

Intimate Partner Violence Against Women Do Victims Cost Health Plans More?

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BACKGROUND. Previous studies of intimate partner violence have not compared the health care costs of female victims with those of a general female population.

METHODS. Our study is an analysis of the computerized cost data for 126 identified victims of intimate partner violence in a large health plan in Minneapolis and St. Paul, Minnesota, in 1994. Data were compared with a random sample of 1007 general female enrollees (aged 18 to 64 years) who used health care services in the same year.

RESULTS. We found that an annual difference of \$1775 more was spent for victims of intimate partner violence than on a random sample of general female enrollees. Regression analyses found that victims of intimate partner violence were significantly younger and had more hospitalizations, general clinic use, mental health services use, and out-of-plan referrals. Use of emergency room services was the same across groups.

CONCLUSIONS. Women who were victims of intimate partner violence cost this health plan approximately 92% more than a random sample of general female enrollees. Contrary to the findings of other studies, use of emergency room services was not a driving factor in the higher costs. Findings of significantly higher mental health service use are supported by other studies.

KEY WORDS. Domestic violence; health care costs; medical records systems, computerized; regression analysis. (*J Fam Pract* 1999; 48:439-443)

Intimate partner violence is defined as a pattern of abusive and coercive behaviors, including physical, sexual, and psychological attacks and economic coercion, that adults or adolescents use against their intimate partners. It has also been called wife abuse, spouse abuse, wife beating, marital assault, woman battery, conjugal violence, intimate violence, battering, and partner abuse.¹ Repeated physical violence, psychological abuse, or sexual assault from someone a woman knows and trusts has serious medical, psychological, and social consequences.²

Intimate partner violence has historically been considered a social or criminal justice problem, not a health care problem. However, victims routinely seek care for medical complaints related to battering, and providers frequently miss the opportunity to address the underlying cause of the complaint.³ Intimate partner violence has physical and emotional consequences for the victims and their children, such as death, serious injury, and chronic

medical and mental health issues.

Findings from the 1998 National Violence Against Women Survey⁴ showed that 1.5 million women are raped or physically assaulted by an intimate partner annually in the United States. In addition, 36% of the women injured during their most recent rape since age 18 years and 30% of the women injured during their most recent physical assault since age 18 received some type of medical treatment. Other studies found an incidence of battering from 7% to 44%, depending on the sampled population.^{5,6} Twenty-five percent⁷ to 30%¹⁰ of all women report being abused at some point in their lives.

Studies have shown significant relationships between intimate partner violence and chronic pain,^{11,12} depression,¹³ and substance abuse.¹⁴ Significantly lower scores on self-reported physical and mental health¹⁵⁻¹⁷ and higher use of emergency room services^{7,9,18,19} have also been reported of victims of intimate partner violence. Relationships have been drawn between intimate partner violence and use of chronic pain clinics¹¹ and mental health services,^{7,13} and gastrointestinal illness.²⁰ The American Medical Association Council on Scientific Affairs²¹ reports that victims of this type of violence may have delayed physical effects, including arthritis, hypertension, and heart disease.

Estimates put the direct medical cost of care for battered women at approximately \$1.8 billion per year.²² Factors that indirectly add to the cost include days of work missed; decreased productivity in the workplace due to emotional, psychiatric, and medical sequelae of

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TABLE 1

Age and Cost of Care Differences Between Intimate Partner Violence Victims and Female Health Plan Enrollees

Measurement	Age, years		Cost, dollars	
	Identified Intimate Partner Violence Victim	General Female Enrollees	Identified Intimate Partner Violence Victim	General Female Enrollees
Mean (SD)	37 (7.5)	40 (11.6)	3635 (8663)	2201 (6381)
Minimum	18	18	16	12
Maximum	60	64	65,555	140,024

Note: This table compares age and cost of patients identified as victims of intimate partner violence from 1992 to 1994 and continuously enrolled during 1994 (n = 126) and a random sample of general female members (continuously enrolled) who used health services during 1994 (n = 1007). SD denotes standard deviation.

abuse; and the loss of young people from the workplace because of death or disability.²³ It is clear from these data that one could expect victims of intimate partner violence to significantly affect the cost to a health plan of delivery of health care services.

None of these data compare identified victims of intimate partner violence with the general population in terms of cost of delivering health care services. Our goal was to add to the body of scientific literature on intimate partner violence by evaluating the cost to health plans of identified victims and by comparing it with that of a general female population.

