Medical Profile of Women Veterans Administration Outpatients Who Report a History of Sexual Assault Occurring While in the Military

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ABSTRACT

To profile differences in current physical symptoms and medical conditions among women users of Veterans Administration (VA) health services with and without a self-reported history of sexual assault sustained during military service, we conducted a cross-sectional analysis of a nationally representative, random sample of women veterans using VA outpatient services (n = 3632). A self-administered, mailed survey asked whether women had sustained sexual assault while in the military and requested information about a spectrum of physical symptoms and medical conditions. A history of sexual assault while in the military was reported by 23% of women VA users and was associated with current physical symptoms and medical conditions in every domain assessed. For example, women who reported sexual assault were more likely to indicate that they had a “heart attack” within the past year, even after adjusting for age, hypertension, diabetes, and smoking history (OR 2.3, 95% CI 1.3–4.0). Among women reporting a history of sexual assault while in the military, 26% endorsed ≥12 of 24 symptoms/conditions, compared with 11% of women with no reported sexual assault while in the military (p < 0.001). Clinicians need to be attuned to the high frequency of sexual assault occurring while in the military reported by women VA users and its associated array of current physical symptoms and medical conditions. Clinicians should consider screening both younger and older patients for a sexual violence history, especially patients with multiple physical symptoms.

INTRODUCTION

A BUSY CLINICIAN EVALUATES sexual assault survivors nearly every day. An estimated 5%–27% of women are sexually assaulted in their lives,1 but as patients typically do not spontaneously disclose this fact to clinicians unless asked,2 this history can go unrecognized. A prior history of sexual assault, however, can influence a patient’s current clinical presentation at an office visit even many years after the attack. The psychological scars that can be associated with

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sexual assault are well documented.\textsuperscript{1,3–5} A growing body of evidence indicates that physical symptoms, such as pelvic pain, irritable bowel syndrome, back pain, and headache, are seen with higher frequency among women with histories of sexual assault as well.\textsuperscript{6–21} Chronic medical conditions, including diabetes,\textsuperscript{13} obesity,\textsuperscript{12} arthritis,\textsuperscript{13} and asthma,\textsuperscript{7,12} also have been reported with increased frequency among sexual assault survivors.

Scientific investigations\textsuperscript{22–24} and media reports have raised the concern that a number of women may have been sexually assaulted during their military service. There are theoretical reasons to expect that sexual assault occurring during military service could be associated with a particularly severe constellation of symptoms and conditions. It is known that specific circumstances of a sexual assault, such as the nature of the attacker-victim relationship,\textsuperscript{25,26} the use of a weapon,\textsuperscript{26,27} and the response of the legal system,\textsuperscript{27,28} are all associated with the severity of subsequent symptoms. Such circumstances may be relevant to sexual assault occurring in a military setting. For example, the woman’s assailant could be serving in the military (perhaps a trusted colleague or a man or woman of higher rank with a fiduciary responsibility toward her), firearms may be readily accessible to assailants in a military setting, and the military has a unique legal system. The military in some ways resembles a domestic setting, with socially interconnected members who live together. At the same time, the military in some ways resembles a work setting, but one where employees cannot leave at will. Such unique features of military service might amplify the severity of symptoms and conditions seen after sexual assault.

Because the nature of military sexual assault may differ from nonmilitary sexual assault in these important ways, we sought to determine whether a self-reported history of sexual assault occurring while in the military (SAIM) is associated with current physical symptoms or medical conditions or both among women veterans using VA outpatient services and to profile these symptoms and conditions. Our study supplements the existing literature by examining (1) a unique population (i.e., women veterans who use VA services), (2) a unique circumstance of sexual assault (i.e., sexual assault sustained during adulthood, specifically during military service), and (3) a broad spectrum of potential symptoms and conditions.

**SUBJECTS AND METHODS**

The VA Women’s Health Project is a cross-sectional, national survey of women veterans who use VA ambulatory care. The study was designed to characterize their health status and is described elsewhere.\textsuperscript{29}

**Survey instrument and measures**

A self-administered, English-language survey included questions on sociodemographic characteristics and current or recent physical symptoms and medical conditions. A major focus of the study was the impact of military duty on subsequent health, so detailed questions assessed the military experience.

For the analyses presented here, the primary independent variable is self-reported history of SAIM. The SAIM group were those women who responded “yes” to the question, “Did you ever have an experience where someone used force or the threat of force to have sexual relations with you against your will while you were in the military?” Those who responded “no” were categorized as having no history of SAIM. Because SAIM was not a major focus of the VA Women’s Health Project (its prevalence was unknown at the time of study design), we did not ascertain if subjects had sustained sexual assault at other times in their lives.

