical and Psychosocial Diagnoses in Women With a History of Intimate Partner Violence

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Background: We characterized the relative risk of a wide range of diagnoses in women with a history of intimate partner violence (IPV) compared with never-abused women.

Methods: The sample comprised 3568 English-speaking women who were randomly sampled from a large US health plan and who agreed to participate in a telephone survey to assess past-year IPV history using questions from the Behavioral Risk Factor Surveillance System (physical, sexual, and psychological abuse) and the Women's Experience with Battering Scale. Medical and psychosocial diagnoses in the past year were determined using automated data from health plan records. We estimated the relative risk of receiving diagnoses for women with a past-year IPV history compared with women with no IPV history.

Results: In age-adjusted models, compared with never-abused women, abused women had consistently significantly increased relative risks of these disorders: psychosocial/mental (substance use, 5.89; family and social problems, 4.96; depression, 3.26; anxiety/neuroses, 2.73; tobacco use, 2.31); musculoskeletal (degenerative joint disease, 1.71; low back pain, 1.61; trauma-related joint disorders, 1.59; cervical pain, 1.54; acute sprains and strains, 1.35); and female reproductive (menstrual disorders, 1.84; vaginitis/vulvitis/cervicitis, 1.56). Abused women had a more than 3-fold increased risk of being diagnosed with a sexually transmitted disease (3.15) and a 2-fold increased risk of lacerations (2.17) as well as increased risk of acute respiratory tract infection (1.33), gastroesophageal reflux disease (1.76), chest pain (1.53), abdominal pain (1.48), urinary tract infections (1.79), headaches (1.57), and contusions/abrasions (1.72).

Conclusion: Past-year IPV history was strongly associated with a variety of medical and psychosocial conditions observed in clinical settings.

Arch Intern Med. 2009;169(18):1692-1697

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INTIMATE PARTNER VIOLENCE (IPV) affects as many as 44% of women in their adult life.[1] Numerous studies have documented an association between IPV history and poor self-rated health.[2-15] Population-based studies have also shown associations between IPV history and medical and psychosocial diagnoses observed in clinical settings, including trauma,[16] gynecological disorders,[16,17] induced abortions,[16,17] suicide attempts,[16,18] mental illness/disorders,[16-19] drug addiction,[16] diseases of the digestive system,[18] injury,[18,19] poisoning,[18] assault,[18] and neurological disease.[19] However, these studies concentrated on clinical populations comprising severe abuse cases, such as abused women seen in emergency departments[16,17] or outpatient settings[17] for treatment of violence-related injury or women who had filed for a protection order to stop abuse.[18] In addition, these studies included only a few types of diagnoses in their analysis, or aggregated diagnoses within major categories (eg, mental disorders, gynecological disorders, and diseases of the digestive system),[16-18] making it difficult to determine risks associated with specific types of diagnoses, such as depression.

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Although prior survey research has shown an association between IPV history and self-reported diagnoses and health risks—such as sexually transmitted disease[3,13]; headaches, back pain, and abdominal pain[3,13]; chest pain[13] and depression[7,13]; vaginal infections and symptoms[3,14]; urinary tract infections[3]; joint disease[13,20]; and asthma[20]—little is known about

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the full range of medical and psychosocial diagnoses that recently abused women commonly manifest in routine health care settings, including primary and specialty care.

The present investigation summarizes the relative risk (RR) of a wide range of common medical and psychosocial diagnoses in 18 major areas such as cardiovascular, reproductive, musculoskeletal, neurologic, and respiratory, and infections among women with an IPV history in the past year compared with women who never experienced IPV. Our study included 3568 women randomly sampled from the membership files of a large health plan and asked about their exposure to past-year physical, sexual, and psychological abuse. We used Adjusted Clinical Group (ACG) software[21-23] to characterize the range of medical and psychosocial diagnoses that occurred during the year of women's abuse exposure. The study provides an important snapshot of the diagnostic profiles of women with recent abuse histories who seek treatment in routine health care settings, using data from actual health plan records.

