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# MILITARY SEXUAL TRAUMA

## A Review of Prevalence and Associated Health Consequences in Veterans

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*This article reviews the literature documenting the prevalence of military sexual trauma (MST) and its associated mental and physical health consequences. Existing research indicates that prevalence rates of MST vary depending on method of assessment, definition of MST used, and type of sample. Risk factors for MST have been identified as including age, enlisted rank, negative home life, and previous assault history. MST has been associated with increased screening rates of depression and alcohol abuse, in addition to significantly increased odds of meeting criteria for post-traumatic stress disorder. In addition, MST has been associated with reporting increased number of current physical symptoms, impaired health status, and more chronic health problems in veterans. Available research on health care utilization and MST is also discussed. Researchers are encouraged to utilize standardized definitions of MST, employ standardized assessment methodology, and utilize more male veterans in future research. Policy and practice implications are discussed.*

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**Key words:** *sexual assault; PTSD; sexual assault; mental health and violence; workplace violence*

A RECENT REVIEW of trauma among veterans and military personnel indicates that they experience higher rates of trauma exposure in comparison to the general population, with associated higher rates of post-traumatic stress disorder (PTSD; Zinzow, Grubaugh, Monnier, Suffoletta-Malerie, & Freuh, 2007). The most widely studied type of trauma in female veterans is sexual assault, which encompasses childhood sexual assault, civilian adult sexual assault, and sexual assault that occurs while serving in the military (military sexual trauma;

MST). Given the recent increased media attention and increasing prevalence rate of MST, the current article focuses on review of the existing literature specifically examining MST in relation to its prevalence and associated consequences.

MST has been defined by the Department of Veterans Affairs (VA; 2004) as "sexual harassment that is threatening in character or physical assault of a sexual nature that occurred while the victim was in the military, regardless of geographic location of the trauma, gender of victim, or the relationship to the perpetrator"

## KEY POINTS OF THE RESEARCH REVIEW

### ***Risk Factors for Military Sexual Trauma***

- Military sexual trauma (MST) has been associated with entering the military at a younger age, being of enlisted rank, and being less likely to have completed college.
- Almost 50% of women in one sample reported escaping their home environment as reason for entering the military.
- Those veterans with childhood sexual assault histories have been found to be more likely to be raped as an adult.
- Female soldiers have been found to have higher rates of childhood sexual assault than their civilian counterparts.

### ***Prevalence of MST***

- 4% to 71% prevalence rate using in-person, face-to-face interviews;
- 17% to 30% prevalence rate using mailed or telephone surveys;
- Lower prevalence rates found in earlier era of veterans (0.4% in Vietnam era);
- Prevalence rates vary depending on method of assessment (e.g., general open-ended question vs. specific definitions).
- Rates vary depending on type of sample used (research vs. clinical vs. benefit seeking).
- Rates vary depending on definition of MST used.

### ***Associated Mental Health Consequences***

- MST is associated with increased screening rates of psychological symptoms (e.g., depression, alcohol abuse).
- Increased number of psychological symptoms have been associated with MST.
- MST has been associated with more severe psychological symptoms.
- MST has been associated with increased odds of meeting criteria for PTSD.
- Women veterans with MST histories have been found to be 9 times more likely to develop PTSD compared to women with no sexual assault histories.
- Methods of assessing psychological symptoms vary across studies (e.g., self-administered checklists vs. face-to-face clinical interviews).

### ***Associated Physical Health Consequences***

- MST has been associated with reporting increased number of current physical symptoms, impaired health status, and more chronic health problems.
- Associated physical symptoms include pelvic pain, menstrual problems, back pain, headaches, gastrointestinal symptoms, and chronic fatigue.
- MST has been associated with increased number of cardiovascular risk factors such as obesity, smoking, and sedentary lifestyles.
- MST has not been shown to relate to significantly increased health care utilization.
- In women, obesity, weight loss, and hypothyroidism have been significantly associated with MST, while AIDS has been associated with MST in men.

(p. 1). MST is the term used to describe physical assault, sexual assault, stalking, or harassment that occurs during active duty (Hall, Sedlacek, Berenbach, & Dieckmann, 2007). For this review, MST usually refers to sexual assault (e.g., physical contact of a sexual nature without voluntary consent) unless otherwise indicated in the text.

The VA 2002 national MST surveillance data from approximately 1.7 million VA patients indicated that 22% of women and 1% of men have experienced MST (Department of VA, 2004). Although women are 20 times more likely to be victimized during their military duty than men, there are 20 times more men in the military than women in the VA system. Therefore, because 22% of female and 1% of male VA users screen positive for MST, the actual numbers of men and women are about equal (Department of VA, 2004). Approximately 54% of all VA users who screen positive for MST are men (Department of VA, 2004). It is likely that there may be many more male victims of sexual acts occurring in the military, as it is estimated that only 16% of rapes that occur in the United States are officially reported (Department of VA, 2005) and that 10% of men in the United States have suffered trauma as the result of sexual assault (Whealin, 2005).

