Describing the Health Status of Women Experiencing Violence or Abuse: An Observational Study Using Claims Data

Rachel Kishton¹, Laura Sinko², Robin Ortiz¹*, Md Nazmul Islam³, Annika Fredrickson³, Natalie E. Sheils³, John Buresh³, Peter F. Cronholm¹, and Meredith Matone¹,4

Abstract

Introduction: Violence against women (VAW) can result in long-term and varied sequela for survivors, making it difficult to evaluate healthcare intervention. This study seeks to improve understanding of the healthcare experiences of women survivors prior to a violence-related diagnosis, allowing healthcare systems to better design strategies to meet the needs of this population. Methods: Using population-based data from 2016 to 2019, this cross-sectional observational study presents healthcare spending, utilization, and diagnostic patterns of privately insured women, age 18 or older, in the 10-months prior to an episode of care for a documented experience of violence (DEV). Results: Of 12,624,764 women meeting enrollment criteria, 10,980 women had DEV. This group had higher general medical complexity, despite being 10 years younger than the comparison group (mean age 32.7 vs 43.5). These relationships held up when comparing participants in each cohort by age. Additional key findings including higher numbers of medical visits across clinical settings and higher total cost ($10,138-$4585). Conclusions: The study utilized population-based data, to describe specific areas of health and medical cost for women with DEV. Increased medical complexity and utilization patterns among survivors broaden the understanding of the health profiles and healthcare touchpoints of survivors to inform and optimize strategies for medical system engagement and resource allocation for this public health crisis.

Keywords

health care delivery/health services research, social factors in health and health care, family life: domestic violence

Introduction

Nearly 20 people a minute are physically abused by an intimate partner in the United States (US).¹ While individuals of any gender can experience intimate partner violence (IPV), women-identifying individuals experience violence at disproportionate rates, with one-in-four women reporting an experience of violence in their lives.² Violence against women (VAW) can result in physical, emotional, social, and financial consequences for survivors.³ The impacts can include missed or lost work, adverse mental health symptoms, and physical health concerns such as chronic pain, gastrointestinal and gynecological disorders, and sexually transmitted infections leading to worsening health outcomes and increased need for health services.⁴,⁵

The far reaching health impacts of VAW can lead individuals to present for care across all healthcare settings, leading to high healthcare utilization and cost⁶-⁹ even after

¹University of Pennsylvania, Philadelphia, PA, USA
²Temple University College of Public Health, Philadelphia, PA, USA
³OptumLabs at United Health Group, Minnetonka, MN, USA
⁴Children’s Hospital of Philadelphia, Philadelphia, PA, USA
*Robin Ortiz is now affiliated to NYU Grossman School of Medicine, New York, NY, USA.

Corresponding Author:
Rachel Kishton, Department of Family Medicine and Community Health, Perelman School of Medicine at the University of Pennsylvania, Penn Presbyterian Medical Center Andrew Mutch Building, Floor 7, 51 N. 39th Street Philadelphia, PA 19104, USA.
Email: rachel.kishton@pennmedicine.upenn.edu
the violence has stopped. Prior studies have estimated healthcare utilization and costs after an experience of violence but are often limited by small sample sizes and self-reported exposures. Few have attempted to assess the sequela and prevalence of VAW, the use of population-based data, healthcare utilization patterns, and medical care costs is an appropriate additional lens to expand identification and intervention opportunities for women who have survived violence.

Using a national insurance claims database, this study describes the health profiles of survivors in the period immediately preceding violence identification in medical settings. These findings may help inform and optimize strategies for medical system engagement and resource allocation for both prevention and treatment of this public health crisis.

Methods

We used an observational retrospective cohort design with administrative claims from a single large national health insurer in the US. The United Health Clinical Research Database used contains deidentified administrative claims of commercially-insured individuals. Given transition to International Classification of Disease (ICD)-10 coding in the US in 2015, we selected January 1, 2016 as the start of the study period, and data was available through December 31, 2019. The study was deemed exempt by the University of Pennsylvania IRB.

