Depression, PTSD, and Comorbidity Related to Intimate Partner Violence in Civilian and Military Women

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The mental health consequences for women who have experienced intimate partner violence (IPV), such as major depressive disorder (MDD) and posttraumatic stress disorder (PTSD) and especially their comorbidity, have received little attention in large-scale studies and treatment protocols for affected populations. We compared the association of PTSD, MDD, and PTSD/MDD comorbidity to IPV in two large cohorts, one of military and the other of civilian women. The adjusted prevalence of mental health symptoms, especially PTSD, was higher among abused than nonabused women in both samples. Mental health symptoms were also higher among the civilian sample compared to the military sample. Approximately one-third (34%) of the abused civilian women and one-fourth (25%) of the abused military women had symptoms that met criteria for at least one of the three diagnostic categories employed in this study, compared to 18% and 15% of nonabused women in the two groups. Comorbidity of PTSD and depression affected 19.7% of the civilian abused women versus 4.5% of nonabused civilian women, whereas for active duty military women, the prevalence was 4.6% and 4.2% for abused and nonabused, respectively. To better understand the mental health consequences of IPV and to design the most effective treatment and prevention programs, it is important to examine the presence of comorbidities between mental health disorders. [Brief Treatment and Crisis Intervention 6:99–110 (2006)]

KEY WORDS: intimate partner violence, posttraumatic stress disorder, military women, HMO enrollees, comorbidity, mental health symptoms, domestic violence.

Intimate partner violence (IPV) has significant acute and long-term physical and mental health consequences for women (Campbell et al., 2002, 2003; Dearwater et al., 1998; Gerlock, 1999; Gleason, 1993; Stein & Kennedy, 2001; Vitanza, L, & L, 1995) with mental health problems representing the greatest health care IPV-related costs (Wisner, Gilmer, Saltzman, & Zink, 1993). From the Centre for Research on Inner City Health, St. Michael’s Hospital, University of Toronto (O’Campo), the Johns Hopkins School of Public Health (O’Campo, Gielen), the Johns Hopkins School of Nursing (Kub, Woods, Campbell), the Center for Minority Health, University of Pittsburgh (Garza), the Wake Forest University School of Medicine (Jones), and the University of North Carolina, Charlotte (Dienemann).

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Although depression has been long acknowledged as a consequence of IPV, fewer studies have examined posttraumatic stress disorder (PTSD) in relation to IPV. Despite the well-documented associations of IPV and mental health symptoms, especially major depressive disorder (MDD) and, more recently, PTSD, the majority of studies investigating this relationship have been relatively small and from clinical, domestic violence shelter, or mental health treatment settings. In addition, most studies measure depression or PTSD separately with few that examine comorbidity between depression and PTSD. A meta-analysis of mental health disorders among abused women (primarily clinical samples) revealed a weighted mean prevalence of 47.6% for depression and 63.8% for PTSD (Golding, 1999). Stein and Kennedy (2001) examined three mental health conditions among 44 women recruited from community medical clinics who were victims of IPV within the 2 years preceding the study interview. Of these, 18% reported having MDD, 32% had PTSD, and 16% were comorbid for PTSD and MDD. In a study of abuse victims, Nixon, Resick, and Nishith (2004) reported that 21% (out of 135) had no depression or PTSD, 28% had PTSD alone, and 51% had both depression and PTSD. Cascardi, KD, and KA (1999) studied 92 women presenting for marital treatment who experienced physical abuse and reported that 13% had PTSD alone, 17% had depression, and 17% were comorbid for the two. Given the high correlation of PTSD and MDD and the lack of examination of their co-occurrence in large-scale studies, greater attention to this issue is needed.