Other researchers, through surveys and research methods, have found rates of women experiencing sexual assault during military experience vary from approximately one fourth (Frayne et al., 1999, Hankin et al., 1999; Sadler, Booth, Nielson, & Doebbeling, 2000) to approximately one third (Coyle, Wolan, & Van Horn, 1996; Suris, Lind, Kashner, Borman, & Petty, 2004) of women sampled. This is significantly higher than civilian prevalence rates of sexual assault in the general population. For example, according to the National Violence Against Women Survey, 1 in 6 women (16.7%) and 1 in 33 men (3%) in the United States has experienced an attempted or completed rape at some time in their lives (Tjaden & Thoennes, 2000). The rate of military sexual assault in male veterans seeking VA disability benefits for PTSD was found to be 4% (Murdoch, Polusny, Hodges, & Cowper, 2006), which is between 5 and 9 times higher than prevalence rates estimated in some studies of males in the general population (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Norris, 1992). Rates for military sexual assault are usually based on a time period of 2 to 6 years, whereas studies of civilian sexual assault are typically based on lifetime prevalence, suggesting increased risk for sexual assault for active duty military personnel of both genders.

Although MST was recognized in the early 1990s as occurring frequently enough that the VA was directed by Congress to provide counseling for veterans who experienced sexual trauma or sexual harassment while on active duty (Veterans Health Care Act of 1992, Public Law 102-585), research related to MST is still in its infancy more than a decade later. Although men and women appear to be equally represented in the numbers of MST victims, research examining the mental and physical consequences associated with MST has been unequivocally focused on females.

This article is a review of the available psychological literature on military sexual trauma using PsychLit, MedLine, and Ovid databases. Articles that included prevalence rates of sexual assault that occurred during active duty were reviewed, with particular focus on those that examined associated psychological and medical consequences and risk factors of MST.

## RISK FACTORS FOR MST

Research studies on veterans with a history of sexual assault have typically not focused on risk factors occurring presexual assault. However, many studies examining lifetime prevalence rates have identified several characteristics that can be conceptualized as precursors to sexual assault while on active duty. Many of these risk factors are consistent with those seen in civilian sexual assault and include sociodemographic characteristics, such as age and history of previous sexual assault.

In a national cross-sectional study of women veterans, those who were raped while on active duty entered the military at a younger age, were more likely to be of enlisted rank, and were less likely to have completed college than women who were not raped in the military (Sadler, Booth, Cook, & Doebbeling, 2003). Sadler's (2003) study found that the likelihood of being raped almost doubles for women who joined the military at age 19 or younger, experienced childhood physical or sexual violence or rape prior to service, or were of enlisted rank. Similarly, in a survey of women veterans at the Baltimore VA, Coyle et al. (1996) found women of enlisted rank were more likely to report all types of abuse (physical, sexual, and rape) than officers. In a national random sample of 3,632 female veterans who use VA health care (Skinner et al., 2000), women who were sexually assaulted in the military were significantly younger than those not reporting sexual assault. One possible reason for individuals entering the military at a younger age is to escape from a dysfunctional family environment that often includes abuse or a distressing home life in general (Sadler, Booth, Mengeling, & Doebbeling, 2004; Schultz, Bell, Naugle, & Polusny, 2006). For example, Sadler's (2004) study found that 49% of respondents reported an escape from their home environment as a primary reason for entering the military.

The correlation between increased risk of adult sexual assault and history of childhood sexual assault is well established in civilian and veteran samples. More than 50% of survivors of rape were sexually assaulted for the first time while under the age of 18, with over

half of these under the age of 12 (National Institute of Justice Centers for Disease Control and Prevention, 1998). Similarly, in a large sample of female navy recruits, those who experienced childhood sexual abuse (CSA) were 4.8 times more likely to be raped as an adult than those who did not report any CSA. Merrill et al. (1999) also compared CSA with childhood physical assault (CPA), concluding that CSA was a stronger predictor of being raped in adulthood than CPA. In Sadler et al.'s (2004) sample of 520 women veterans, 26% were identified as survivors of rape before their entry into the military. Furthermore, 19% of this sample had experienced both CSA and rape prior to enlistment. Sadler and colleagues also found that women veterans with exposure to military violence (including rape) had higher rates of childhood violence including physical and sexual abuse. They also reported more pre-enlistment rape. Of this sample, 12% experienced rape during military service, whereas 25% experienced sexual violence during their childhood but not during military service. Finally, 14% of respondents experienced both military and childhood sexual violence both before and during military service (Sadler et al., 2003). In a recent study of 142 female veterans compared to 81 civilians, veterans reported more severe experiences of CSA, with 92% being sexually abused by a parental figure for longer periods of time than their counterparts (31 months vs. 18 months; Schultz et al., 2006). Rosen and Martin (1996) also found female soldiers to have higher rates of CSA compared to females in civilian populations. Furthermore, the impact of CSA on female soldiers was found to be more severe than in their male counterparts.