METHODS

SAMPLING

The study was approved by Group Health Cooperative's Institutional Review Board. Group Health is a large health plan providing insurance and health services to more than 500 000 people in Washington state and northern Idaho. English-speaking women ages 18 to 64 years who were enrolled at Group Health for at least 3 years were randomly sampled from enrollment files to participate in a telephone survey to assess IPV exposure.[1,13] An advance letter was sent by mail to women describing our interest in issues affecting women's health. We then contacted women to ascertain their interest and consent to participate in the telephone survey, and consent to access their automated medical records.[1,13]

Of 6666 women selected, 345 (5.2%) were excluded because they did not meet the sampling criteria originally identified (n=209), were deceased (n=3) or too ill (n=15), or had a language barrier or hearing impairment (n=118). Of the 6321 remaining women, 1829 (28.9%) refused to participate, 539 (8.5%) were located but did not complete the interview, 385 (6.1%) could not be located, and 3568 (56.4%) completed the survey. As previously reported, because of the response rate, we requested additional administrative data from the health plan to undertake a propensity score analysis; we showed that the probability of study participation was similar for women exposed to IPV compared with women who reported no IPV (0.58 vs 0.57).[24] Therefore, it is unlikely that the response rate contributes to bias in the study results.

AUTOMATED DIAGNOSES

Medical and psychosocial diagnoses were assembled for the 1-year period comprising the 4 calendar quarters before and including the date of the study interview for abused and nonabused women using ACG software.[21-23] The ACG software uses *International Disease Classification, 9th Revision* (*ICD-9*), codes to capture the full range of primary and secondary diagnoses documented in inpatient and outpatient records. The Expanded Diagnosis Cluster methods, a component of the ACG system, involve assigning *ICD-9* codes from health care visit data to 1 of 264 clusters. Expanded Diagnosis Clusters are aggregations of *ICD-9* codes that group individual diagnoses into a set of clinically similar clusters and provide a way to identify women with similar types of conditions while removing differences in coding behavior among health care providers. We considered the full range of diagnosis clusters, organized under the following major categories: allergy; cardiovascular; ear, nose, and throat; endocrine; eye; female reproductive; gastrointestinal; general signs and symptoms; general surgery; genitourinary; infections; musculoskeletal; neurologic; nutrition; psychosocial/mental; reconstructive; respiratory; and skin. In order to provide meaningful estimates in our analysis, we report on only those relatively common diagnoses that were recorded for at least 5% of women in our study. There were several exceptions to the 5% criterion. Less than 5% of women received the following diagnoses, but the diagnoses were included because they have been found in prior studies to be associated with IPV: lacerations (3.7%); family and social problems (3.7%); sleep problems (3.5%); fractures (3.5%); irritable bowel syndrome (1.6%); sexually transmitted diseases and human immunodeficiency virus/AIDS (1.4%); and substance abuse (1.1%). In addition, we excluded a few diagnoses received by more than 5% of participants that were conditions extremely common among women or were likely unrelated to the experience of IPV: refractive errors (43.5%); benign and unspecified neoplasm (14.0%) and skin neoplasms (8.2%); other breast disorders (11.6%); and uncomplicated pregnancy (5.2%).

INTIMATE PARTNER VIOLENCE

Intimate partner violence victimization since age 18 years was assessed during the telephone survey using the Women's Experience with Battering (WEB) Scale[25] and 5 questions from the Centers for Disease Control and Prevention's Behavioral Risk Factor Surveillance System (BRFSS) survey on physical (1 question), sexual (2 questions), and psychological abuse (verbal threats and chronic controlling behavior; 2 questions).[1,13] Details of the IPV assessment procedure are described elsewhere.[1,13] In brief, women were asked to name their 3 most recent adult intimate (heterosexual or homosexual) partners and answered the WEB questions for each of their 3 partners. The WEB uses a Likert scale with scores ranging from 1 (strongly disagree) to 6 (strongly agree) and assesses fear and disempowerment resulting from exposure to abuse. Women who scored 20 or higher on the WEB (score range, 10-60) for any given partner were considered positive for abuse.[26] If women scored positive on the WEB, they were then asked about the date that they started and stopped feeling that way with the partner; this information was used to construct the timing of abuse. Women were then asked whether they had ever experienced each of the physical, sexual, and nonphysical abuse tactics represented in the 5 BRFSS questions using a binary response option (yes/no). Women who answered yes to any of the BRFSS questions were considered positive for that abuse type. If women ever experienced any of the abuse types, they were then asked whether the abuse occurred in the past year and when the abuse first happened to them and when it last happened to them. This information (along with the information from the WEB) was used to construct the timing of women's abuse.