The majority of studies of mental health and IPV have been conducted in civilian populations with very little focus on women in the military. One reason for this may be that working with military populations presents challenges not encountered in working with civilian populations. For example, the command structure in military populations required that commanding officers have access to research data that would normally be confidential in civilian populations. This may result in lower response rates in military samples if enlisted women and officers are reluctant to reveal personal information to their superiors. Yet, existing studies of domestic violence within the military suggest that IPV is a significant problem with a current prevalence rate of at least 22% among active duty military (ADM) women (Campbell et al., 2003; Murdoch & Nichol, 1995) and a perpetration rate among veterans and active duty men ranging from 13% to 58% (Marshall, Panuzio, & Taft, 2005). The wide variation is explained, in large part, by the composition of the samples where the higher rates are found among samples selected for psychopathology such as PTSD and substance abuse. Marshall et al. (2005) note that IPV prevalence has been found to be up to three times higher than that in civilian populations. Female veterans with a past history of IPV report significantly worse mental health symptoms, including depression and anxiety, than nonabused veterans (Gerlock, 1999; Murdoch & Nichol, 1995).

Despite the increased recognition of IPV and its sequelae, effective interventions to eliminate IPV are lacking. Advocates call for clinic-based screening, but such programs have not been rigorously evaluated. Consequently, it is unclear whether such screening is effective in reducing overall harm (MacMillan & Wathen, 2005). And while the need to address the combined issues of IPV and mental health is gaining support, such discussions have yet to be informed by data on IPV and mental health comorbidity.

This study attempts to address some of the methodological limitations of previous research on the association between mental health symptoms and IPV in military women (i.e., small sample sizes, absence of a nonabused comparison group, and failure to assess for psychiatric comorbidity of depression and PTSD). Our
specific aim was to compare two relatively large cohorts of women, one civilian and one ADM, of approximately the same demographics and from the same geographic area and to compare abused with never-abused women within those cohorts. We compared the groups in terms of (a) the prevalence of depression (without PTSD) and PTSD (without depression) and the comorbidity of PTSD/depression and (b) the association of IPV with these mental health problems.

Methods

Detailed descriptions of the methodology employed have been reported elsewhere (Campbell et al., 2002, 2003; Jones, 1999). A summary of sampling procedures, assessment instruments, and statistical analysis follows.

Civilian Sample

The civilian sample was drawn from female HMO enrollees in the metropolitan Washington, DC, area that tended to comprise relatively highly educated middle-class working women. After Institutional Review Board (IRB) approval from the participating HMOs, letters of invitation describing the study as a women’s health study with no mention of partner violence due to safety considerations were sent to 21,426 women between the ages of 21 and 55 years during the fall of 1997 and 1998. Twelve percent (n = 2,535) responded with contact information indicating that they were willing to participate. A professional survey research firm used contact information to determine study eligibility and participation. Of these, 79% were able to be contacted and were determined to be eligible, yielding a final sample of 2,005 civilian women who completed telephone interviews.

IPV was defined as physical and/or sexual assault by a husband, partner, ex-husband, or ex-partner. To identify the women who experienced partner violence within this sample, a modified version of the Abuse Assessment Screen (AAS; Soeken, McFarlane, Parker, & Lominack, 1998) was administered to the 2005 participants. The AAS is widely used and has documented reliability and validity (Parker & McFarlane, 1991; Soeken et al., 1998). Three questions were used to identify women who experienced IPV:

1. Have you ever as an adult been physically abused by a husband, boyfriend, or female partner?
2. Have you ever been hit, slapped, kicked, pushed, or shoved, or otherwise physically hurt by a current or previous husband, boyfriend, or female partner?
3. Have you ever been forced into sexual activities by a husband, boyfriend, or female partner?

Among the civilian sample, 201 responded affirmatively to one of these three questions and experienced this partner violence between the period January 1, 1989, and December 31, 1997. The time period was restricted in order to maximize incident recall and to track development of health sequelae of abuse. Among those who reported no abuse, a random sample of 240 women (nonabused) was selected as a comparison group. Both groups of women participated in in-depth interviews concerning physical and mental health and received $15 for participation.