In-service sexual harassment has been found to be associated with increased risk for sexual assault (Sadler et al., 2003). A high correlation has also been found between a hostile military environment and military sexual assault (Murdoch et al., 2006). Military sexual harassment severity in women was found to be significantly associated with PTSD symptom severity, with an effect size about the same as seen for military sexual assault among women veterans (Murdoch et al., 2006).

### ***Prevalence of MST***

High prevalence rates of MST have been found among military personnel and veterans, although rates vary depending on the sample, method of obtaining data, and definition of sexual assault used. Most available research has relied on data obtained through mail or telephone surveys, whereas very few have utilized personal face-to-face interviews with military personnel or veterans. Our review revealed that out of 26 studies noting prevalence rates of MST, only 12 of them collected data through face-to-face interview or in-person self-report (see Table 1 for a summary of studies reporting prevalence rates of MST). It should be noted that all articles that reported prevalence rates were included in the table, even if numerous articles shared the same data sample and thus had the same prevalence rate. All studies were included for readers to have a thorough resource listing of articles which examined this topic).

Prevalence rates of MST in studies utilizing in-person response formats vary greatly, ranging from 0.4% to 71%. The low prevalence rate of 0.4% reported in Fontana, Schwartz, and Rosenheck (1997) may be partially due to the open-ended nature of the questions assessing for MST (e.g., "In what ways were you treated badly?") and the era of veterans that were assessed (Vietnam era), which represents a time in military history when MST was not at the forefront. The 71% prevalence rate found in Murdoch, Polusny, Hodges, and O'Brien's (2004) study may reflect the fact that the rate included MST attempts, in addition to using a sample of veterans who were seeking VA benefits for PTSD. This selective sample is very different than other samples that include veterans who are seeking primary care services or samples of active duty soldiers. In studies utilizing mailed or telephone surveys to collect data, prevalence rates of MST ranged from 17% to 30%. Overall, it appears that most studies report prevalence rates ranging from 20% to 43%.

Differential prevalence rates of MST may also be attributed to the purpose of data collection. Researchers of a recent study involving

**TABLE 1: Studies Reporting Prevalence Rates of Military Sexual Trauma (MST)**

<i>Study</i>	<i>Sample Characteristics</i>	<i>Method of Obtaining Data</i>	<i>Definition of MST Used in the Study</i>	<i>Rates of MST</i>
Coyle, Wolan, & Van Horn (1996)	429 women veterans enrolled at the Baltimore Veterans Affairs (VA) Medical Center who received care during the previous 6 months of 1994 M age = 42.3 49% some college education	Mailed survey	Sexual abuse = "Has anyone ever pressured you into doing something sexual? This could include someone trying or succeeding in feeling you, grabbing you, touching your private parts, touching your breasts, getting you to touch their private parts, or kissing you in a way that made you feel threatened or uncomfortable?" Rape = "Have you ever been forced into unwanted sexual intercourse?"	Rape = 28.7% on active duty Sexual abuse = 30.7% on active duty
Fontana, Schwartz, & Rosenheck (1997)	646 women veterans (396 Vietnam theatre and 250 Vietnam era) M age = 46.8 ± 8.2 for Vietnam theatre M age = 44.9 ± 8.5 for Vietnam era	Face-to-face interview as part of the National Vietnam Veterans Readjustment Study	"While serving in or around Vietnam/in the military, were there any ways you were treated unfairly or badly because you are a woman? In what ways were you treated unfairly or badly?"	1% of Vietnam theatre women 0.4% of Vietnam era women
Butterfield, McIntyre, Stechuchak, Nanda, & Bastian (1998)	632 consecutive women veterans using primary care services at a VA women's health center in North Carolina M age = 40 (range = 18-80) 48.8% African American	Self-report questionnaire given during a routine clinical assessment	Three questions from the Trauma Questionnaire measured sexual trauma, rape, and battering	33% = rape during the military
Fontana & Rosenheck (1998)	327 women veterans using services from four VA women's stress disorder treatment teams M age = 39.5 ± 9.4 years 50% served in army eras from World War II through Persian Gulf	Face-to-face clinical interview	Rape was not defined. The Military Stress Inventory for Women was developed for use in the study	43% = rape or attempted rape during the military
Martin, Rosen, Durand, Stretch, & Knudson (1998)	555 male and 573 female soldiers from six U.S. Army posts 54% men and 44% women = Caucasian 27% men and 40% women = African American 13% men and 8% women = Hispanic M age men = 26.2 (SD = 5.9) M age women = 25.6 (SD = 5.5)	Self-report questionnaires in person	Rape and sexual assault: "Have you ever experienced an attempted rape? Have you ever experienced a completed rape (oral, anal, or vaginal penetration by penis, finger, or object due to force or threat of harm), and other than the incidents described above, have there been any other situations that did not involve actual sexual contact between you and another person but did involve an attempt by someone to force you to have any kind of unwanted sexual contact?"	Female victims of rape = 12.1% happened in military and 12.5% reported rape before and during the military Males = 3% since entering military and 6.7% before military
Frayne et al. (1999)	3,632 women veterans using VA ambulatory care at one of 158 VA hospitals M age of MST = 42.6 ± 11.5 years M age of no MST = 48.8 ± 16.9 years	Mailed survey as part of the national cross-sectional, VA Women's Health Project with follow-up postcard and telephone calls	"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?"	23%

