Prevalence of Domestic Violence and Associated Factors among Women on a Trauma Service

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Background: Despite the increasing recognition of the problem of domestic violence (DV), it has not been studied in surgical populations.

Methods: Eligible patients underwent screening for a recent history of DV and alcohol abuse (AA). Other demographic, health, and injury-related data were also collected.

Results: Of 127 subjects entered into the study, 18% screened positive for DV and 21% screened positive for AA. Of those screening positive for DV, 65% screened positive for AA compared with 12% of those screening negative for DV ($p < 0.0001$). Screening for DV was recommended by a vast majority of subjects, with only 6% of subjects responding that it was not appropriate.

Conclusion: Both DV and AA have a high prevalence among female trauma patients admitted to trauma centers. Nearly all subjects recommended screening for DV. Screening for DV should be incorporated into the routine care of female trauma patients.

Key Words: Domestic violence, Alcohol abuse, Trauma, Epidemiology, Women.


Domestic violence (DV), defined as “a pattern of coercive control consisting of physical, sexual, and/or psychological assault against former or current intimate partners”1 is an important public health problem in the United States. One to 2 million women are injured by their partners annually, and 30% to 50% of all homicides of women are performed by former or current intimate partners.2,3 In 90% to 95% of the cases, DV occurs in the setting of a man harming a woman.1,5

In February 2000, the American College of Surgeons (ACS) concluded its statement on domestic violence with the following: “It is therefore the responsibility of the treating surgeon not only to care for the immediate injury and to reassure the patient, but also to identify and report potential threats to his or her safety, and to encourage an ongoing safety strategy.

“Surgeons are encouraged to take a leadership role in their communities, hospitals, and medical schools in preventing and treating domestic violence.”

The Eastern Association for the Surgery of Trauma in June 1999 issued their own position on domestic violence. Their recommended goals included developing a curriculum on domestic violence; supporting a policy of universal screening of all female patients for domestic violence; promoting programs to assist with victims, children, and perpetrators of domestic violence; and developing a research agenda in this area.5

Despite the recommendations of the ACS and Eastern Association for the Surgery of Trauma, no studies have evaluated the prevalence of domestic violence among female general surgical or trauma patients. This study describes the prevalence of a recent history of domestic violence among female patients admitted to general surgery trauma services and explores their characteristics.

MATERIALS AND METHODS

The study is a multicenter cross-sectional survey that enrolled subjects from March through December 2000 at three ACS-designated trauma centers: one urban Level I trauma center, one Level I academic tertiary medical center, and one Level II community teaching hospital. Eligible subjects were injured female patients admitted to the general surgery trauma service, who were at least 18 years old, understood English, and had the cognitive ability to complete the study instrument.

The study was administered by trained female social workers or research nurses. Training consisted of a 4-hour session at a local SAFE House women’s shelter where a legal representative for the shelter and a study investigator (D.M.M.) led a discussion on the topic.
Two validated screens were used to assess for domestic violence, the Partner Violence Screen and the Index of Spouse Abuse. The Partner Violence Screen, described in 1997 in the *Journal of the American Medical Association*, is a three-item instrument that is easy to administer and score. The three items are as follows:

1. “Have you been hit, kicked, punched, or otherwise hurt by someone within the past year? If so, was it by a current or former intimate partner or spouse?”
2. “Do you feel unsafe or afraid in your current relationship?”
3. “Is there a partner from a previous relationship who is making you feel unsafe or afraid now?”

A yes answer to any of the three items results in a positive screen. The Index of Spouse Abuse (see Fig. 1 for examples) is a 30-item test that was described in 1981. Eleven items assess physical abuse, and 19 assess nonphysical abuse. Items are weighted by severity, results are added up, and cutoff scores exist to define a positive screen.

To screen for alcohol abuse, the Alcohol Use Disorder Identification Test (AUDIT) was used (Fig. 2). The AUDIT is a 10-question screening tool that has been found to more accurately screen women for alcohol abuse than other instruments. An AUDIT score of greater than or equal to seven points was used to define a positive screen for alcohol abuse.