Military Sample

The military sample was randomly drawn from 16,540 triservice (Army, Air Force, Navy/Marines) ADM women in the greater Washington, DC, area obtained from the Defense Enrollment Eligibility Registry System (DEERS) database. DEERS is a computerized database of military sponsors, family members, and others who are entitled to TRICARE health care coverage benefits. An introductory letter describing the study as a women’s health study
with no mention of partner violence to minimize safety concerns was sent out to those residing in the Washington, DC, area and Norfolk, VA. A total of 2,179 women gave initial consent to be contacted. This response rate of 13.2% was similar to the overall response from the civilian sample described above. The three IRBs overseeing the military research required a second phase of the consent process for the military group. The 2,179 women were sent a second longer consent form (4 pages) which had explicit reference to the study topic of partner violence, required a witness signature, and noted that the woman’s commanding officer could review her survey research results. Although these military IRB requirements differed substantially from those required by the civilian IRB (i.e., verbal phone consent was sufficient), the research could not proceed without adherence to these procedures. Only 36% of those receiving the long consent form (n = 779) signed and returned it (compared to 79% of those in the civilian sample who had consented to participate in the study). Feedback from the military women who refused after receiving the second consent form suggests that the statement limiting confidentiality of the survey results substantially affected participation. Of this group of 779, 616 (79%) were reached to complete the full interview, which was very similar to the civilian sample (78% of those consenting).

The modified version of the AAS (Soeken et al., 1998) was administered to the military sample. Women who responded affirmatively to one or more of the screening questions based on the same recall period as the civilian sample were classified as having experienced abuse and participated in an in-depth interview. Data collection took place from January 1998 to October 2000. Of the 616 interview participants, 184 (30%) experienced lifetime physical or sexual abuse, whereas 432 reported no physical or sexual abuse in their adult lifetimes.

Depressive Symptoms

Depressive symptoms were measured using the Brief Symptom Inventory (BSI; Derogatis & Melisaratos, 1983), which is derived from the longer self-reported SCL-90-R and has demonstrated validity and reliability. The BSI captures a broad range of dysphoric symptoms, including feelings of loneliness, lack of interest, worthlessness, hopelessness, feeling blue, and having thoughts of ending your life. For this study, “depression only” was defined using the standard cutoff for depression of a raw score in the BSI of 1.11 or greater (Derogatis, 1977) as well as the absence of PTSD symptoms.

PTSD Symptoms

PTSD symptoms were assessed with the Crime-Related PTSD scale for Women (Saunders, Arata, & Kilpatrick, 1990), which is derived from the SCL-90-R (Derogatis, 1977). Although this instrument has a high degree of internal consistency (Cronbach’s α = .93), the positive predictive value is typically low (31%), resulting in high levels of misclassification. In order to reduce the false-positive rate and to more closely approximate the Diagnostic and Statistical Manual of Mental Disorders - Fourth Edition (DSM-IV) (Mollerstrom, Patchner, & Milner, 1992) criteria for PTSD, the items from the Crime-Related scale were categorized according to whether they indicated reexperiencing of the traumatic event (e.g., intense psychological distress at exposure to cues that symbolize or resemble an aspect of the event; physiological reactivity on exposure to cues), avoidance or numbing (e.g., efforts to avoid thoughts, feelings, or conversations associated with the trauma; restricted range of affect; markedly diminished interest or participation in significant activities), and increased arousal (e.g., difficulty falling or staying asleep; irritability or outbursts of anger; difficulty concentrating). Consistent with DSM-IV-R diagnostic
criteria, the presence of PTSD for this study was defined as reporting (a) at least one reexperiencing symptom, (b) at least three avoidance/numbing symptoms, and (c) at least two symptoms of increased arousal. This technique has been used in other research on battered women (Kemp, Rawlings, & Green, 1991). “PTSD only” was defined as scoring positive for PTSD symptoms with this modified scale and scoring less than 1.11 on the BSI for depressive symptoms.