*(continued)*

TABLE 1: (continued)

Study	Sample Characteristics	Method of Obtaining Data	Definition of MST Used in the Study	Rates of MST
Hankin et al. (1999)	White = 77% MST, 76% no MST 54% army, 24% air force, 19% navy = MST 50% army, 24% air force, 21% navy = no MST 3,632 women veterans using VA ambulatory care at one of 158 VA hospitals M age of MST = 42.6 ± 11.5 years M age of no MST = 48.8 ± 16.9 years White = 77% MST, 76% no MST 54% army, 24% air force, 19% navy = MST 50% army, 24% air force, 21% navy = no MST	Mailed survey as part of the national cross-sectional, VA Women's Health Project with follow-up postcard and telephone calls	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?"	23%
Smith, Frueh, Sawchuk, & Johnson (1999)	129 male combat veterans consecutively referred for routine clinical evaluation of post-traumatic stress disorder (PTSD) at a VA Medical Center outpatient PTSD clinic M age = 47.4 (SD = 7.13) range = 24-74 White = 60% African American = 38% 87% had served in Vietnam War	Structured clinical interview and self-report measures	Exposure to traumatic events: Respondents were asked whether they had experienced one of nine traumatic events Compensation-seeking status: "defined on the basis of their self-report as having filed a VA disability claim for PTSD or their intention to seek VA disability for PTSD at the time of evaluation"	Sexual assault: One incident = 12% Multiple incidents = 3% 11% of the sample reported that this sexual assault occurred prior to combat experience
Martin, Rosen, Durand, Knudson, & Stretch (2000)	1,128 male and female soldiers on active duty in the U.S. Army 555 = men, 49.2% 573 = women, 50.8% 54% men = Caucasian 44% women = Caucasian 27% of men and 40% of women = African American 13% of men and 8% of women = Hispanic 2% of men and 1% of women = Asian 3% of men and 5% of women = other M age men = 26.2 (SD = 5.9), range = 18-49 M age women = 25.6 (SD = 5.5), range = 18-46	Self-report questionnaires in person	Rape and sexual assault: "Have you ever experienced an attempted rape? Have you ever experienced a completed rape (oral, anal, or vaginal penetration by penis, finger, or object due to force or threat of harm), and other than the incidents described above, have there been any other situations that did not involve actual sexual contact between you and another person, but did involve an attempt by someone to force you to have any kind of unwanted sexual contact?"	22% of women reported experiencing a completed rape and 80% of these women reported that the rape occurred prior to entering the military
Sadler, Booth, Nielson, & Doebbeling (2000)	558 women veterans who served in Vietnam, post-Vietnam, and Persian Gulf War eras M age = 40 ± 9 (range = 20-83) 74% White 49% army, 23% air force, 22% navy 10% held officer rank	Computer-assisted telephone interview by female interviewers of cross-sectional national sample selected from the Department of VA (DVA) comprehensive women's health centers' registries	The legal definition of rape was used: "any act that occurred without an individual's consent, which involved the use or threat of force, and included attempted or completed sexual penetration of the victim's vagina, mouth or rectum"	30% reported completed or attempted rape while in the military

(continued)

TABLE 1: (continued)