Identifying ICD-10 Codes

While past studies have used diagnosis coding to identify cases of IPV and VAW, these have mostly used ICD-9 codes. The studies using ICD-10 have been conducted outside of the US, limiting the ability to directly adapt the codes to our population of interest. To advance the science of identification of VAW in administrative data, this study developed a VAW diagnostic grouping derived from empiric review of the ICD-10 codebook. A total of 15 candidate base-codes were identified (Supplemental Tables 1 and 2) and associated claims for women over 18 years old were reviewed. The research team assessed the total number of unique claims, average frequency of use per member, and average interval time between use. Candidate codes which indicated a past history of abuse, had utilization patterns suggesting ongoing care at regular intervals (eg, therapy), or with limited specificity from which to determine an acute experience of violence or abuse (Supplemental Table 2) were excluded. A final list included 9 definitional ICD-10 codes.

Participants

We identified privately-insured women aged 18 years or older in the database (n = 16 934 473) as of November 3, 2020 (Figure 1). Two cohorts were established: (1) women with documented experience of violence (DEV) identified by any insurance claim with at least 1 of the definitional ICD-10 (n = 16 379) and (2) a comparison group of women without DEV. The date of the DEV claim was set as the index date. For women with more than 1 DEV ICD-10 code, the earliest claim was used. Given the potential for insurance change and subsequent uncertainty regarding service use and coverage during periods of disenrollment, inclusion required at least 10-months of continuous insurance enrollment prior to the index date. Compared with requiring a full year of enrollment, the 10-month threshold increased the total number of cases identified by 10% (final n = 10 980).

The comparison group included privately-insured women aged 18 years or older with at least 10-months of continuous enrollment during the study period who had no claims with definitional ICD-10 codes (n = 12 613 784). Each individual in the comparison group was randomly assigned an index date (15th day of a random month and year).

Variables

Demographic information included age, zip code, and status as a primary insured member. Medical history and complexity were established using ICD-10 codes submitted with insurance claims in the 10-months prior to the index encounter date. For overall medical complexity we included the Elixhauser Comorbidity Index which includes 29 weighted and scaled comorbidities, and has been used as a proxy for overall health status. We separately described both mental and reproductive health using ICD-10 diagnosis codes. Mental health diagnoses were categorized as nonorganic mental disorders or substance use disorders. Reproductive health indicated pregnancy status and diagnosis of sexually transmitted disease. For care utilization we identified all insurance claims, including care setting and total expenditure, submitted in the 10-months prior to the index date.

Results

Of the 12 624 764 women with at least 10-months of continuous enrollment during the study period, 10 980 women (0.087%) with DEV were identified (Table 1). On average women in the DEV cohort were younger than the comparison group (mean age 32.7 vs 43.5, respectively) and less likely to be the primary insured member (37.41% vs 55.58%, respectively). Both groups represent all 50 states.

Clinically important differences between the DEV and comparison cohorts were identified. Women with DEV had higher medical complexity, as indicated by Elixhauser score, than women in the comparison group (average score
In the 10-months prior to the index date, 49.47% of women with DEV had a medical claim with a mental health diagnosis, compared to 18.46% of the comparison group. A similar trend was found for the diagnosis of substance use disorders (11.07% of survivors of DEV vs 1.21% of comparison cohort). In terms of sexual and reproductive health, 3.01% of women with DEV had a diagnosis of an STI versus 0.78% of the control group. We also identified more pregnancy-related diagnoses for women in the DEV group (8.14% vs 4.50%).

In addition to differences in disease burden, women with DEV had different patterns of healthcare utilization prior to the index encounter. On average, women in the DEV cohort had two-times more inpatient visits, 1.68-times more outpatient visits, and 4.5-times more emergency room visits than the comparison group. Finally, we identified higher average healthcare expenditure for women with DEV than for the comparison group ($10,138 vs $4,585, respectively).

Results were unchanged when stratified by age with the exception of a slightly higher percentage of at least 1 claim related to pregnancy in controls age 30–39 compared to the DEV group (15% vs 11.6%, respectively; Supplemental Tables 3.1 and 3.2).

**Discussion**

This study describes the health status and healthcare utilization of a national cohort of privately-insured women with DEV. A comparison group of women without DEV provides a referent for assessing the unique attributes of identified survivors. While past literature has suggested an increased risk of illness and cost for survivors of violence,4-12,24 this study builds on prior science by adding population-based data to include women who may not have otherwise participated in research.