**Comorbidity**

The presence of comorbid depression and PTSD was defined as the presence of both depressive symptoms as identified by the BSI (a raw score of 1.11 or greater) as well as positive PTSD symptoms as identified by the modified Crime-Related PTSD scale.

**Statistical Analysis**

Sociodemographic differences between the abused and nonabused women were found for both the civilian and military samples making unadjusted comparisons between abused and nonabused women inappropriate. Thus, we employed methods of direct adjustment to control for differences in educational level, race, income, and marital status for the civilian group and for rank, marital status, and number of children in the military group (Khan & Sempos, 1989). Details about our direct adjustment methods are found in our previously published work (Campbell et al., 2002, 2003; Jones et al., 1999) but briefly described here. These sociodemographic factors were used to construct weights for the two samples in order to improve within-sample comparability between abused and nonabused women. Applying the weights to the samples makes them more comparable with regard to the factors that they were initially found to differ upon. The weighted data were used to calculate adjusted sample proportions. However, use of weights produced samples that are substantially larger than the original sample size. Consequently, use of standard hypothesis tests based on comparisons of weighted means or proportions would produce inaccurate standard errors and significance levels. In order to determine statistically significant effects, (unweighted) regression analyses with covariates for characteristics on which samples were unbalanced were used to determine statistically significant differences between abused and nonabused women in each sample.

**Results**

**Sociodemographic Characteristics of the HMO and Military Samples**

Table 1 compares the two samples’ sociodemographic characteristics after standardization. For both samples, more than 60% of the women were white, married, or earned over $50,000 per year, and the majority of women were between the ages of 30 and 50 years. However, in the military sample, less than 5% of the women were over 50 years old compared to 13% in the civilian sample. Income levels were somewhat higher in the military sample. Approximately 68% of ADM women had 4 or more years of college compared to 49% of the civilian sample. There was a larger proportion (39.9%) of African American women in the civilian sample than in the military one (13.6%). In addition, fewer ADM women had less than a high school diploma compared to the civilian sample (6% vs. 22%, respectively). In the military sample, a little over half (57%) of the women were officers.