<i>Study</i>	<i>Sample Characteristics</i>	<i>Method of Obtaining Data</i>	<i>Definition of MST Used in the Study</i>	<i>Rates of MST</i>
Stern et al. (2000)	66% had service-connected disability Random samples were selected within region and era of service strata 1,500 women veterans selected from the National Registry of Women Veterans database using stratified random sampling	Phone survey	"receipt of sexual force or the threat of force for sexual relations against one's will"	17%
Chang, Skinner, & Boehmer (2001)	3,632 women veterans using VA ambulatory care at one of 158 VA hospitals M age of MST = 42.6 ± 11.5 years M age of no MST = 48.8 ± 16.9 years White = 77% MST, 76% no MST 54% army, 24% air force, 19% navy = MST 50% army, 24% air force, 21% navy = no MST	Mailed survey as part of the national cross-sectional VA Women's Health Project, with follow-up postcard and telephone calls	"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?"	23%
Sadler, Booth, Cook, Torner, & Doebbeling (2001)	537 women veterans who served in Vietnam, post-Vietnam, and Persian Gulf War eras M age = 39.9 ± .40 69% White 31% non-White	Computer-assisted telephone interview of cross-sectional national sample selected from the DVA comprehensive women's health centers' registries	"Experienced any act that occurred without an individual's consent that involved the use or threat of force and included attempted or completed sexual penetration of the victim's vagina, mouth, or rectum."	28% = rape while in the military
DeRoma, Root, & Smith (2003)	336 women veterans who had scheduled an outpatient appointment at the gynecological clinic at the Biloxi Veterans Affairs Hospital M age = 44.23 (SD = 13.65) White = 62% African American = 27% Army 42%, air force 28%, navy 22%	Self-report during the course of a clinical assessment	"Sexual intercourse that was against the women's will or that a veteran felt she had to comply with because she feared for her life or safety" "Any unwanted or uninvited pressure for dates or sex, touching, sexual gestures, or body language, sexual teasing, jokes, remarks, whistles, hoots, or yells of a sexual nature"	Rape = 8.7% Sexual harassment = 15%
Carney et al. (2003)	3,695 military personnel deployed during Gulf War Stratified random sample Women = 129 Men = 3,566	Structured telephone interview using computer-assisted telephone interview	Single items within the structured interview	Women = 8% Men = <1%
Frayne, Skinner, Sullivan, & Freund (2003)	3,632 women veterans using VA ambulatory care at one of 158 VA hospitals M age of MST = 42.6 ± 11.5 years M age of no MST = 48.8 ± 16.9 years White = 77% MST, 76% no MST 54% army, 24% air force, 19% navy = MST 50% army, 24% air force, 21% navy = no MST	Mailed survey as part of the national cross-sectional VA Women's Health Project, with follow-up postcard and telephone calls	"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?"	23%

(continued)



TABLE 1: (continued)

<i>Study</i>	<i>Sample Characteristics</i>	<i>Method of Obtaining Data</i>	<i>Definition of MST Used in the Study</i>	<i>Rates of MST</i>
Sadler, Booth, Cook, & Doebbeling (2003)	558 women veterans who served in Vietnam, post-Vietnam, and Persian Gulf War eras M age = 40 ± 9 (range = 20-83) 74% White 49% army 23% air force 22% navy 10% held officer rank 66% had service-connected disability Random samples were selected within region and era of service strata	Computer-assisted telephone interview by female interviewers of cross-sectional national sample selected from the DVA comprehensive women's health centers' registries	The legal definition of rape was used: "any act that occurred without an individual's consent, which involved the use or threat of force, and included attempted or completed sexual penetration of the victim's vagina, mouth or rectum"	30% reported completed or attempted rape 8% reported completed rape
Murdoch, Polusny, Hodges, & O'Brien (2004)	3,337 representatively sampled veterans seeking VA disability benefits for PTSD Women = 1,683 Men = 1,654 M age = 42.3 73% White	Mailed self-administered questionnaire	"Someone had attempted to or had successfully forced them to have sex against their will"	Women = 71% Men = 4%
Sadler, Booth, Mengeling, & Doebbeling (2004)	520 women veterans who served in Vietnam, post-Vietnam, and Persian Gulf War eras M age = 40.3	Cross-sectional telephone interview of sample selected from comprehensive women's health care centers' registries at six VA medical centers	"Experienced any act that occurred without an individual's consent that involved the use or threat of force and included attempted or completed sexual penetration of the victim's vagina, mouth, or rectum." If answered yes, then they were asked if the rape(s) had been attempted, completed, or both, and the number of incidents they had experienced.	29% (10% attempted, 19% completed, 11% both attempted and completed)
Suris, Lind, Kashner, Borman, & Petty (2004)	270 women veterans receiving treatment at southwestern VA Medical Center M age = 46.7 ± 11.5 years 64% Caucasian, 32% African American, 4% Hispanic 47% army, 30% air force, 17% navy	Face-to-face clinical interview and self-report questionnaire	"Any type of sexual conduct including vaginal, anal, or oral sex, achieved or attempted without the person's consent and with the use of threat or force" while in the military. Developed Interview of Sexual Experiences Survey (ISE).	33%
Campbell & Raja (2005)	268 female veterans and reservists seeking health care in a VA medical clinic 75% were age 45 or younger	Self-report written survey	Modified version of the ISE. Participants reported whether assault occurred during military service.	38%
Kang, Dalager, Mahan, & Ishii (2005)	11,441 Gulf War Veterans (2,131 women, 9,310 men) M age = 39.1 women without PTSD, 38.1 without M age = 40.4 men with PTSD, 39.6 without White = 47% women with PTSD, 63% without White = 62% men with PTSD, 79% without	Mailed survey as part of the National Health Survey with follow-up computer-assisted telephone interview	"Suffered forced sexual relations or sexual assault" while in the military	3%