Our methodological approach found clinically relevant differences. Findings of this study are consistent with existing literature on survivors while contributing new knowledge on the scale of the economic, mental and physical costs associated with DEV.4-12 Women with DEV had a higher illness burden, with an almost 3-times higher comorbidity score, than the comparison population, despite being an average of 10 years younger. Our results indicate a 2.7-times increased rate of mental health diagnoses and a 9-fold increase in substance use disorders in women with DEV as compared to their peers. Similar differences existed across age groups with the exception of pregnancy claims. These findings are
interesting, as researchers have disagreed about whether the risk of violence decreases during pregnancy, remains about the same, or increases. Our findings suggest risk may vary by age group, but additional research is needed.

With the demonstrated increased comorbidity burden, it is perhaps not surprising to find utilization and cost differences. The scale of this difference, however, is critical to review. This study finds DEV is associated with 2.2 times increased cost, leading to an average of over $6500 additional spending per woman per year. In the 10 months prior to an index encounter, women in our DEV population had more inpatient, outpatient, and emergency visits than the control group. Interestingly the increased rate was not uniform across locations. While outpatient visits were only

Table 1. Descriptive Statistics for the 10-months Prior to Index Date for Women with Documented Experience of Violence and Comparison Group.

| Demographic                  | Comparison (N = 12,613,784) | DEV (N = 10,980) |
|------------------------------|------------------------------|------------------|
| Age                          | Mean (Median, SD)            | Mean (Median, SD) |
| Age range                    | Count Percentage of total    | Count Percentage of total |
| [18,20]                      | 487 633 (3.87)               | 1429 (13.01)      |
| [20, 25]                     | 11 55 450 (9.16)             | 3080 (28.05)      |
| [25, 30]                     | 13 61 125 (10.79)            | 1489 (13.56)      |
| [30, 35]                     | 13 14 782 (10.42)            | 1044 (9.51)       |
| [35, 40]                     | 12 85 616 (10.19)            | 1015 (9.24)       |
| ≥40                          | 70 08 874 (55.57)            | 2923 (26.62)      |
| Fully insured                | 29 89 218 (23.70)            | 2157 (19.65)      |
| Primary policy holder        | 70 10 264 (55.58)            | 4107 (37.41)      |
| Comorbidity score            | Mean (Median, SD)            | Mean (Median, SD) |
| Elixhauser score             | 3.3 (0, 7.5)                 | 9.6 (4, 13.1)     |
| Elixhauser score range       | Count Percentage of total    | Count Percentage of total |
| [0]                          | 88 95 402 (70.52)            | 4235 (38.57)      |
| [1,5]                        | 9 17 824 (7.28)              | 1526 (13.90)      |
| [5, 10]                      | 13 33 018 (10.57)            | 1295 (11.79)      |
| [10, 15]                     | 6 47 641 (5.13)              | 1420 (12.93)      |
| ≥15                          | 8 19 595 (6.50)              | 2504 (22.81)      |
| Diagnosis                    | Count Percentage of total    | Count Percentage of total |
| Mental Health (F20-29, F30-39, F40-48, F50, F53, F60, F63, F90) | 23 28 426 (18.46) | 5431 (49.47) |
| Pregnancy (Any ICD-10 code starting with O) | 5 68 152 (4.50) | 894 (8.14) |
| STI (A50-A64)                | 98 817 (0.78)                | 331 (3.01)        |
| Substance Abuse (F10, F11, F12, F13, F14, F15, F16, F18, F19) | 1 52 435 (1.21) | 1215 (11.07) |
| Utilization                  | Mean (Median, SD)            | Mean (Median, SD) |
| ER encounters                | 0.2 (0.6)                    | 0.9 (0.2)         |
| Inpatient encounters         | 0.1 (0.3)                    | 0.2 (0.7)         |
| Outpatient encounters        | 2.5 (1.4)                    | 4.2 (2.8)         |
| Cost                         | Mean (Median, SD)            | Mean (Median, SD) |
| Total spend                  | 45 85 (835, 18,843)          | $10,138 (2,702, 28,216) |
| Total spend range            | Count Percentage of total    | Count Percentage of total |
| [0, 2000]                    | 86 08 637 (68.25)            | 4754 (43.30)      |
| [2000, 5000]                 | 18 33 133 (14.53)            | 2194 (19.98)      |
| [5000, 8000]                 | 6 57 803 (5.21)              | 1047 (9.54)       |
| ≥8000                        | 15 13 907 (12.00)            | 2985 (27.19)      |
1.68 times more frequent for our DEV cohort, women with DEV had 4.5 times more emergency visits in the months preceding the index encounter, suggesting the ED as an important clinical setting for IPV screening.