**Prevalence of PTSD and Major Depression Separately**

Overall rates of depression in our sample were 17% for the civilian subsample and 14.7% for the military group. We found 22.2% of the
<table>
<thead>
<tr>
<th>Age category</th>
<th>Total</th>
<th>Nonabused</th>
<th>Abused</th>
<th>Total</th>
<th>Nonabused</th>
<th>Abused</th>
</tr>
</thead>
<tbody>
<tr>
<td>21–29 years</td>
<td>180 (9.1)</td>
<td>79 (7.9)</td>
<td>101 (10.4)</td>
<td>66 (14.1)</td>
<td>52 (14.9)</td>
<td>14 (11.8)</td>
</tr>
<tr>
<td>30–39 years</td>
<td>577 (29.1)</td>
<td>300 (37.8)</td>
<td>276 (28.2)</td>
<td>198 (42.3)</td>
<td>150 (43.0)</td>
<td>48 (40.3)</td>
</tr>
<tr>
<td>40–49 years</td>
<td>961 (48.4)</td>
<td>485 (86.2)</td>
<td>475 (48.5)</td>
<td>189 (40.4)</td>
<td>137 (39.3)</td>
<td>52 (43.7)</td>
</tr>
<tr>
<td>50–59 years</td>
<td>265 (13.4)</td>
<td>139 (13.8)</td>
<td>126 (12.9)</td>
<td>15 (3.2)</td>
<td>10 (2.9)</td>
<td>5 (4.2)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White/other</td>
<td>1,192 (60.1)</td>
<td>602 (59.9)</td>
<td>590 (60.3)</td>
<td>401 (86.4)</td>
<td>301 (86.7)</td>
<td>100 (85.5)</td>
</tr>
<tr>
<td>African American</td>
<td>791 (39.9)</td>
<td>402 (40.1)</td>
<td>389 (39.7)</td>
<td>63 (13.6)</td>
<td>46 (13.3)</td>
<td>17 (14.5)</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>1,188 (59.9)</td>
<td>605 (60.2)</td>
<td>583 (59.5)</td>
<td>334 (71.4)</td>
<td>249 (71.3)</td>
<td>85 (71.4)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not married</td>
<td>796 (40.1)</td>
<td>399 (39.8)</td>
<td>397 (40.5)</td>
<td>134 (28.6)</td>
<td>100 (28.7)</td>
<td>34 (28.6)</td>
</tr>
<tr>
<td>≤High school</td>
<td>444 (22.4)</td>
<td>225 (22.4)</td>
<td>219 (22.4)</td>
<td>26 (5.6)</td>
<td>20 (5.8)</td>
<td>6 (5.1)</td>
</tr>
<tr>
<td>Some college/trade</td>
<td>567 (28.6)</td>
<td>262 (26.1)</td>
<td>306 (31.2)</td>
<td>122 (26.2)</td>
<td>89 (25.6)</td>
<td>33 (28.0)</td>
</tr>
<tr>
<td>4 year college/+</td>
<td>971 (49)</td>
<td>517 (51.5)</td>
<td>454 (46.4)</td>
<td>317 (68.2)</td>
<td>238 (68.6)</td>
<td>79 (66.9)</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>&lt; $50 K</td>
<td>755 (38.3)</td>
<td>389 (39)</td>
<td>365 (37.5)</td>
<td>147 (32.4)</td>
<td>107 (31.8)</td>
<td>40 (34.2)</td>
</tr>
<tr>
<td>≥$50 K</td>
<td>1,218 (61.7)</td>
<td>609 (61)</td>
<td>608 (62.5)</td>
<td>307 (67.6)</td>
<td>230 (68.2)</td>
<td>77 (65.8)</td>
</tr>
<tr>
<td>Military type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Officer</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>265 (56.6)</td>
<td>197 (56.4)</td>
<td>68 (57.1)</td>
</tr>
<tr>
<td>Enlisted</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>203 (43.4)</td>
<td>152 (43.6)</td>
<td>51 (42.9)</td>
</tr>
</tbody>
</table>
civilians women had symptoms consistent with PTSD, whereas this proportion was 7.3% in the military sample. Among civilian abused women, 22.8% scored at a level on the BSI that indicated major depression compared to 11.2% of nonabused women (Table 2). Among the military women, 19.3% of the abused women were in the major depression range of symptoms compared to 13.2% of the comparison group. Almost a third (30.9%) of civilian abused women had symptoms consistent with PTSD compared to 13.7% of nonabused women, whereas in the military sample, 9.6% of abused women had PTSD symptoms compared to 6.5% of their nonabused counterparts.

**PTSD and Major Depression Comorbidity**

In order to obtain estimates of depression and PTSD that accounted for comorbidity, respondents were categorized as screening positive for depressive symptoms only, PTSD symptoms only, comorbid PTSD/MDD symptoms, or no mental health symptoms (Table 3). The findings are in contrast to those seen in Table 2 when comorbidity is not considered. In the civilian group, almost 20% of abused women were categorized as comorbid PTSD/MDD compared to 6.6% of nonabused women. There was very little difference in comorbidity between abused (4.2%) and nonabused (4.6%) military women.

Regardless of abuse status, when comorbidity is accounted for, the civilian sample had a lower prevalence of depression-only symptoms (3.1% abused, 4.6% not abused) compared to the military sample (14.3% abused, 8.6% not abused). A similar pattern was seen for PTSD only when the two samples were compared; however, the prevalence of PTSD only is lower than depression only in both samples. Abused civilian women demonstrated a higher prevalence of PTSD-only and comorbid symptoms compared to nonabused civilian women. The military sample revealed a similar pattern only for PTSD only, with abused women having a greater prevalence than nonabused women (5.3% vs. 1.8%, respectively; Table 3).