(continued)

TABLE 1: (continued)

<i>Study</i>	<i>Sample Characteristics</i>	<i>Method of Obtaining Data</i>	<i>Definition of MST Used in the Study</i>	<i>Rates of MST</i>
Benda (2006)	625 homeless male and female veterans who were inpatients with the Department of VA domiciliary substance abuse program Women = 310 Men = 315	Two admission interviews and one discharge interview	5-item subscale of the Childhood Trauma Questionnaire applied to active duty period	Women = 41% Men = 2%
Yaeger, Himmelfarb, Cammack, & Mintz (2006)	196 women veterans seeking treatment at Women's Comprehensive Healthcare Center at VA West Los Angeles or by letter inviting participation M age = 47.8 ± 14.5 40% Caucasian 39% African American	Self-report questionnaire, in person and clinical interview	"Forced intercourse or anal sex, forced oral sex, forced insertion of objects, or threats of forced sex"	41%, alone or with other trauma
Kimerling, Gima, Smith, Street, & Frayne (2007)	Administrative data from 134,894 female and 2,900,106 male veteran outpatients who were treated in VHA health care settings nationwide in 2003 and who were screened for MST Demographic characteristics were grouped by MST results	Analysis of data involving VHA universal screening for MST	"While you were in the military: a) Did you receive uninvited and unwanted sexual attention, such as touching, cornering, pressure for sexual favors, or verbal remarks? b) Did someone ever use force or threat of force to have sexual contact with you against your will?"	22% women 1% men

270 women veterans who were utilizing services at a southwestern VA medical center found that 33% of women veterans sampled reported a history of MST (Suris et al., 2004). In another study involving interviews with 327 female veterans, 43% of veterans reported rape or attempted rape (Fontana & Rosenheck, 1998). It may be that higher prevalence rates in the second study could be attributed to the fact that women in the sample were being evaluated for treatment of traumatic stress in VA clinical programs, whereas Suris et al.'s (2004) study included female veterans who were evaluated for research purposes only. For those women veterans in Fontana and Rosenheck's (1998) study who were seeking treatment, their disclosure of MST during the clinical evaluation may have been perceived to have different consequences compared to an evaluation solely for epidemiological research purposes.

The definition of MST varies greatly across studies, ranging from no definition given (e.g., Fontana & Rosenheck, 1998) to the legal definition of rape (Sadler et al., 2000). In addition,

some researchers included attempted rape and completed rapes in their prevalence rates (e.g., Martin, Rosen, Durand, Knudson, & Stretch, 2000; Martin, Rosen, Durand, Stretch, & Knudson, 1998; Sadler et al., 2004), whereas others only used completed rape. Several researchers used definitions that included sexual intercourse (e.g., Coyle et al., 1996), whereas other definitions did not include sexual intercourse but referred to sexual force, or threat of force, for sexual relations (e.g., Stern et al., 2000). Differential definitions of sexual assault in the military context likely results in measuring differing constructs as well as accounts for different prevalence rates. Based on the review, it appears that the utilization of inclusive definitions resulted in higher prevalence rates.

Another potential factor influencing prevalence rates is the type of respondent assessed in the study. Studies have used participants ranging from recent active duty soldiers (Martin et al., 1998) to veterans who served decades ago (Fontana et al., 1997). The era that participants

served in in the military is important to consider, as the climate, awareness of MST, and military jobs women perform vary according to time served. For example, during the Vietnam era, women served in more ancillary positions, such as nursing, whereas in more recent eras women are placed in more vulnerable and isolative positions with men. In addition, many studies use respondents who are utilizing services from VA sources, whereas others are cross-sectional, randomized surveys of veterans in general. It appears that studies examining respondents utilizing services from VA facilities report significantly higher rates of sexual assault while on active duty compared to current active duty. It may be that the trauma associated with MST results in mental and physical health conditions that require further medical attention. Or it may be that those with military sexual trauma receive medical services from VA for service-connected injuries.