The primary outcome variables were an array of current or recent physical symptoms and medical conditions spanning all major organ systems. Most questions were formatted in one of the following ways: “Are you currently bothered by or being treated for: . . . chronic pelvic pain?” (yes/no); “During the past 4 weeks, to what extent were you limited in your everyday activities by: . . . vision problems?” (not at all/a little bit/moderately/quite a bit/extremely); “In the past 6 months, have you had periods painful enough to interfere with your usual schedule?” (yes/no); “Within the past 12 months, have you been treated by a doctor for: . . . heart attack?” (yes/no).

**Sample**

After obtaining approval from the Edith Nourse Rogers Memorial Veterans Hospital’s Human Subjects Committee, we requested all 172 VA hospitals nationally to provide a randomly
selected subset from all women veterans who had made at least one VA outpatient visit between July 1, 1994, and June 30, 1995. A total of 158 VA hospitals responded.

Eligible subjects were mailed the questionnaire (encoded with a unique identification number) along with a cover letter, a brochure describing the study, a self-addressed, stamped return envelope, a letter of endorsement from the director of the Center for Women Veterans, and a tangible incentive (embossed Post-it® notes). Written informed consent was obtained from each participant. The study sample consists of the 3632 women who returned completed questionnaires (58.4% of those eligible).

Statistical analyses

Background characteristics were compared between women reporting a history of SAIM and those reporting no such history, using two independent samples t tests for continuous variables and Chi-square tests for categorical variables. Descriptive statistics were then generated for each outcome variable (i.e., each physical symptom and each medical condition), and distributional properties were assessed. Chi-square tests were used to evaluate observed differences in the frequency of each physical symptom and condition, according to history of SAIM. Because of the large number of outcome variables in the analysis, two-sided p values of <0.01 are considered statistically significant. However, p values <0.05 are reported as an indicator of trends.

Because advancing age is positively associated with medical illness and, in our sample, negatively associated with a history of SAIM, we sought to minimize the risk of confounding by age. Consequently, we calculated age-adjusted odds ratios (OR) and 95% confidence intervals (CI) for each symptom or condition using logistic regression analysis. (An OR of 1.0 indicates no difference between groups, and an OR>1.0 indicates that SAIM survivors were more likely to report the symptom or condition than were women with no history of SAIM. If the 95% CI range includes 1.0, the reported difference is not statistically significant.) In a second set of models, we included terms for race and education along with age. The results were almost identical to those adjusted for age alone and are not presented here (data available on request). Next, we eliminated overlapping symptoms and counted the total number of symptoms and medical conditions endorsed by each subject (possible range 0–24). Number of symptoms and conditions was classified as 0–5, 6–11, or ≥12. We used Chi-square tests to ascertain differences in the number of symptoms and conditions reported by women with and without a history of SAIM.

To assess for possible sources of bias, we extracted data from the Austin Computerized Data Center, a centralized facility for all VA data files, for every woman selected for inclusion in the VA Women’s Health Project. There were only small differences between responders to the VA Women’s Health Project survey and nonresponders with respect to the variables measured: age, region, Veterans Integrated Service Network, race, eligibility code, marital status, period of service, annual income, total number of VA ambulatory clinic visits per year, and number of VA admissions. Nonresponders were slightly younger than responders (45 vs. 48 years of age, p < 0.05) and had lower annual incomes ($10,521 vs. $12,159, p < 0.05) and fewer annual clinic visits (14.3 vs. 15.8, p < 0.05). To account for the possibility of undercoverage (due to the 14 nonreporting hospitals) and nonresponse bias, we performed poststratification adjustment by region (Eastern, Central, Southern, Western) and age (<25, 25–34, 35–44, 45–54, 55–64, 65–74, 75–84, ≥85). Only age and region were included in the weighting. When multiple other characteristics were examined for responders and nonresponders, no substantive differences were found. All analyses were repeated incorporating the poststratification adjustment weights, and no differences were observed between unweighted and weighted results. This indicated that no significant bias due to undercoverage or nonresponse exists. Thus, unweighted results are presented here.

RESULTS

Of the 3632 respondents, 89 (2%) omitted the question on SAIM and are excluded from further analyses. Among the 3543 remaining, 805 (23%) reported a history of SAIM.