The civilian sample exhibited a lower prevalence overall of depression-only symptoms compared to the military sample (3.9% and 10%, “Total” columns in Table 3). PTSD only and comorbid PTSD/MDD were more prevalent in the civilian sample with 9.1% of the civilian sample having PTSD-only symptoms compared to 2.6% of the military sample. For comorbid PTSD/MDD, 13.1% of the civilian sample reported symptoms compared to 4.5% of the military sample. Overall, the civilian sample reported a greater prevalence of mental health symptoms, particularly among abused women. In the military sample, 25% of abused women had mental health symptoms that met criteria for at least one of the three mental health categories employed in this study. In the civilian sample, this proportion was somewhat higher (34%; p = .05 for the difference between the two). Among nonabused women these proportions were 15% for military and 18% for

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**TABLE 2. Depression and PTSD by IPV Status in Civilian and Military Samples From the Metropolitan Washington, DC, Area, 1999–2000, Weighted Data**

<table>
<thead>
<tr>
<th></th>
<th>Civilian sample (N = 1,982)</th>
<th>Military sample (N = 468)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total, n (%)</td>
<td>Nonabused, n (%)</td>
</tr>
<tr>
<td>Depression (≥1.11 BSI)</td>
<td>336 (17)</td>
<td>113 (11.2)</td>
</tr>
<tr>
<td>PTSD</td>
<td>440 (22.2)</td>
<td>138 (13.7)</td>
</tr>
</tbody>
</table>
civilian women. The military sample reported greater prevalence of depression-only symptoms, whereas the civilian sample had greater PTSD-only and comorbid PTSD/MDD symptoms.

**Multivariate Analyses**

Unweighted logistic regression analyses were employed. Women in the civilian sample with a history of IPV were at significantly greater risk of PTSD and comorbid PTSD/MDD (2.3 times and 4.8 times, respectively) compared to never-abused women after controlling for race, marital status, and income (Table 4). For the military sample, there were no differences between abused and never-abused women that were statistically significant at conventional levels ($p < .05$). However, all odds ratios exceed 1.0 by at least 30% and one (PTSD) approaches statistical significance at the $p = .08$ level. It is highly likely that the very small numbers of military women who met the criteria for these three categories of symptoms (see Table 3) resulted in reduced statistical power for detecting significant differences. There was no statistically significant difference between abused and nonabused women for depression only in either sample, although the odds ratio (OR = 1.67; $p = .15$) for military women is suggestive of a relationship that cannot be detected due to low statistical power.

**Discussion**

This large, population-based study compared the association between IPV, depression, PTSD, and PTSD/depression comorbidity in samples of civilian and ADM women. Although not the primary focus of this paper, it is important to note that IPV is prevalent in both populations (37% lifetime physical/sexual abuse for the civilian sample and 30% for the military sample; Campbell et al., 2003; Jones et al.,

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**TABLE 3.** Comparing Mental Health Correlates by IPV Status in Civilian and Military Samples From the Metropolitan Washington, DC, Area, 1999–2000, Weighted Data

<table>
<thead>
<tr>
<th>Total</th>
<th>Nonabused</th>
<th>Abused</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression only</td>
<td>77 (3.9)</td>
<td>47 (4.6)</td>
</tr>
<tr>
<td>PTSD only</td>
<td>181 (9.1)</td>
<td>71 (7.1)</td>
</tr>
<tr>
<td>Comorbid</td>
<td>260 (13.1)</td>
<td>66 (6.6)</td>
</tr>
<tr>
<td>None</td>
<td>1,464 (73.9)</td>
<td>817 (81.6)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total</th>
<th>Nonabused</th>
<th>Abused</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression only</td>
<td>47 (10.0)</td>
<td>30 (8.6)</td>
</tr>
<tr>
<td>PTSD only</td>
<td>12 (2.6)</td>
<td>6 (1.8)</td>
</tr>
<tr>
<td>Comorbid</td>
<td>21 (4.5)</td>
<td>16 (4.6)</td>
</tr>
<tr>
<td>None</td>
<td>375 (82.4)</td>
<td>289 (84.8)</td>
</tr>
</tbody>
</table>