To compare the expected percentage of women experiencing violence who access healthcare services with the rate we identified, we referenced the most recent estimated data from the National Intimate Partner and Sexual Violence Survey (NISVS) and National Violence Against Women Survey. According to the NISVS, women in the US have a 12-month prevalence of “any contact sexual violence, physical violence, and/or stalking” of 5.5% [95% CI 4.8–6.3%]. Based on the estimates from the NVAW survey, 39.0% of survivors were injured in their most recent experience of violence and 30.2% of those injured received medical care for their injury. Using these values, one would expect 0.65% of a cohort of women to have sought medical care over a 12 month period for an injury related to experiencing violence. We identified 10 980 women or 0.087% over 10 months. The difference in our identification rate and the prevalence reported in national surveys illustrates the need for ongoing research aimed at developing best practices for early intervention for survivors of violence in the healthcare setting. As healthcare systems prioritize screening and intervention around social determinants of health, it is important to consider provider and patient factors which contribute to a low recognition rate despite increased care needs and utilization. By describing the specific health experiences of women with DEV, this study provides insights which can help shape the direction of future investigation.

Because quantifying the financial and health impact of VAW has always been challenging, few studies attempt to estimate the cost to survivors or for the healthcare system in general. One study estimated the lifetime cost of IPV was $103 767 per female survivor, with a national economic general. One study estimated the lifetime cost of IPV was $3.6 trillion, including $2.1 trillion in medical annual healthcare costs between $439 and $2263 for women caring for their injury. Using these values, one would expect 0.65% of a cohort of women to have sought medical care over a 12 month period for an injury related to experiencing violence. We identified 10 980 women or 0.087% over 10 months. The difference in our identification rate and the prevalence reported in national surveys illustrates the need for ongoing research aimed at developing best practices for early intervention for survivors of violence in the healthcare setting. As healthcare systems prioritize screening and intervention around social determinants of health, it is important to consider provider and patient factors which contribute to a low recognition rate despite increased care needs and utilization. By describing the specific health experiences of women with DEV, this study provides insights which can help shape the direction of future investigation.

Because quantifying the financial and health impact of VAW has always been challenging, few studies attempt to estimate the cost to survivors or for the healthcare system in general. One study estimated the lifetime cost of IPV was $103 767 per female survivor, with a national economic burden of $3.6 trillion, including $2.1 trillion in medical costs. Previous studies have estimated an increase in annual healthcare costs between $439 and $2263 for women experiencing violence. These studies relied on small sample sizes and self-reporting of experiences of violence and healthcare utilization. This study leverages a unique and expansive national dataset to increase the reliability of cost estimates, as using private insurance claims allows us to report the administratively observed utilization and cost patterns for women with DEV. Using our rate of DEV detection and estimate of increased annual cost for survivors, the US has $611 million in annual healthcare costs associated with VAW.

Limitations

The United Health Clinical Research Database provides a large population-based cohort with verified information for all healthcare accessed via insurance during the study period. Compared with previous studies seeking to assess outcomes for women experiencing violence, this large sample size and wealth of clinical information provide important new insights into this population while suggesting areas for intervention. However, the use of administrative data has some important limitations. First, we were unable to review charts for clinical clarification, identification of errors in coding, or controlling for differences in billing or diagnostic practices between providers. We believe misclassification errors were likely to occur at random across the data. Second, the lack of consistent racial or ethnic demographic information within the claims data and the inability to identify gender outside what was assigned at birth preclude this study from presenting stratification of outcomes among groups disproportionately impacted by violence. Given known differences in rates of VAW for women of different racial or ethnic backgrounds, as well as increased rates of violence against transgender women, the inability to present outcomes for these populations is a call to action for future research. Third, our data is limited to only privately-insured women and the generalizability of these findings to a publicly-insured population is unknown. Future research should be conducted to estimate the costs of VAW enrolled in Medicare and Medicaid.

Lastly, under-ascertainment of DEV is a threat to validity in this study. To establish inclusion criteria, care was taken to create a comprehensive list of ICD-10 codes. That said, it is possible that we have some omitted diagnostic codes. More significantly, past studies have cautioned that with current provider documentation patterns, ICD-10 coding alone might not have sufficient sensitivity or specificity to replace national surveys in research of prevalence and associated outcomes of IPV. Our method identifies women who had an insurance billing claim with an identified code during the study period. Women who experienced violence but did not seek care, or who did not have an identified diagnosis added to the medical record, are not included in the DEV cohort. Given this under-ascertainment, this cohort is not generalizable to the full population of women with violence exposure, but only to women with DEV in a healthcare setting. It is plausible that the DEV cohort may include women with higher-severity injury episodes and that the comparison group includes women with violence experiences that remain undocumented in medical settings.