Other data we collected included general demographics, medical care use including emergency department/urgent care use, family history of alcohol and other drug abuse, history of rape, and data obtained from the trauma registries of each site, including length of stay, injury severity defined by the Injury Severity Score (ISS) version 1990, and mechanism of injury. The Brief Symptom Inventory (BSI) was used to assess for psychological distress. The BSI is a 53-question screening instrument that breaks down distress into nine subscales of psychological symptoms: somatization, obsessive/compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. Each of these subscales represents categories of psychopathology and consists of a number of questions that assess a number of symptoms. Individual scores are calculated for each subscale, and global scores are also calculated. The Global Symptom Inventory is calculated by summing the nine subscales of the BSI and is an indicator of the global level of distress. In normal subjects who are not patients in a hospital, a normal value is approximately 0.3, compared with a value of 1.37 for psychiatric inpatients.

The study instrument was administered as a written questionnaire, with the research assistant offering to read the questions and options aloud to the subject if she wished. The description of the study, the informed consent process, and the administration of the screening instrument took place in private with only the trained research assistant and subject in the room. As recommended by experts, the women were never asked about domestic violence in the presence of their significant others.

Differences between groups were tested using $\chi^2$ for binomial variables and $t$ tests for continuous variables. Statistical significance was defined as an alpha of 0.05; $p$ values are explicitly stated if they are less than 0.10.

Research assistants entered data using Epi Info Version 6 (Centers for Disease Control and Prevention, Atlanta, GA, and World Health Organization, Geneva, Switzerland). Statistical calculations were performed using SPSS (Version 9.0 for Windows, SPSS, Inc., Chicago, IL). Approval from the institutional review board for human subject research was obtained at each of the three centers.

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**Fig. 1.** The Index of Spouse Abuse, sample questions. To obtain the final score, the weight of each question (a marker of the severity of the action described in the question) is multiplied by the points corresponding to the subject’s response (never = 1, rarely = 2, occasionally = 3, frequently = 4, very frequently = 5,) and the values for all the questions are added to obtain the final score. Cutoff scores exist to define a positive screen.

**Fig. 2.** Alcohol Use Disorder Identification Test (AUDIT.) A score of 7 points or more defines a positive screen for alcohol abuse.
RESULTS

A total of 442 female trauma patients at least 18 years old were admitted to the three hospitals during the time period from March through December 2000, of whom 127 were enrolled in the study. Reasons for nonenrollment included subject refusal (n = 10), subject death (n = 6), subject critically ill or cognitively disabled (n = 7), subject non-English speaking (n = 1), subject missed by recruiters (n = 209), other reason (n = 1), or unknown reason (n = 81). Data obtained from the trauma registries (Table 1) comparing subjects who participated with patients who did not participate revealed no statistically significant differences in terms of age, ISS, length of stay, or percentage presenting with penetrating trauma.

The prevalence of a recent history (within the past year) of domestic violence by the Partner Violence Screen was 23 of the 127 subjects entered into the study (18%) (95% confidence interval [CI], 11–25%). Twenty-seven subjects (21%) (95% CI, 14–28%) screened positive by the Index of Spouse Abuse, and 40 subjects (31%) (95% CI, 24–38%) screened positive using either the Partner Violence Screen or Index of Spouse Abuse. Because of its acceptance in clinical settings, the Partner Violence Screen was used for the remaining analyses.

In response to the question, “Do you think health care providers (doctors, nurses, or others) should ask women questions about family violence?” 88% of subjects responded that health care providers should ask about family violence; only 6% responded no. No patients who screened positive for DV indicated that questions about family violence should not be asked.

Results comparing subject characteristics of those who screened positive for DV with those who screened negative are displayed in Table 2. Age, level of education, income, ISS, and length of stay did not differ comparing subjects who screened positive by the Partner Violence Screen with those who screened negative. Average age was approximately 40 years old, mean ISS was approximately 10, and mean length of stay was about 6 days.

Seventy-seven percent of the subjects responded that they had never been asked about DV before. Of the subjects screening positive for recent DV, 44% had never been asked about it, compared with 85% of those who screened negative ($\chi^2 = 18.3$, $p < 0.001$.)