**TABLE 4.** Depression, PTSD, and Comorbidity as Risk Factors for IPV

<table>
<thead>
<tr>
<th></th>
<th>Civilian sample</th>
<th>Military sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Odds ratio</td>
<td>95% Confidence intervals</td>
</tr>
<tr>
<td>Depression symptoms</td>
<td>1.034 ($p = .944$)</td>
<td>0.406–2.637</td>
</tr>
<tr>
<td>PTSD</td>
<td>2.265 ($p = .015$)</td>
<td>1.175–4.363</td>
</tr>
<tr>
<td>Comorbidity</td>
<td>4.784 ($p = .000$)</td>
<td>2.54–9.011</td>
</tr>
</tbody>
</table>

Note. Results of logistic regression for civilian and military samples from the greater metropolitan Washington, DC, area, 1999–2000. All models are adjusted for variables that differ between the “abused” and “not abused” comparison groups. The civilian sample is adjusted for race, marital status, and income, and the military sample is adjusted for marital status, number of children, and military rank.
The rate for our military sample falls into a middle range of perpetration rates (13–58%) reported in a recent review of military samples (Marshall et al., 2005).

In both civilian and military groups, abused women reported a higher prevalence of mental health symptoms than nonabused women. The prevalence of depression among abused women (22.8% civilian; 13.2% military) and PTSD (30.9% civilian and 9.6% military) was lower than the weighted prevalence in the Golding (1999) meta-analysis (47.6% for depression, 63.8% for PTSD), however; the majority of studies in the meta-analysis were based on clinical or shelter samples where the expected prevalence of depression and PTSD is likely to be higher. Rates in our civilian sample were similar to the 28% PTSD recently reported by Pico-Alfonso (2005) among a nonclinical sample of abused women in Spain. In addition, the prevalence of PTSD among the abused women in our military sample (9.6%) was very similar to that reported in two samples of female military personnel, one active duty and one veterans, who had experienced physical or sexual violence while in the military (Gerlock, 1999; Stretch, Knudson, & Durand, 1998). Furthermore, because the military is less likely to have women with psychopathology (e.g., via limited recruitment and/or early discharge of those with mental health problems), it is expected that the PTSD and depression rates would be lower in the ADM sample compared to the civilian sample (Booth-Kewley, Larson, & Ryan, 2002; Cigrang, EG, S, & E, 1998; Hoge et al., 2002; Smikle et al., 1996).

An important contribution of this study is the inclusion of PTSD and MDD comorbidity as a separate mental health state from those based only on symptoms of depression or only on symptoms of PTSD because each individual category may include individuals with both disorders. This approach to classifying mental health status may change the distribution of mental health symptoms associated with IPV considerably. Rather than depression being the primary mental health outcome of IPV as Gleason (1993) found, PTSD (in both our civilian and military samples) and comorbid PTSD/MDD (in our civilian sample) were the conditions for which IPV was a serious risk factor. In the multivariate analysis, the apparent association between abuse and MDD was not statistically significant in the civilian population, suggesting that the etiology of the oft-noted depression in abused women may be through a traumagenic or complex PTSD pathway (Herman, 1992). More population-based research directed to examine this comorbidity is needed in order to address this question more definitively.

Although Stein and Kennedy (2001), Cascarci et al. (1999), and Nixon et al. (2004) also examined these comorbidities, the two former studies were considerably smaller than ours and all were clinical rather than population based. Clinic-based samples are expected to have higher prevalence of PTSD and MDD compared to population-based studies as is seen in these three studies. Stein (2001) studied 44 victims of IPV and found that 50% had PTSD, 68% had depression, and 43% were comorbid for the two. The 92 women in the Nixon study were victims of IPV and had the highest levels of PTSD (75%) and depression (54%). Forty-nine percent of the sample had comorbid PTSD and depression. The 92 women in the Cascarci sample were being seen for marital problems; 30% were found to have PTSD and 32% depression, and 17% were comorbid.