Conclusions

Despite the limitations noted above, this study was the first in the past decade to use population-based data to estimate differences in health status and healthcare expenditures for women who experience violence. Our study demonstrates that survivors of DEV have disproportionately adverse
health status and increased touchpoints with the medical system. This adds even more importance to the role of healthcare settings as key access points for primary, secondary, and tertiary intervention efforts. Healthcare providers have a unique role to play, as proper assessment and resource triaging can lead to early detection and intervention for women who experience violence.32

Resourcing of targeted efforts to prevent exposure and minimize harm after experiences of violence are needed. Results from this study can be used to promote stakeholder engagement—by expanding our ability to quantify the effect of VAW beyond the individual survivor and demonstrating its impact on the healthcare system at large. These results also illuminate the current insufficiency of public health resources available to support effective violence prevention, as well as the need for more evidence and innovation to support and optimize these resources. The differences in expenditure outcomes identified in this study can be used by advocates and policy makers to demonstrate the value of funding prevention and early intervention programs. Current models showing success include survivor-centered assessments that connect patients to support and services regardless of disclosure, medical record protocols that capture detailed and standardized IPV data, integration of violence-care into quality and meaningful use measures, and community education on the health implications of trauma and violence.32,33 Given the scale and sequelae of VAW, further funding, research, and support is warranted to create and implement inventions within the healthcare setting and beyond.

Declaration of Conflicting Interests
The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding
The author(s) received no financial support for the research, authorship, and/or publication of this article.

ORCID iDs
Rachel Kishton https://orcid.org/0000-0002-5541-2841
Natalie E. Sheils https://orcid.org/0000-0002-0631-5834

Supplemental Material
Supplemental material for this article is available online.

References
1. Basile KC, Black MC, Breiding MJ, et al. National intimate partner and sexual violence survey; 2010. U.S. Department of Health & Human Services.
2. Smith SG, Zhang X, Basile KC, et al. The national intimate partner and sexual violence survey: 2015 data brief—updated release. NISVS; 2018.
3. Garcia-Moreno C, Watts C. Violence against women: an urgent public health priority. Bull World Health Organ. 2011;89:2-2.
4. D’Inverno AS, Smith SG, Zhang X, Chen J. The impact of intimate partner violence: a 2015 NISVS research-in-brief. Atlanta, GA: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention. 2019;2:1-3.
5. Karakurt G, Smith D, Whiting J. Impact of intimate partner violence on women’s mental health. J Fam Violence. 2012;29(7):693-702. doi:10.1007/s10896-014-9633-2
6. Dichter ME, Sorrentino AE, Haywood TN, et al. Women’s healthcare utilization following routine screening for past-year intimate partner violence in the veterans health administration. J Gen Intern Med. 2018;33(6):936-941.
7. Coker AL, Reeder CE, Fadden MK, Smith PH. Physical partner violence and medicare utilization and expenditures. Public Health Rep. 2004;119(6):557-567.
8. Jones AS, Dienemann J, Schollenberger J, et al. Long-term costs of intimate partner violence in a sample of female HMO enrollees. Womens Health Issues. 2006;16(5):252-261.
9. Ulrich YC, Cain KC, Sugg NK, Rivara FP, Rubanowice DM, Thompson RS. Medical care utilization patterns in women with diagnosed domestic violence. Am J Prev Med. 2003;24(1):9-15.
10. Bonomi AE, Anderson ML, Rivara FP, Thompson RS. Health care utilization and costs associated with physical and non-physical-only intimate partner violence. Health Serv Res. 2009;44(3):1052-1067.
11. Fishman PA, Bonomi AE, Anderson ML, Reid RJ, Rivara FP. Changes in health care costs over time following the cessation of intimate partner violence. J Gen Intern Med. 2010;25(9):920-925.
12. Rivara FP, Anderson ML, Fishman P, et al. Healthcare utilization and costs for women with a history of intimate partner violence. Am J Prev Med. 2007;32(2):89-96.
13. Day T, McKenna K, Bowlus A. The economic costs of violence against women: an evaluation of the literature. United Nations. 2005:1-66.
14. Tennessee AM, Bradham TS, White BM, Simpson KN. The monetary cost of sexual assault to privately insured US women in 2013. Am J Public Health. 2017;107(6):983-988. doi:10.2105/AJPH.2017.303742
15. Btoush R, Campbell JC, Gebbie KM. Care provided in visits coded for intimate partner violence in a national survey of emergency departments. Women’s Health Issues. 2009;19(4):253-262.
16. Davidov DM, Larrabee H, Davis SM. United States emergency department visits coded for intimate partner violence. J Emerg Med. 2015;48(1):94-100. doi:10.1016/j.jemermed.2014.07.053.
17. Kivelä S, Leppäkoski T, Ruohoniemi J, Puolijoki H, Paavilainen E. The documentation and characteristics of hospitalized IPV patients using electronic medical records data: a follow-up descriptive study. J Fam Violence. 2019;34(7):611-619. doi:10.1007/s10896-019-00081-z
18. Olive P. Intimate partner violence and clinical coding: issues with the use of the International Classification of Disease (ICD-10) in England. J Health Serv Res Policy. 2018;23(4):212-221. doi:10.1177/1355819618781413
19. World Health Organization. International classification of
diseases, Accessed August 19, 2020. https://icd.who.int/
browse10/2016/en.