Demographic characteristics of women who did and did not report a history of SAIM are presented in Table 1. Women reporting SAIM were
younger and more likely to have been pregnant at least once. Among those who were unemployed, women reporting SAIM were more likely to say they were not working because of physical illness than were women with no reported SAIM history.

In Table 2, the prevalence of various symptoms reported by the two groups is compared. Women reporting SAIM were significantly more likely to report current or recent symptoms across almost all organ systems assessed. Differences between the groups persisted and even increased after controlling for age (Table 2).

Several serious medical conditions were reported with increased frequency in the women with a history of SAIM (Table 3). They were significantly more likely to endorse currently being bothered by or treated for asthma/emphysema/bronchitis even after controlling for age, race, education, and history of smoking (OR 1.7, 95% CI 1.4, 2.1). (Only age-adjusted OR is shown in Table 3.) Women reporting a history of SAIM were more likely to report having been treated for a “heart attack” within the past year than were women who reported no such history. This difference persisted after controlling for age, hypertension, diabetes, and smoking status (OR 2.3, 95% CI 1.3, 4.0).

SAIM was associated with poor reproductive outcomes, including infertility and lost pregnancies (Tables 2 and 3). Even after controlling for age, women with SAIM were more likely to positively endorse the question, “Is there anything about your military experience that interfered with your desire or ability to have children?” than were women with no such history (38% vs. 13%, age-adjusted OR 2.5, 95% CI 2.1, 3.0).

When total number of symptoms and conditions endorsed were considered in aggregate, significant differences were seen between women veterans with and without a history of SAIM (Fig. 1). Among women reporting a history of SAIM, 26% endorsed ≥12 of 24 current or recent symptoms/conditions, whereas among women with no reported history of SAIM, 11% endorsed ≥12 ($p < 0.001$).

### DISCUSSION

#### Proportion reporting SAIM

In our nationally representative sample of women veterans receiving VA outpatient care, 23% report that they were sexually assaulted during the time they served in the military. This proportion is substantial when compared with a lifetime prevalence of 5%–27% reported for women in the general population.¹ Our findings on a national sample are consistent with²³,²⁴ or somewhat higher³¹ than rates previously reported by women veterans using single site VA clinics. Of note, we do not know who perpetrated the sexual assault that occurred while the woman was in the military. It could have occurred at the

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>No (n = 2738)</th>
<th>Yes (n = 805)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age/years (SD)</td>
<td>48.8 (16.9)</td>
<td>42.6 (11.5)***</td>
</tr>
<tr>
<td>White (%)</td>
<td>76</td>
<td>77</td>
</tr>
<tr>
<td>Mean education/years (SD)</td>
<td>13.9 (1.9)</td>
<td>14.0 (1.7)*</td>
</tr>
<tr>
<td>Ever married (%)</td>
<td>79</td>
<td>82</td>
</tr>
<tr>
<td>Now married (%)</td>
<td>37</td>
<td>37</td>
</tr>
<tr>
<td>Ever pregnant (%)</td>
<td>73</td>
<td>78**</td>
</tr>
<tr>
<td>Mean household income (SD)</td>
<td>$27,137 ($20,331)</td>
<td>$26,032 ($19,354)</td>
</tr>
<tr>
<td>Not working (%)</td>
<td>53</td>
<td>53</td>
</tr>
<tr>
<td>Not working–physical reasona (%)</td>
<td>32</td>
<td>42**</td>
</tr>
</tbody>
</table>

*\(p < 0.05\). (Note: \(p < 0.05\) is not considered significant for this study.)
**\(p < 0.01\).
***\(p < 0.001\).

a Percents are for the subset of women who reported not working \(n = 1881\).
hands of military personnel or nonmilitary persons. Symptoms and medical conditions among women who sustained SAIM

A reported history of SAIM not only is common among women veterans who use VA services but also is associated with more symptoms (current or recent) than are seen in women without a history of SAIM. Most of these symptoms parallel those seen consistently in other populations as correlates of sexual assault,6–21 for example, pelvic pain, menstrual problems, chronic fatigue, back pain, headache, and gastrointestinal symptoms. Symptoms not anticipated based on our literature review included menopausal symptoms, vision problems, and hearing problems.