Women appear to be at greater risk for injury from abuse and are likely to attack their partners in self-defense.²⁴ We focused on intimate partner violence against women, while acknowledging that men also experience it.²⁵

METHODS

STUDY DESIGN

We initially identified potential victims of intimate partner violence by the presence of diagnostic codes in the general medical charts indicating a possible case of abuse. This included codes for injuries to the head or neck, a twisted ankle, or depression. Then the general medical and mental health charts were reviewed for indications of intimate partner violence. Unfortunately, very few medical charts indicated any such reference. Therefore, because of budgetary constraints, our chart abstraction focused on mental health chart reviews.

Our analysis involved using computerized health plan data to identify the differential in cost incurred by a large health plan in Minneapolis and St. Paul, Minnesota,* providing health care services to members who are identified as victims of intimate partner violence compared with the general female health plan population. All

*The portion of the health plan data used for this study is from 19 staff-model clinics, urban and suburban primary care offices with family physicians, internists, and pediatricians. Some clinics have obstetrician gynecologists and other specialists on site. All patients had insurance, and less than 5% of the population was on Medicaid.

women referred by primary care practitioners to mental health services for treatment for intimate partner violence from 1992 to 1994 (n = 126), and continuously enrolled in the health plan for 1994, were included in the study. A random sample of 1007 continuously enrolled adult women who used health services during 1994 but were not identified as experiencing intimate partner violence was chosen for a comparison sample equivalent to the hypothesized prevalence of battered women among users of health services in a health plan. Gin and colleagues²⁶ reported that 14% of women surveyed in an ambulatory setting (internal medicine clinics) were experiencing intimate partner violence. The ages of battered women in our sample ranged from 18 to 61 years. Therefore, the age of the control sample was truncated at 64 years to avoid cost estimates using the Medicare population.

All data were abstracted from computerized databases in the health plan. Cost was defined as internal charges designated for each service in the system. Internal charges measure resource use within the health plan and provide measures of health plan cost. These charges were obtained for hospitalizations, emergency room visits, in-patient skilled nursing, physical therapy, occupational therapy, home health visits, speech therapy, diagnostic and laboratory procedures, pharmaceuticals, durable medical equipment, primary care clinic visits, mental health visits, after-hours clinic visits, affiliate (specialty) visits, and out-of-plan clinic visits.

DATA ANALYSIS

Using regression analysis, we compared the age-adjusted mean of the total cost of health care services for 1994 for identified victims of intimate partner violence with the age-adjusted mean of the general health plan population.

Total cost of health care services for the 2 groups during 1994 is modeled using generalized linear regression as a gamma model with a log link function.²⁷ The independent covariates (case controls) are age, age², and abuse. Since the random sample of adult women was drawn from users of health services, it was not necessary to model the probability of use.

RESULTS

Means and standard deviations of the age and cost variables appear in Table 1. Identified victims of intimate partner violence were younger and used greater amounts of resources than the general health plan population. The average age of identified victims of intimate partner violence was 37 years, with a mean cost of \$3635, while the average age for the general health plan female enrollees (under age 65 years) is 40 years with a mean cost of \$2201.

Coefficient estimates of the effects of age and intimate partner violence on the cost of health care appear in Table 2. Age and involvement with a violent intimate partner were significant predictors of cost. Controlling for age as a predictor of cost, the coefficient for intimate partner violence indicates that victims have a 92%* higher cost than the general female health plan enrollee.

An estimate of the difference in cost for identified victims of intimate partner violence and general female health plan enrollees was calculated for the age distribution of the battered women. The estimate represents the potential cost saving if none of the identified victims was abused. The additional cost for identified victims of intimate partner violence is estimated at \$1775, with a standard error of \$800, estimated using the delta method ($P = .05$).

Table 3 gives breakdowns of unadjusted cost between the groups by category of health care cost. Although victims of intimate partner violence have higher hospitalization costs than the general female enrollees, the difference is not statistically significant. Emergency department services were not heavily used by victims of intimate partner violence or by the comparison sample. An average cost of \$46 per person was found for victims, compared with \$36 for the comparison group, but the difference was not statistically significant. Significant differences between the groups were found for general ambulatory clinic visits ($P < .00$), and mental health clinic visits ($P < .00$). Mental health care costs were 800% higher among identified victims of intimate partner violence.