The contrast between mental health symptoms in the two samples in the present study is particularly interesting. Our initial findings for depressive symptoms in these samples were similar (17% civilian, 14.7% military) until data were reclassified to include the comorbidity category. Differences were found for PTSD and comorbid PTSD/MDD, with both these categories being more prevalent in the civilian...
sample. One possible explanation for the lower prevalence of mental health symptoms in the military sample is the selection process described above. Epidemiological studies have shown that mental disorders in the military are associated with early military attrition (Booth-Kewley et al., 2002; Cigrang et al., 1998; Hoge et al., 2002).

In the multivariate analyses, neither civilian women with a history of IPV nor their military counterpart demonstrated a statistically significant association between IPV and depression. However, women with a history of IPV in both samples demonstrated a strong association between IPV and PTSD. In both samples, women who reported having been abused demonstrated an elevated association with PTSD with odds ratios in excess of 2.0. The lack of statistical significance in the military sample is likely to be due to small cell sizes and reduced statistical power. However, the consistency of the strong association across mental health symptom categories in the military sample suggests that this would be a fruitful avenue to explore in future studies with adequate power.

There are several limitations to the present study. The very low response rate among military women, due to the requirement that commanding officers have access to survey responses, may have discouraged women experiencing IPV from participating (Campbell et al., 2003). One additional consequence of our low response rate and the means by which it was generated is that sampling bias was likely introduced. However, our IPV prevalence rates in this sample were not particularly low compared to other studies of military populations (e.g., Marshall et al., 2005). There are also no studies involving relatively large numbers of ADM women that examine IPV and mental health. Consequently, this study addresses an important gap. Future research on partner violence with military populations should undertake multiple precautions to guarantee confidentiality of the survey responses. A new legislation, the recently introduced Military Victims of Violence Confidentiality Act (HR 3837), will make this possible as it is designed to protect the confidentiality of active duty personnel who desire privacy around issues of violence (109th Congress, 2005). Strengthening partnerships by overcoming high turnover in our military coinvestigators (due to reassignment or short assignments) can increase advocacy for the needs of the study. Introducing or increasing incentives for taking part in the survey would likely increase participation of both military and civilian samples in future studies.

One final limitation is that our modifications of the PTSD scale, while making the categorization of PTSD closer to that of the Diagnostic and Statistical Manual of Mental Disorders, may have led to misclassification of some women and even to underreporting of PTSD in our sample. Our PTSD levels were lower than those found in other samples. However, a conservative approach seemed preferable to overstating PTSD prevalence. The resulting bias toward the null could mean that the association between IPV and PTSD is even stronger than that reported here.

Despite these limitations, this study adds significantly to the present knowledge base about IPV, depression, PTSD, and comorbidity. There have been few studies as large as ours that have examined these issues. Nor have there been any studies of military women that carefully measure IPV and mental health symptoms. This study begins to fill these gaps and paves the way for future work that should provide better understanding to mental health and health care providers of how IPV affects mental health among women.

Our findings also have implications for interventions for women with depression, PTSD, and IPV. The traumatic nature of partner violence as well as PTSD comorbidity requires special attention during treatment.
and intervention. Newer, more effective models of treatment for trauma and its consequences are emerging. Trauma-specific services recognize that major or repeated trauma such as partner violence can impact all aspects of women’s lives including her sense of self, behavior, coping, ability to respond to treatment, and intimate relationships to name a few. Thus, programs that most effectively attend to trauma and PTSD will directly address the trauma, its symptoms, and multiple consequences. Failure to adhere to these newer models of intervention can lead to inappropriate treatment as well as missed or inaccurate diagnoses (Markoff, Reed, & Fallot, 2005).

Our results, along with previous research, suggest that PTSD and its comorbidity are present at higher levels among abused compared to nonabused women. These data are part of a growing body of evidence that should inform future efforts to more fully address the mental health sequelae of IPV.

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References