Our data add another dimension to the understanding of the sequelae of sexual assault. We document that a number of self-reported medical

### Table 2. Physical Symptoms by Self-Reported History of Sexual Assault while in the Military

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>No (n = 2738)</th>
<th>Yes (n = 805)</th>
<th>Age-adjusted OR (95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reproductive/gynecological</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Menopause symptoms severe enough to interfere with usual activities</td>
<td>18</td>
<td>41***</td>
<td>2.4 (2.0, 2.9)</td>
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<tr>
<td>or lifestyle (%)b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Had a problem getting pregnant (%)</td>
<td>13</td>
<td>21***</td>
<td>1.8 (1.5, 2.2)</td>
</tr>
<tr>
<td>Chronic pelvic pain (%)</td>
<td>8</td>
<td>17**</td>
<td>2.1 (1.7, 2.6)</td>
</tr>
<tr>
<td>Repeated vaginitis or yeast infections (%)</td>
<td>11</td>
<td>29***</td>
<td>1.4 (1.2, 1.7)</td>
</tr>
<tr>
<td>Periods painful enough to interfere with usual schedule in past 6 months</td>
<td>35</td>
<td>53***</td>
<td>1.8 (1.4, 2.1)</td>
</tr>
<tr>
<td>Parallel those seen consistently in other populations as correlates of</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sexual assault,6–21 for example, pelvic pain, menstrual problems, chronic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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conditions are seen with higher frequency in the group who reported SAIM. Conditions seen with increased frequency in the SAIM group included obesity, peptic ulcer disease, asthma/emphysema/bronchitis, heart problems, hypertension, arthritis, and endometriosis. The possibility that major and potentially life-threatening physiological abnormalities can be seen many years after sexual assault is suggested by the observation that women with SAIM were 2.3 times more likely to report having been treated for a “heart attack” within the past year, even after controlling for age, hypertension, diabetes, and smoking status. “Heart attack” appears to be a moderately valid measure of serious cardiovascular disease. In other studies, 59%–81% of self-reported past heart attacks correspond with a medical record diagnosis of myocardial infarction,32–34 and more than half of the remainder correspond with a medical record diagnosis of unstable angina, congestive heart failure, or coronary insufficiency.32 Thus, the “heart attacks” reported by our subjects may in the majority of cases correspond with actual myocardial infarctions. We have not identified other studies reporting increased risk of myocardial infarction associated with prior sexual assault.

Concern about symptom burden in women with past SAIM is reinforced by our data on the total number of symptoms among women who experienced SAIM: 26% endorsed ≥12 of 24 possible symptoms. By comparison, in a prior community-based study of women from the general population, 29% of sexual assault survivors reported ≥6 of 35 possible symptoms.13 In another study of gastroenterology patients, mean number of medically unexplained physical symptoms was 13.4 (of 37 possible) among women who had sustained severe sexual trauma vs. 7.6 among women who had sustained less severe or no trauma.20 By these standards, our subjects had substantial symptomatology.

Potential mechanisms of the association

Because our design is cross-sectional, we cannot state that SAIM caused our subjects’ current symptoms. Observed differences between the two groups could be an artifact of unmeasured confounders. For example, we do not know
whether women in the SAIM group were more likely to have sustained other lifetime trauma (possibly severe) before \textsuperscript{35,36} or after military service than were women with no reported history of SAIM. This is important because repetitive victimization and severe trauma are associated with increased symptomatology.\textsuperscript{28,37–39} However, our findings did not change after controlling for three major potential confounders (age, race, and education). Likewise, when we controlled for smoking (in the case of asthma) and for smoking, diabetes, and hypertension (in the case of myocardial infarction), our findings did not change. It is unlikely that observed differences reflect recall bias, as the sexual assault question was only one of many questions, and subjects would have had no way to see that the researchers might draw an association between SAIM and physical symptoms.

The credibility of the associations seen is bolstered by their consistency with the findings of other studies, as described, and with proposed nonpathophysiological and pathophysiological mechanisms of association.\textsuperscript{5,13,40–42} Potential non-pathophysiological mechanisms include the possibility that women who have been sexually assaulted may be more willing to report symptoms or may experience somatoform disorders at increased rates. All 24 symptoms studied occurred with increased frequency in the women reporting SAIM, lending credence to a nonpathophysiological mechanism. On the other hand, systemic (e.g., infectious or humoral) derangements can cause multisystem illness. Infections acquired during the assault, posttraumatic neuroendocrine dysregulation, and direct tissue injury might lead to pathophysiological processes culminating in symptoms; Likewise, hyperarousal could heighten sensitivity to physical cues.\textsuperscript{42–46} The fact that we observed higher rates of more objective conditions, such as heart attack and hypertension, among the group who had sustained SAIM would tend to support a pathophysiological mechanism.