The number of out-of-plan referrals by

*The exponentiated coefficient is a cost multiplier for that variable.

TABLE 2

General Linear Regression Model of Total Cost of Care

Variable	Coefficient (SE)	Standard Deviation	P
Intercept	7.59	.099	.000
Age	.024	.006	.000
Intimate partner violence	.653	.227	.004

Note: Controlling for age, victims of intimate partner violence cost the health plan approximately 92% (exponentiated coefficient = 0.653) more than those not identified as victims of this type of violence.

Identified intimate partner violence victims, $n = 126$; general female enrollees, $n = 1007$. SE denotes standard error.

providers was also higher for the intimate partner violence victims than for the general female enrollees ($P < .05$). We do not know if these differences were from mental health services provided by a referral organization or other services related to specialty care for physical injuries. The use of affiliate visits was also significantly different between the groups ($P < .00$). These visits are typically unapproved clinic visits, for which the enrollee has a greater out-of-pocket expense. The costs of these visits were higher in the victim group. No sig-

TABLE 3

Cost of Care Comparisons Between Intimate Partner Violence Victims and a Random Sample of Female Health Plan Enrollees

Category	126 Identified Intimate Partner Violence Victims \$ (SE)	Random Sample of 1007 General Female Enrollees \$ (SE)	P
Hospitalizations	1006 (4787)	603 (4217)	.32
Emergency department visits	46 (188)	36 (185)	.60
General clinic ambulatory visits	619 (700)	379 (532)	.00
Mental health clinic visits	414 (573)	53 (252)	.00
Out-of-pocket referrals*	634 (1974)	281 (1050)	.05
Affiliate visits†	136 (143)	33 (403)	.00
After-hours care	29 (63)	16 (72)	.26
Home health	0 (0)	27 (784)	.70
Physical therapy	35 (210)	25 (181)	.55
Pharmacy	82 (131)	62 (185)	.23
Durable medical equipment	5 (35)	12 (106)	.48
HealthPartners lab‡	79 (153)	72 (163)	.61
Diagnostic and lab§	167 (916)	137 (586)	.62
All other	485 (1623)	358 (1230)	.30

SE denotes standard error.

Note: Cost comparisons between identified intimate partner violence victims continuously enrolled during 1994 and a random sample of general female members (continuously enrolled) who utilized health services during 1994.

*Referrals to unaffiliated clinics where the enrollee paid 100% out of pocket.

†Unapproved clinic visits where the enrollee paid a percentage out of pocket.

‡Laboratory tests performed in-house.

§Testing done at a laboratory external to, but contracted by, health plan.

nificant differences were found and relatively little cost was accrued by visits for after-hours care; use of diagnostic and laboratory services; use of home health services; and use of physical therapy, pharmacy, durable medical equipment, and other laboratory and health services.

DISCUSSION

Women patients in this health plan who were referred for treatment for intimate partner violence had significantly higher costs and were younger than women of the health plan population in general. These results are consistent with findings from earlier studies showing that victims of intimate partner violence used more health care services.

Because the victims of intimate partner violence were identified by referrals to mental health services for treatment of such violence, it is not surprising that they would use more mental health services. It is less intuitive that they would visit general ambulatory clinics more frequently, as was found. Perhaps these women visit clinics because they can provide a safe and available support system. Many of the chief complaints and problems identified may be proxies for the real problem.

The higher rate of out-of-plan referrals we found for victims may be because of concerns for confidentiality. For example, the victim or abuser may be an employee of the health plan, the abuser may receive care through the health plan, or the victim may intimately know someone who is an employee of the health plan. The same issue could contribute to the greater use of more expensive affiliate clinics. The victim may be willing to pay for a certain level of anonymity, not wishing to present to her provider with certain injuries, either physical or mental.

It is clear that victims of intimate partner violence are active participants in the health care system, more so than women enrolled in general health plans. What is not clear is whether they use health services more often because of their abusive relationships or because of other reasons.