20. Centers for Medicare and Medicaid Services. ICD-10-CM
official guidelines for coding and reporting. 2016. Accessed
December 8, 2020. https://www.cms.gov/Medicare/Coding/
ICD10/Downloads/2016-ICD-10-CM-Guidelines.pdf.

21. Anne E, Claudia S, Harris D, Rosanna C. Comorbidity
measures for use with administrative data. Med Care.
1998;36(1):8-27.

22. Van Walraven C, Austin PC, Jenings A, Quan H, Forster AJ.
A modification of the Elixhauser comorbidity measures into a
point system for hospital death using administrative data. Med
Care. 2009;47(6):626-633.

23. Austin SR, Wong YN, Uzzo RG, Beck JR, Egleston BL.
Why summary comorbidity measures such as the charlson
comorbidity index and Elixhauser score work. Med Care.
2015;53(9):e65-e72.

24. Carbone-López K, Kruttschnitt C, Macmillan R. Patterns of
intimate partner violence and their associations with physical
health, psychological distress, and substance use. Public
Health Rep. 2006;121(4):382-392.

25. Bailey BA. Partner violence during pregnancy: prevalence,
effects, screening, and management. Int J Women’s Health.
2010;2:183.

26. Breiding MJ, Smith SG, Basile KC, Walters ML, Chen J,
Merrick MT. Prevalence and characteristics of sexual violence,
stalking, and intimate partner violence victimization—national
intimate partner and sexual violence survey, United States,
2011. MMWR Surveill Summ. 2014;63(8):1-18.

27. Davidson KW, McGinn T. Screening for social determinants of
health: the known and unknown. JAMA. 2019;322(11):1037-
1038. doi:10.1001/jama.2019.10915

28. O’Doherty L, Hegarty K, Ramsay J, Davidson LL, Feder
G, Taft A. Screening women for intimate partner violence
in healthcare settings. Cochrane Database Syst Rev.
2015;2015(7):CD007007. doi:10.1002/14651858.CD007007.
pub3

29. Williams JR, Gonzalez-Guarda RM, Halstead V, Martinez
J, Joseph L. Disclosing gender-based violence during health
care visits: a patient-centered approach. Journal of interper-
sonal violence. 2020;35(23-24):5552-5573.

30. Peterson C, Kears MS, McIntosh WL, et al. Lifetime eco-
nomic burden of intimate partner violence among US adults.
Am J Prevent Med. 2018;55(4):433-444.

31. Tjaden PG, Thoennes N. Full report of the prevalence, inci-
dence, and consequences of violence against women. (NCJ
183781). Washington, DC: U.S. Department of Justice Office
of Justice Programs National Institute of Justice; 2000.

32. Bair-Merritt MH, Lewis-O’Connor A, Goel S, et al. Primary
care-based interventions for intimate partner violence: a sys-
tematic review. Am J Prev Med. 2014;46(2):188-194.

33. Miller E, McCaw B, Humphreys BL, Mitchell C. Integrating
intimate partner violence assessment and intervention
into healthcare in the United States: a systems approach. J
Women’s Health. 2015;24(1):92-99.