### Limitations

This study has several limitations. First, current physical symptoms and medical conditions identified were all based on self-report. However, even though we cannot assert that women with a history of SAIM are necessarily sicker (in terms of documented biological disease) than women with no such history, we can say that they report more perceived physical symptoms and thus, presumably, have lower quality of life. Indeed,
women in our study who reported SAIM had poorer health status (measured by the validated Medical Outcomes Study Short Form-36) compared with those who did not. Furthermore, in a related study of male veterans, self-report data regarding medical conditions was found to have good validity when compared with medical records.

Second, the SAIM question was likewise based on self-report. The validity of self-report is of particular concern for sensitive topics like sexual assault and raises considerations about whether observed associations could be due to correlated patterns of reporting. Although our single-item screen for SAIM has never been validated, behaviorally based questions about sexual assault, like the one we used, appear to be most effective, and written questionnaires give acceptable accuracy when compared with the gold standard in-person interview. Underreporting of sexual assault has been documented previously. If present, this would tend to dilute the strength of effects seen. It is less likely that women would overreport SAIM because women were reminded repeatedly that the survey was anonymous, so secondary gain was presumably absent, and because data collection was completed in March 1997, prior to the beginning of substantial media publicity about alleged sexual assaults in the military. The possibility of recall bias should be considered (i.e., that women with many physical symptoms would be more likely to remember a prior sexual assault than would healthy women). However, our findings are concordant with the results of studies conducted in nonveteran populations, supporting the validity of our findings.

Third, there is a risk of nonresponse bias. Although respondents and nonrespondents were similar or only marginally different in terms of measured variables, it is possible that women with a self-reported history of SAIM, particularly those with many symptoms, were more likely to participate and may be overrepresented. Alternatively, these women might have been reluctant to participate in a study that reminded them of their military experiences and may be underrepresented.

Fourth, our findings are limited to a population of women veterans who are currently users of VA outpatient services. Our findings may not be generalizable to women veterans who choose not to use VA services, to women currently in the military, or to men who sustained SAIM. Although we surveyed a nationally representative sample of women using VA outpatient services, the minority of eligible women veterans who choose VA services may differ from women veterans who receive healthcare in non-VA settings. For example, women veterans who do not use VA services may have had adverse experiences while in the military (such as sexual assault) that make them reluctant to return to a setting where most users are military veterans. Conversely, women veterans who do not use VA services may tend to be healthier, working women who have private insurance. Further studies are needed in a community-based sample of women veterans to confirm that our findings on the sequelae of SAIM apply to all women veterans and to determine the prevalence of SAIM in that population.

CONCLUSIONS

This descriptive study suggests that primary care clinicians, particularly those working in a VA setting, should be attuned to the possibility that female veteran patients may have sustained SAIM and alert to the spectrum of physical symptoms and medical conditions that can be seen long after assault. Our findings are consistent with the recommendation that clinicians routinely screen for violence experienced by patients, at least women veterans. A history of SAIM may meet three criteria that justify screening. First, it has serious subjective and possibly objective health implications, as our findings of increased physical symptoms and medical conditions demonstrate. Second, treatment may be effective, although further empirical study is needed to verify this. In some cases, treatment of emotional distress can lead to improvements in medical outcomes. Controlled trials of interventions for victims of recent sexual assault and incest survivors have shown promise in reducing posttraumatic stress disorder symptoms and depression. If similar treatments prove effective in reducing psychological distress in subjects with long-term sequelae of adult sexual assault, it is possible that they will alleviate physical symptoms as well. Third, a history of self-reported SAIM is common in a population of women veterans using VA services, with 23% of women reporting such a history. This proportion is comparable to the community-based prev-
lence of hypertension, another condition for which clinicians routinely screen.\textsuperscript{55} Sexual trauma screening requires a distinct set of skills. Techniques for sexual trauma screening in a primary care setting have been described elsewhere.\textsuperscript{5,61}

Screening should include women of all ages. Even though SAIM was more commonly reported by younger women, it was seen in older women as well.

Our data also point to possible red flags for a history of SAIM. The symptoms reported in our study are highly nonspecific, but clinicians should be particularly attentive to the possibility of a history of SAIM among women veterans with 12 or more current symptoms.

These findings raise intriguing questions as to (1) whether the increased symptomatology seen in women with a reported history of SAIM translates into increased utilization of medical services, and (2) whether increased symptomatology and increased utilization (if any) would respond to interventions designed to decrease psychological and physiological responses to the stress of past sexual assault.

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