The victims from this health plan did not use emergency services more often than general female enrollees. Abbott and colleagues²⁸ found that 11.7% of women who had current husbands or boyfriends attributed their emergency department visit to domestic violence. Other studies²⁹ have reported higher percentages. However, some of the high-end percentages are made on the basis of a sample that excludes other injury victims and then calculates the percentage, thus making it much higher than if we had looked at all emergency department visits made by women. McLeer and coworkers⁹ excluded all motor vehicle crashes before calculating the percentage of battered women seen in the emergency department. Since our sample was drawn from general users of services, not just those women using the emergency department, it is difficult to compare these results with studies

drawn from different populations. We do not claim to have identified all victims of intimate partner violence in the health plan, only those referred to mental health services for treatment of intimate partner violence. We present the average cost of emergency department visits, not the probability of use of emergency services.

LIMITATIONS

There are several limitations to our study. One of the methods used to identify victims of partner violence was a list of mental health patients referred for treatment of this type of violence. These patients' charts were reviewed for documentation of such violence. Other methods of identification were attempted. We did a retrospective review of health plan charts from 1995, with 475 randomly selected ambulatory clinic charts with ICD-9 codes for depression or injury for patients the same age as the subjects. Unfortunately, there was no documentation of screening for abuse, and only 0.05% had documentation of counseling for potential abuse.³⁰ The ICD-9 code for adult maltreatment (995.80) and counseling a victim of spousal and partner abuse (V61.11) are not routinely used, and very few were found in the data.

The women in our control group were not identified as intimate partner violence victims. However, this does not mean that they were *not* victims, perhaps just not documented. Having abused women in the control group would have a conservative effect on any difference between the groups, if the care of abused women does result in higher costs.

This study is a snapshot in time for a single health plan and cannot necessarily be generalized to other health plans. It would be interesting to compare the costs of victims' health care over several years and contrast those costs with the costs of nonvictims with chronic conditions such as diabetes, fibromyalgia, headache, or hypertension. It would be valuable to evaluate the difference between the costs of victims cared for by only the primary care physician and those who have entered the mental health system. Ideally, health care costs before and after documentation of intimate partner violence, or before and after treatment occurs should be examined to evaluate the potential of long-term cost saving of identification and treatment.

Because of the nature of the health plan's data set, we were unable to compare victims with nonvictims on other factors, such as socioeconomic status, education level, family size, and marital status. These would be interesting variables to include in future studies examining cost differences.

CONCLUSIONS

We need to continue to raise the awareness of the medical community about intimate partner violence as a major clinical and public health problem. Health care

providers are in excellent positions to identify women in abusive relationships. They are able to assist these women with appropriate interventions to help decrease the intimate partner violence and reduce the long-term need for health care services related to the abuse. Many groups have developed guidelines to aid providers in the identification and treatment of this type of abuse. These guidelines recommend screening by providers in primary care, dentistry, the emergency department, and specialty clinics (ie, gastroenterology).²

Partner violence is costly to society in many ways. The early identification and treatment of victims and potential victims will most likely benefit health care systems in the long run. Our study probably underestimates potential cost saving, given the limitations in the identification of victims (ie, only victims willing to see a mental health professional). Also, this study does not include the health care costs of children who witness the violence and may develop a variety of physical and behavioral problems.³¹

This is an important issue for health plan administrators who are in a position to allocate money for physician and staff training on intimate partner violence screening and intervention. Understanding the health care costs of victims is valuable to policymakers and intimate partner violence advocates dealing with the loss of health insurance for victims of partner violence due to preexisting conditions.