### **MENTAL HEALTH CONSEQUENCES ASSOCIATED WITH MST**

In the civilian sexual assault literature, it has been shown that women exposed to recurrent sexual abuse have an increased vulnerability to psychiatric symptoms (Seedat & Stein, 2000). Numerous studies confirm that compared to nonvictims, sexually abused women suffer from significantly higher rates of depression, panic disorder, and somatization disorder compared to those with no sexual assault history (Butterfield, McIntyre, Stechuchak, Nanda, & Bastian, 1998; Resick, 1993; Walker et al., 1992; Walker, Torkelson, Katon, & Koss, 1993). In studies examining veterans, women with a history of sexual assault have significantly higher rates of depression, PTSD, and substance use (Davis & Wood, 1999; Suris et al., 2004).

When examining the relationship between MST and mental health, most studies have shown that MST has detrimental effects on mental health, either by increased screening rates, more psychological symptoms, or more severe psychological symptoms. In a national sample of women veterans, more than half (60%) of women with MST screened positive

for current depression, and 27% reported eating disorders. Women with MST were also twice as likely as women with no MST to have alcohol abuse problems (Skinner, 2000). A study involving 270 women veterans with sexual assault histories who were seeking VA care indicated that MST is associated with clinical differences regarding PTSD and other psychological symptoms (Suris et al., 2004). After controlling for demographic differences, women veterans with a positive history of sexual assault were 5 times more likely to meet criteria for PTSD than those veterans without a history of sexual assault. When type of sexual assault was examined, MST was associated with more than a ninefold increased risk of PTSD. After using child sexual trauma and adult civilian sexual trauma histories as covariates, MST was associated with a fourfold increased risk of PTSD compared to women with adult civilian sexual assault histories, and a threefold increased risk compared to women with CSA histories. Women veterans with MST also had significantly poorer psychiatric outcomes compared to the other assault groups on 9 of 11 symptoms assessed on the Brief Symptoms Inventory (BSI; e.g., somatization, anxiety, hostility).

The reader is referred to Table 2 for studies examining the mental health consequences associated with MST in veterans. Of the 10 reviewed studies, 9 of them illustrated either a significant relationship between MST and psychological symptoms or greater odds of meeting criteria for psychological disorders associated with MST. For example, in a study of 327 women veterans treated in a VA clinical program for stress disorders, researchers found that sexual stress (stress related to sexual harassment and abuse) was almost 4 times more influential than duty-related stress in the development of PTSD (Fontana & Rosenheck, 1998). Women with a history of MST were found to be 3 times more likely to meet screening criteria for current symptoms of depression or alcohol abuse compared to veterans with no MST history (Hankin et al., 1999). In a large study of more than 11,000 Gulf War veterans, MST was significantly related to PTSD in women and men (Kang, Dalager, Mahan, & Ishii, 2005).