Twenty-seven subjects (21%) of the total sample screened positive for alcohol abuse by the AUDIT. Of patients who screened positive for DV, 65% also screened positive for alcohol abuse. In contrast, of those who screened negative for DV, 12% of subjects screened positive for alcohol abuse ($\chi^2 = 32.4$, $p < 0.001$.)

As one measure of the clinical significance of a positive screen for domestic violence, subjects were asked, “Has anyone harmed you on purpose causing you to get medical care in the past year?” Thirty-two percent of the subjects who screened positive for domestic violence sought medical care because they were intentionally harmed over the past year, compared with 7% of subjects who screened negative ($\chi^2 = 11.4$, $p = 0.001$.)

Using the BSI to evaluate psychological distress among the women, subjects who screened positive for domestic violence had statistically significant elevations in all nine areas of distress. Subjects in this study who screened positive for DV by the Partner Violence Screen had a statistically significantly higher Global Symptom Inventory than in those who screened negative (0.91 vs. 0.33, $p < 0.001$).

DISCUSSION

This study reveals that a recent history of domestic violence is a common comorbidity among injured female patients admitted to a general surgery trauma service, with 18%, or more than one in six subjects screening positive using a simple, standardized screening tool. This is consistent with results found in other medical populations. In a study of 8,000 married couples, the prevalence rate was 12%. In studies from emergency departments, the prevalence rates range from 22% to 35%. The yearly incidence rate is 14% to 20% among women visiting primary care physicians for routine purposes, with a lifetime prevalence of about 25% to 40%. The popular beliefs concerning the prevalence of this condition differ markedly from these reported data. In a survey of primary care providers in the Seattle area, of 200 respondents, more than half of the providers thought the prevalence rate of DV was less than 1%, nearly half never asked about it, and all felt less comfortable discussing that subject than smoking or alcohol use. Regarding our study of female trauma patients, it is important to recognize that very few of these subjects presented as a direct result of domestic violence; most were blunt motor vehicle injuries. It may be that DV increased the chance of unintentional injury because of the associated higher rates of alcohol abuse and psychological

<table>
<thead>
<tr>
<th>Table 1 Subject Characteristics Comparing Patients Who Entered into Study versus Those Not Enrolled, Obtained from Trauma Registry</th>
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<tr>
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<tr>
<td>Enrolled in Study (n = 127) (SD)</td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>ISS</td>
</tr>
<tr>
<td>Length of stay, days</td>
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<tr>
<td>Percent penetrating injuries</td>
</tr>
</tbody>
</table>

NS, not significant.
distress. To determine whether a patient has a history of domestic violence, she must be asked direct questions regarding that topic.

Screening for domestic violence was approved by a vast majority of the subjects, with only 6% responding that it was not appropriate. Physicians or health care workers should therefore feel comfortable that patients would like them to ask these questions. If appropriate, physicians can then assess the home safety of the patient before discharge and refer her to other widely available resources to minimize her chance of being injured or killed. These resources include hospital-based social workers, local area women’s shelters that can provide shelter, social and legal support, and national hotlines (1-800-799-SAFE). Because many of the subjects who screened positive for DV did not have a primary care provider, the hospital admission for their trauma may be a good opportunity to get them into the health care system, and screening at this point would be appropriate. Screening for DV can be incorporated into a routine questionnaire administered to all trauma patients and can include questions about alcohol use, the presence of a primary care provider, and other pertinent issues.

Our study confirms others by showing that domestic violence is strongly associated with a history of alcohol abuse. It is generally believed that domestic violence precedes alcohol abuse; the risk of violent death in the home is elevated among homes with chronic alcohol use or illicit drug use, and acute episodes of violence commonly involve alcohol use by both parties. Any patient screening positive for domestic violence should be evaluated for a history of alcohol abuse and offered appropriate treatment.

Nearly one third of those who screened positive for domestic violence used medical care because of an assault during the previous year, approximately four times the prevalence of those who screened negative for domestic violence. This reinforces the clinical applicability of the Partner Violence Screen.