According to our exposure definitions, 272 women experienced IPV in the past year (7.6%), 1977 had never experienced IPV (55.4%), and 1319 had experienced IPV in the past but not within the past year (37.0%). Our study focuses on diagnoses associated with recent abuse; therefore, we excluded the 1319 women with past but not recent abuse. In addition, since we relied on automated data from the health plan to identify diagnoses, we excluded 321 women who were not enrolled in the health plan for at least 3 of the 4 calendar quarters before the study interview, resulting in a final analytic sample

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Table 1. Participant Characteristics

Characteristic	% of Participants: No IPV Ever (n=1686)	% of Participants: IPV in Past Year (n=242)
Age, y		
18-24	14.8	17.8
25-34	11.7	8.7
35-44	17.7	24.0
45-54	29.4	30.2
55-64	26.3	19.4
Annual household income, $[a]		
<25 000	11.3	20.3
25 000-49 999	24.1	34.1
50 000-74 999	25.4	22.8
≥75 000	39.2	22.8
Employed at least part time	78.5	83.9
High-school graduate or less[a]	12.7	18.2
White race	80.4	79.3
Have children <18 y in the home[a]	29.7	38.4

Abbreviation: IPV, intimate partner violence.
[a] $P < .05$.

of 1928 women. Our analysis compares 242 women reporting abuse within the past year to the reference group of 1686 women who never experienced IPV in their adult lifetime according to the BRFSS or WEB questions.

We focused on women with past-year abuse to construct an argument about types of medical and psychosocial conditions affecting women during the year of their abuse exposure. We did not examine women who had an IPV history before but not during the past year; future analyses may include this group.

SOCIODEMOGRAPHIC CHARACTERISTICS

Women were asked about their age, household income, employment status, highest grade level completed, race/ethnicity, and number of children living in the home using questions from the US Census Bureau.[27]

STATISTICAL ANALYSIS

We used χ^2 tests and tests for trend to compare the demographic characteristics of women with a past-year IPV history (exposed group) compared with never-abused women (reference group). Generalized linear models with a log link and binomial errors were used to estimate RRs of the dichotomous diagnoses in the exposed compared with the reference group. We ran 2 generalized linear models: an unadjusted model and a model that adjusted for women's age. As noted in the "Automated Diagnoses" subsection of this section, we excluded diagnoses that occurred in less than 5% of women, with the exception of a handful of diagnoses that occurred infrequently but bear close association to IPV.

RESULTS

PARTICIPANT CHARACTERISTICS

Table 1 presents the characteristics of participants by IPV history. Women with a past-year IPV history had lower annual household income (income < $50 000, 54% vs 35% of women with no IPV history), were less likely to have completed high school (18% vs 12%), and were more likely to have children younger than 18 years living in the home (38% vs 29%) than never-abused women.

MEDICAL AND PSYCHOSOCIAL DIAGNOSES

Table 2 presents the results of the unadjusted and age-adjusted generalized linear models. The results from the age-adjusted analysis were similar to the unadjusted results; we comment on the age-adjusted findings here. Compared with never-abused women, women with a past-year IPV history had consistently significantly increased RRs of diagnoses falling within the following major diagnostic groupings: psychosocial/mental disorders (substance use, 5.89; family and social problems, 4.96; depression, 3.26; anxiety/neuroses, 2.73; tobacco use, 2.31); musculoskeletal disorders (degenerative joint disease, 1.71; low back pain, 1.61; trauma-related joint disorders, 1.59; cervical pain, 1.54; acute sprains and strains, 1.35); and female reproductive conditions (menstrual disorders, 1.84; vaginitis/vulvitis/cervicitis, 1.56). After these major diagnostic groupings, abused women also had a more than 3-fold increased risk of being diagnosed with a sexually transmitted disease (3.15) and a 2-fold increased risk of treated lacerations (2.17) compared with never-abused women. Finally, we observed significant but less pronounced increased risk in the following diagnostic areas for women with a past-year IPV history compared with never-abused women: acute respiratory tract infection, 1.33; gastroesophageal reflux disease, 1.76; undifferentiated chest pain, 1.53; undifferentiated abdominal pain, 1.48; urinary tract infections, 1.79; undifferentiated headaches, 1.57; and contusions/abrasions, 1.72.