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REFERENCES

- Ganley A. Understanding intimate partner violence. In: Lee D, Durborow N, Salber P, eds. *Improving the health care response to intimate partner violence: a resource manual for health care providers*. San Francisco, Calif: Family Violence Prevention Fund; 1996:19-44.
- Warshaw C. Identification, assessment and intervention with victims of intimate partner violence. In: Lee D, Durborow N, Salber P, eds. *Improving the health care response to intimate partner violence: a resource manual for health care providers*. San Francisco, Calif: Family Violence Prevention Fund; 1996:49-86.
- Salber PR. Introduction. In: Lee D, Durborow N, Salber P, eds. *Improving the health care response to intimate partner violence: a resource manual for health care providers*. San Francisco, Calif: Family Violence Prevention Fund; 1996:1.
- Tjaden P, Thoennes N. Prevalence, incidence and consequences of violence against women: findings from the National Violence Against Women Survey. Washington, DC: US Department of Justice: National Institute of Justice and Centers for Disease Control; 1998.
- Elliot B, Johnson M. Domestic violence in a primary care setting: patterns and prevalence. *Arch Fam Med* 1995; 4:113-9.
- Hamberger L, Saunders D, Hovey M. Prevalence of domestic violence in community practice and rate of physical inquiry. *Arch Fam Med* 1992; 24:283-7.
- Stark E, Flitcraft A, Frazier W. Medicine and patriarchal violence: the social construction of a private event. *Int J Health Serv* 1979; 98:461.
- Rath G, Jarratt L, Leonardson G. Rates of domestic violence against adult women by men partners. *J Am Board Fam Pract* 1989; 2:227-33.
- McLeer S, Anwar R, Herman S, Maquiling K. Education is not enough: a systems failure in protecting battered women. *Ann Emerg Med* 1989; 18:651.
- Centers for Disease Control. Lifetime and annual incidence of intimate partner violence and resulting injuries—Georgia, 1995. *MMWR* 1998; 849-53.
- Haber J. Abused women and chronic pain. *Am J Nurs* 1985; 85:1010.
- Domino J, Haber J. Prior physical and sexual abuse in women with chronic headache: clinical correlates. *Headache* 1987; 27:310-4.
- Carmen E, Riecker P, Mills T. Victims of violence and psychiatric illness. *Am J Psychiatry* 1984; 141:378.
- Leonard KE. Drinking patterns and intoxication in marital violence: review, critique and future directions for research. In: Martin S, ed. *Alcohol and interpersonal violence: fostering multidisciplinary perspectives*. Washington, DC: US Department of Health and Human Services; 1992:253-80.
- Mullen PE, Romans-Clarkson SE, Walton VA, Herbison GP. Impact of sexual and physical abuse on women's mental health. *Lancet* 1988; 1:841.
- Jaffe P, Wolfe D, Wilson S, Zak L. Emotional and physical health problems of battered women. *Can J Psychiatry* 1986; 31:625.
- Saunders D, Hamberger K, Hovey M. Indicators of woman abuse based on a chart review at a family practice center. *Arch Fam Med* 1993; 2:537-43.
- Flaherty EW, Kurtz DE. Battering victims: identification in emergency rooms. Final report. National Institute of Mental Health Grant #R01.MH37180. Philadelphia, Pa: Philadelphia Health Management Corporation; 1985.
- Rand M. Violence-related injuries treated in hospital emergency department. Special report. Washington, DC: US Department of Justice, Bureau of Justice Statistics, 1997.
- Drossman DA, Lesserman J, Rachman G, Zhiming L, Gluck H, Toomey TC. Sexual and physical abuse in women with functional or organic gastrointestinal disorders. *Ann Intern Med* 1990; 113:828.
- American Medical Association Council of Scientific Affairs. Violence against women: relevance for medical practitioners. *JAMA* 1992; 267:3184-9.
- Miller TR, Cohen MA, Rossman SB. Victim costs of violent crime and resulting injuries. *Health Aff* 1993; 12:186.
- Bergman B, Brismar B. A 5-year follow-up study of 117 battered women. *Am J Public Health* 1991; 81:1486-9.
- Cascardi M, Langhinrichsen J, Vivian D. Marital aggression: impact, injury, and health correlates for husbands and wives. *Arch Intern Med* 1992; 152:1178-84.
- Schwartz MD. Gender and injury in spousal assault. *Soc Focus* 1987; 20:61.
- Gin NE, Rucker L, Frayne S, Cygan R, Habbell FA. Prevalence of intimate partner violence among patients in three ambulatory care internal medicine clinics. *J Gen Intern Med* 1991; 6:317.
- McCullagh P, Nelder J. *Generalized linear models*. London, England: Chapman & Hall; 1989.
- Abbott J, Johnson R, Kozol-McLain J, Lowenstein S. Domestic violence against women: incidence and prevalence in an emergency department population. *JAMA* 1995; 273:1763-7.
- American Medical Association. American medical association diagnostic and treatment guidelines on domestic violence. *Arch Fam Med* 1992; 1:39-47.
- Bilinkoff J. Focus study domestic violence. Minneapolis, Minn: HealthPartners, Center of Health Promotion; 1995.
- Wolak J, Finkelhor D. Children exposed to partner violence. In: Jasinski J, Williams L, eds. *Partner violence: a comprehensive review of 20 years of research*. Thousand Oaks, Calif: Sage Publications; 1998:73-112.