The study has a major limitation in that only 127 of 442 eligible patients (28.7%) were recruited into the study. Most of these were not enrolled because they were never contacted by researchers; either they were discharged before being

### Table 2 Characteristics of Women Screening Positive or Negative for Domestic Violence

<table>
<thead>
<tr>
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<th>PVS-Positive (n = 23)</th>
<th>PVS-Negative (n = 104)</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age, yr</strong></td>
<td>37.3 ± 12.3</td>
<td>42.1 ± 17.0</td>
<td>NS</td>
</tr>
<tr>
<td><strong>Number of children</strong></td>
<td>1.8 ± 1.6</td>
<td>2.1 ± 2.4</td>
<td>NS</td>
</tr>
<tr>
<td><strong>Mean Level of education</strong></td>
<td>High school grad</td>
<td>Some college/technical</td>
<td>NS</td>
</tr>
<tr>
<td><strong>Approximate annual income for subject.</strong></td>
<td>$10–$19k</td>
<td>$10–$19k</td>
<td>NS</td>
</tr>
<tr>
<td><strong>Approximate combined annual income for subject and partner</strong></td>
<td>$20–$29k</td>
<td>$30–$39k</td>
<td>NS</td>
</tr>
<tr>
<td><strong>Injury Severity Score (ISS)</strong></td>
<td>9.5 ± 8.3</td>
<td>10.1 ± 8.3</td>
<td>NS</td>
</tr>
<tr>
<td><strong>Length of Stay, days</strong></td>
<td>5.6 ± 5.0</td>
<td>6.7 ± 7.4</td>
<td>NS</td>
</tr>
<tr>
<td><strong>Current history of alcohol abuse by Alcohol Use Disorder Identification Test (AUDIT) (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Has a health care provider (doctor, nurse, or other) ever asked you if your spouse or partner ever hit you or harmed you?” (%)</td>
<td>“Yes”: 13 (56.5)</td>
<td>“Yes”: 15 (15.0)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>“Do you think health care providers (doctors, nurses, or others) should ask women questions about family violence?” (%)</td>
<td>“No”: 10 (43.5)</td>
<td>“No”: 85 (85)</td>
<td></td>
</tr>
<tr>
<td>“Do you have a doctor, nurse practitioner, or other health care provider who you regularly see when you have health problems?” (%)</td>
<td>“Yes”: 21 (100)</td>
<td>“Yes”: 91 (92.9)</td>
<td>NS</td>
</tr>
<tr>
<td>“Not including your current injury, have you had to get medical care for any injuries in the past year?” (%)</td>
<td>“No”: 7 (31.8)</td>
<td>“No”: 96 (93.2)</td>
<td>0.001</td>
</tr>
<tr>
<td>“Has anyone harmed you on purpose causing you to get medical care in the past year?” (%)</td>
<td>“Yes”: 10 (45.5)</td>
<td>“Yes”: 27 (26.2)</td>
<td>0.073</td>
</tr>
<tr>
<td>“Has drinking ever caused your partner or spouse to have problems with health, family, their job, or the police?” (%)</td>
<td>“No”: 12 (54.5)</td>
<td>“No”: 76 (73.8)</td>
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</tr>
<tr>
<td>“Has drinking ever caused any of your [step]parents or guardians to have problems with health, family, their job, or the police?” (%)</td>
<td>“Yes”: 9 (52.9)</td>
<td>“Yes”: 23 (28.0)</td>
<td>0.046</td>
</tr>
<tr>
<td>“Has drug use, either illegal or prescription drugs, ever caused your partner or spouse to have problems with health, family, their job, or the police?” (%)</td>
<td>“No”: 8 (47.1)</td>
<td>“No”: 59 (72.0)</td>
<td></td>
</tr>
<tr>
<td>“Has drug use, either illegal or prescription drugs, ever caused any of your [step]parents or guardians to have problems with health, family, their job, or the police?” (%)</td>
<td>“Yes”: 9 (40.9)</td>
<td>“Yes”: 11 (11)</td>
<td>0.001</td>
</tr>
<tr>
<td>“Has a health care provider (doctor, nurse, or other) ever asked you if your [step]parents or guardians ever hit you or harmed you?” (%)</td>
<td>“No”: 13 (59.1)</td>
<td>“No”: 89 (89)</td>
<td></td>
</tr>
<tr>
<td>“Has drinking ever caused your partner or spouse to have problems with health, family, their job, or the police?” (%)</td>
<td>“Yes”: 7 (41.2)</td>
<td>“Yes”: 3 (3.6)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>“Has drug use, either illegal or prescription drugs, ever caused any of your [step]parents or guardians to have problems with health, family, their job, or the police?” (%)</td>
<td>“No”: 10 (58.8)</td>
<td>“No”: 81 (96.4)</td>
<td></td>
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<tr>
<td>“Has drinking ever caused any of your [step]parents or guardians to have problems with health, family, their job, or the police?” (%)</td>
<td>“Yes”: 3 (14.3)</td>
<td>“Yes”: 6 (5.9)</td>
<td>NS</td>
</tr>
<tr>
<td>“Has drinking ever caused any of your [step]parents or guardians to have problems with health, family, their job, or the police?” (%)</td>
<td>“No”: 18 (85.7)</td>
<td>“No”: 96 (94.1)</td>
<td></td>
</tr>
<tr>
<td><strong>Mean Global Symptom Inventory from Brief Symptom Inventory</strong></td>
<td>0.91 ± 1.1</td>
<td>0.33 ± 0.38</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Lifetime history of being raped (%)</strong></td>
<td>13 (56.5)</td>
<td>39 (38.6)</td>
<td>NS</td>
</tr>
</tbody>
</table>