COMMENT

Compared with never-abused women, women with a past-year history of IPV had a pronounced increased risk of psychosocial/mental health diagnoses, with an almost 6-fold increased risk of clinically identified substance abuse, a nearly 5-fold increase in family and social problems, a more than 3-fold increase in depression, and a more than 2-fold increase in anxiety/neuroses and tobacco use. Also of note was the more than 3-fold increased risk of sexually transmitted disease diagnoses and the 2-fold increased risk of lacerations as well as consistently significantly increased risk of diagnoses within the major categories of musculoskeletal and female reproductive conditions.

Our results are consistent with prior studies involving abused women seeking treatment in trauma settings or involved in the criminal justice system, which showed increased risk of medical and psychosocial diagnoses such as gynecological disorders,[16,17] mental illness,[16-19] substance abuse,[16] injury,[18,19] and neurological disorders.[19] For example, our finding of a more than 3-fold increase in depression among abused women (RR, 3.26) is consistent with the finding by Kernic et al[18] of a RR of 3.6 for hospitalizations for mental disorders among abused women who sought protection orders compared with

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Table 2. Relative Risk of Diagnoses Associated With IPV Exposure

Diagnosis	% of Participants: No IPV Ever (n=1686)	% of Participants: IPV in Past Year (n=242)	Relative Risk (95% Confidence Interval): Unadjusted	Relative Risk (95% Confidence Interval): Age-Adjusted
Allergy				
Allergic rhinitis	10.3	13.2	1.28 (0.90-1.82)	1.28 (0.90-1.82)
Asthma, without status asthmaticus	6.9	8.3	1.20 (0.76-1.89)	1.20 (0.76-1.90)
Cardiovascular				
Cardiovascular signs and symptoms	8.5	8.7	1.02 (0.66-1.57)	1.10 (0.71-1.69)
Disorders of lipid metabolism	5.6	4.1	0.74 (0.39-1.40)	0.86 (0.46-1.62)
Hypertension	11.7	13.6	1.17 (0.83-1.64)	1.33 (0.96-1.83)
Ear, nose, and throat				
Otitis media	6.9	10.3	1.49 (0.99-2.24)	1.46 (0.97-2.19)
Acute upper respiratory tract infection	20.2	27.7	1.37 (1.09-1.71)	1.33 (1.06-1.66)
Endocrine				
Thyroid disease	5.5	7.9	1.42 (0.89-2.29)	1.56 (0.97-2.49)
Type 2 diabetes	5.8	5.0	0.85 (0.48-1.53)	0.96 (0.54-1.71)
Eye				
Conjunctivitis, keratitis	6.5	6.2	0.96 (0.57-1.62)	0.96 (0.57-1.61)
Female reproductive				
Female genital symptoms	6.8	10.3	1.53 (1.01-2.31)	1.47 (0.98-2.20)
Vaginitis, vulvitis, cervicitis	7.6	12.0	1.58 (1.08-2.31)	1.56 (1.07-2.27)
Menstrual disorders	8.5	16.1	1.89 (1.36-2.62)	1.84 (1.33-2.56)
Menopausal symptoms	9.1	7.4	0.81 (0.51-1.30)	0.93 (0.58-1.47)
Gastrointestinal				
Gastroesophageal reflux	5.8	9.5	1.65 (1.08-2.55)	1.76 (1.14-2.70)
Irritable bowel syndrome	1.6	1.7	1.03 (0.36-2.92)	1.05 (0.37-2.99)
General signs and symptoms				
Chest pain	8.7	12.8	1.48 (1.03-2.13)	1.53 (1.07-2.20)
General surgery				
Nonfungal infections of the skin and subcutaneous tissue	8.0	8.3	1.04 (0.66-1.63)	1.05 (0.67-1.65)
Abdominal pain	10.6	15.7	1.49 (1.08-2.05)	1.48 (1.07-2.04)
Genitourinary				
Urinary tract infections and other symptoms	11.7	21.1	1.79 (1.36-2.37)	1.79 (1.36-2.36)
Infections				
Sexually transmitted diseases	1.1	3.7	3.30 (1.51-7.21)	3.15 (1.45-6.86)
Musculoskeletal				
Musculoskeletal signs and symptoms	27.1	27.7	1.02 (0.82-1.27)	1.08 (0.87-1.33)
Acute sprains and strains	18.0	24.0	1.33 (1.04-1.71)	1.35 (1.06-1.73)
Degenerative joint disease	8.2	12.0	1.45 (1.00-2.12)	1.71 (1.20-2.44)
Fractures and dislocations	4.6	3.7	0.81 (0.41-1.60)	0.83 (0.42-1.64)
Trauma-related joint disorders	8.0	12.4	1.55 (1.07-2.25)	1.59 (1.10-2.31)
Cervical pain syndrome	12.2	18.6	1.52 (1.14-2.04)	1.54 (1.15-2.07)
Low back pain	20.2	31.8	1.58 (1.28-1.94)	1.61 (1.31-1.98)
Bursitis, synovitis, tenosynovitis	16.6	16.5	1.00 (0.74-1.35)	1.07 (0.79-1.44)