PVS, Partner Violence Screen.

*Not all subjects answered all questions. Percentages are based on the number of valid responses.*
contacted by researchers or the researchers never knew they were in the hospital. Although the comparison of the data obtained from the trauma registries revealed no statistically significant differences between those who were enrolled with those who were missed, selection bias is a concern.

DV is increasingly being recognized as an endemic problem in society. Trauma systems should incorporate routine screening of female patients for DV to contribute to the primary, secondary, and tertiary prevention of domestic violence.

ACKNOWLEDGMENTS

We thank Madonna Walters, Shannon Porter, Jennifer Fowler, Susan Huehl, Jenny Duff, Judy Mikhail, Leora Bowdin, and Alethia Battles for their hard work developing and carrying out this project.

REFERENCES


EDITORIAL COMMENT

Domestic violence is a recognized public health problem. It is a leading cause of acute and chronic illness in the United States. The magnitude of domestic violence has been documented in publications similar to this well written article by Melnick, Maio, and associates from Michigan. Approximately one third of all emergency department visits are the result of domestic violence. This study reveals that the prevalence is 18% in female patients admitted to the trauma service at three designated trauma centers. This article adds further support to the position of the American College of Surgeons and the Eastern Association for the Surgery of Trauma for increased awareness and identification of domestic violence in the trauma and surgical population. Trauma centers have the opportunity to educate their team members in recognizing domestic violence as a mechanism of injury in their patient population. Each trauma center should devise a protocol or system to identify these patients. The questions that would identify victims of domestic violence must be asked. It is well understood that the questions should be asked in private; however it is yet to be defined who should ask these questions (attending surgeons, residents, social workers, case managers, nursing personnel, or other trained individuals), when the questions should be asked (at admission as part of the secondary survey, following admission as part of the tertiary survey) and what educational programs the screener should attend before proceeding with domestic violence screening. These questions must be evaluated and answered at each institution to maximize identification of victims.

I have two concerns with this study. The first is the number of patients that were missed during the screening process. The recruiters missed 209 patients, with only 28.7% of eligible patients recruited into the study. Selection bias regarding their conclusions is a true concern as noted in the author’s discussion. Second, I would disagree with Dr. Melnick that it is the physician’s responsibility to assess the home safety of the patient before discharge. I do agree that the physician should be educated in the identification of domestic violence victims, reporting of domestic violence, and assisting in development of hospital-based or community domestic violence programs that provide specialized health services and resources to victims of domestic abuse. However, the physician may not be the appropriately trained individual to assess the safety of the home of the patient.

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