(continued)

other women. Moreover, our finding of increased risk of lacerations, contusions/abrasions, acute sprains and strains, and trauma-related joint disorders is consistent with prior studies showing higher rates of injury among abused women.[18,19] However, as previously noted, because prior studies included only a few diagnoses or lumped diagnoses within major categories (eg, mental disorders), it is challenging to make comparisons with our study. Our study includes a broader range and more specific listings of medical and psychosocial diagnoses for women seeking treatment in routine health care settings, including primary care, specialty care, and urgent care or emergency department settings.[24]

Our finding of an increased risk of sexually transmitted disease, tobacco use, headache, back pain, abdominal pain, chest pain, arthritis/degenerative joint disease, depression, vaginitis, genital symptoms, urinary tract infections, and respiratory tract disease for women with a past-year IPV history is consistent with survey-based research noting associations between IPV history and each of these areas.[3,7,9,13-15,20,28]

In addition, our study improves on the methods of prior population-based studies. We randomly sampled women from health plan enrollment files, rather than from among women seeking clinical services. We had access to diagnoses recorded by physicians and other health care providers across the full range of care received by women enrolled in the health plan (eg, primary care, specialty care, and emergency services). Furthermore, we used a multifaceted approach to assess IPV history—which in-

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Table 2. Relative Risk of Diagnoses Associated With IPV Exposure (continued)

Diagnosis	% of Participants: No IPV Ever (n=1686)	% of Participants: IPV in Past Year (n=242)	Relative Risk (95% Confidence Interval): Unadjusted	Relative Risk (95% Confidence Interval): Age-Adjusted
Neurologic				
Headaches	12.2	19.0	1.56 (1.16-2.08)	1.57 (1.18-2.10)
Peripheral neuropathy, neuritis	7.5	9.9	1.33 (0.88-2.01)	1.42 (0.94-2.15)
Vertiginous syndromes	5.3	5.4	1.01 (0.57-1.77)	1.04 (0.59-1.83)
Sleep problems	3.4	4.6	1.34 (0.72-2.53)	1.39 (0.74-2.62)
Nutrition				
Obesity	8.6	10.7	1.25 (0.84-1.85)	1.31 (0.88-1.94)
Psychosocial				
Anxiety, neuroses	13.9	38.0	2.73 (2.23-3.33)	2.73 (2.24-3.34)
Substance use	0.7	4.1	6.33 (2.72-14.75)	5.89 (2.54-13.65)
Tobacco use	6.4	14.9	2.34 (1.65-3.34)	2.31 (1.62-3.27)
Family and social problems	2.5	12.4	4.98 (3.18-7.79)	4.96 (3.17-7.78)
Depression	10.3	33.5	3.24 (2.59-4.07)	3.26 (2.59-4.08)
Reconstructive				
Lacerations	3.3	7.0	2.15 (1.27-3.65)	2.17 (1.28-3.68)
Respiratory				
Respiratory signs and symptoms, cough	12.8	15.3	1.19 (0.87-1.65)	1.23 (0.89-1.69)
Acute lower respiratory tract infection	10.1	12.8	1.26 (0.88-1.81)	1.30 (0.91-1.86)
Sinusitis	13.9	17.8	1.27 (0.95-1.71)	1.28 (0.95-1.72)
Skin				
Contusions and abrasions	8.7	14.9	1.72 (1.22-2.41)	1.72 (1.23-2.42)
Dermatitis and eczema	11.0	14.1	1.28 (0.91-1.80)	1.30 (0.92-1.83)
Acne, exanthems, skin keratoses, other skin disorders	23.8	25.2	1.06 (0.84-1.34)	1.07 (0.84-1.35)

Abbreviation: IPV, intimate partner violence.

cluded physical, sexual, and psychological aspects of abuse—to adequately characterize women's experience of abuse.

There were several limitations of our study. Women were required to be insured for at least 3 years during a 10-year period to satisfy another study component.[24] Women who are not consistently insured suffer higher rates of IPV[1] and may have more compromised health; therefore, our results may be conservative. Women in the sample were older, had higher income levels, and were more highly educated compared with all women in the United States.[27] Because of the small number of women in our sample with a history of IPV in the past year and the low prevalence of many of the diagnoses, it was not possible to adjust for additional participant characteristics (eg, women's educational level) in our multivariate model.

These limitations notwithstanding, our study provides important information for health care providers and health plans on medical and psychosocial diagnoses commonly observed in a population-based sample of women by IPV history. The results suggest that certain conditions may be important indicators for screening women for IPV. For example, given the high RRs of psychosocial/mental health diagnoses, sexually transmitted disease, and lacerations among abused women, screening for IPV should be prioritized among women presenting with these conditions. Because women may not volunteer that they are in abusive relationships, health care providers should also maintain a high index of suspicion for underlying IPV when women present with these diagnoses and symptoms.

Studies suggest that women are comfortable with being asked about abuse by their health care providers,[29,30] and, even with the lack of widespread, evidence-based treatments,[31] connecting women with protection order services[32] and increasing their access to community resources and social support[33,34] may reduce IPV.[31] Moreover, abused women recommend a number of simple strategies implemented by health care providers to help them with their situation, namely, informational interventions,[30,35] individual counseling,[35] and referrals,[30] as well as substance abuse counseling and treatment for depression and education about how abuse affects their health.[30] Our study provides concrete and compelling information on the medical and psychosocial ramifications of IPV that could be used in discussions with women.

Accepted for Publication: June 18, 2009.
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Author Contributions: Drs Bonomi, Reid, Rivara, and Thompson and Ms Anderson had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. *Study concept and design*: Bonomi and Rivara. *Acquisition of data*: Bonomi, Rivara, and Carrell. *Analysis and interpretation of data*: Bonomi, Anderson, Reid, Rivara, Carrell, and Thompson. *Drafting of the manuscript*: Bonomi. *Critical revision of the manuscript for important intellectual content*: Bonomi, Anderson, Reid, Rivara, Carrell, and Thomp-

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son. *Statistical analysis*: Bonomi and Anderson. *Obtained funding*: Rivara and Thompson. *Administrative, technical, and material support*: Rivara. *Study supervision*: Thompson.

Financial Disclosure: None reported.

Funding/Support: This study was developed with support from the Agency for Healthcare Research and Quality and the Group Health Foundation.

Additional Contributions: We thank the study interviewers for interviewing thousands of women.

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