**TABLE 2: Mental Health Consequence of Military Sexual Trauma (MST)**

<i>Study</i>	<i>Sample Characteristics</i>	<i>Area Assessed</i>	<i>Assessment Measure</i>	<i>Finding</i>
Fontana, Schwartz, & Rosenheck (1997)	646 women veterans (396 Vietnam theatre and 250 Vietnam era) M age = 46.8 ± 8.2 for Vietnam theatre M age = 44.9 ± 8.5 for Vietnam era	Post-traumatic stress disorder (PTSD)	Predicted probability of being diagnosed with PTSD at the time of the survey was derived by optimizing the predictors of current PTSD, determined by clinical interview in a subsample, and the total survey sample	Trauma during the military contributed 22.7% of the effects for theater women and 29.3% of the effects for era women, the former being divided about equally between sexual (10.4%) and war trauma (12.3%).
Fontana & Rosenheck (1998)	327 women veterans using services from four Veterans Affairs (VA) women's stress disorder treatment teams M age = 39.5 ± 9.4 years	PTSD, exposure to sexual stress and duty-related stress	PTSD Checklist (PCL), Military Stress Inventory for Women	Military-related sexual stress was 4 times more likely to influence the development of PTSD than duty-related stress
Hankin et al. (1999)	3,632 women veterans using VA ambulatory care at one of 158 VA hospitals M age of MST = 42.6 ± 11.5 years M age of no MST = 48.8 ± 16.9 years	Screening prevalence of depression and alcohol abuse	Short-form Iowa version of the Center for Epidemiological Studies Depression (CES-D) scale, TWEAK	The odds of meeting screening criteria for symptoms of current depression were 3 times higher for those women with MST. The odds of meeting screening criteria for current alcohol abuse were nearly 2 times higher for those women with MST.
Martin, Rosen, Durand, Knudson, & Stretch (2000)	1,128 male and female soldiers on active duty in the U.S. Army 555 = men, 49.2% 573 = women, 50.8%	General psychological health	National Women's Study PTSD Module, Brief Symptom Inventory (BSI)	Completed rape and attempted sexual assaults predicted increased psychological symptoms as measured by the BSI
Chang, Skinner & Boehmer (2001)	3,632 women veterans using VA ambulatory care M age of MST = 42.6 ± 11.5 years M age of no MST = 48.8 ± 16.9 years	Mental health status, depression, religiosity	SF-36 Mental Component Summary (MCS), CES-D	Current mental health status was significantly lower in women with MST. Women with MST had higher rates of depression.
Suris, Lind, Kashner, Borman, & Petty (2004)	270 women veterans receiving treatment at southwestern VA Medical Center M age = 46.7 ± 11.5 years	PTSD, health care use	Clinician Administered PTSD Scale (CAPS), Interview of Sexual Experiences (ISE), Utilization and Cost Patient Questionnaire (UAC-PQ)	MST was associated with more than a ninefold increased risk of PTSD
Kang, Dalager, Mahan, & Ishii (2005)	11,441 Gulf War veterans (2,131 women and 9,310 men) M age = 39.1 women with PTSD; 38.1 without PTSD ; M age = 40.4 men with PTSD ; 39.6 without	PTSD, sexual assault, sexual harassment, combat experiences	PCL	For men and women, MST was significantly related to PTSD
Murdoch, Polusny, Hodges, & Cowper (2006)	3,337 male and female veterans who had previously filed VA PTSD disability claims Women = 1,683 Men = 1,654 M age = 48.4 ± 12.6	PTSD	Penn Inventory for PTSD	In-service sexual assault among women and current PTSD had a small but statistically significant positive relationship after controlling for other adult traumatic experiences. There was not enough power to detect statistically significant results in men.

*(continued)*

TABLE 2: (continued)

<i>Study</i>	<i>Sample Characteristics</i>	<i>Area Assessed</i>	<i>Assessment Measure</i>	<i>Finding</i>
Yaeger, Himmelfarb, Cammack, & Mintz (2006)	196 women veterans seeking treatment at Women's Comprehensive Healthcare Center at VA West Los Angeles or by letter inviting participation M age = 47.8 ± 14.5	PTSD	Stressful Life Events Questionnaire (SLEQ), PTSD Symptom Scale-Interview (PSS-I)	The relationship between MST and PTSD was highly significant. Participants with MST were almost 4.5 times more likely than participants without MST to develop PTSD.
Kimerling, Gima, Smith, Street, & Frayne, 2007	Administrative data from 134,894 female and 2,900,106 male veteran outpatients who were treated in VHA health care settings nationwide in 2003 and who were screened for MST	Mental health diagnoses abstracted from VHA administrative records	N/A	MST was significantly associated with 2 to 3 times greater odds of a mental health diagnosis. PTSD had the strongest association with MST. MST was also strongly associated with dissociative, eating, and personality disorders in women and with dissociative and personality disorders in men.

The psychiatric sequelae of MST in male veterans is still in its infancy. Studies examining mental health consequences of sexual assault in men, although still scant, have mainly examined men in the general population. These data suggest that sexually victimized men experience similar adverse mental health outcomes as women. However, studies involving men have shown they are more likely than their female counterparts to report subsequent alcohol abuse (Burnam et al., 1988; Coxell, King, Mezey, & Gordon, 1999; Ratner et al., 2003). Suicide attempts and self-harm have also been found to be higher in men with nonconsensual sexual experiences and repeated sexual assault histories (Coxell et al., 1999; Ratner et al., 2003). For example, in a study investigating the lifetime prevalence rates of sexual assault in a sample of homosexual and bisexual men, those who reported CSA were 3.3 times more likely to have attempted suicide (Ratner et al., 2003). In regard to psychiatric symptoms, men at a rape treatment center had significantly higher rates of current psychiatric symptoms and twice the lifetime history of psychiatric disorders (Kimerling et al., 2002). Little research has been done examining the mental health consequences related to military sexual assault in men. One of the likely main contributory factors to this is the lower prevalence rate of MST in men, thus requiring a large number of men

to detect statistically significant results. For example, in a recent study examining the association between military sexual assault and PTSD, the contribution of in-service assault and harassment was unclear due to lack of statistical power.

### PHYSICAL HEALTH CONSEQUENCES ASSOCIATED WITH MST

In the general sexual assault literature, it has been found that women exposed to recurrent sexual abuse have an increased vulnerability to physical symptoms (Seedat & Stein, 2000), and sexual assault history is associated with later health problems (Golding, 1999; Golding, Cooper, & George, 1997). Female sexual assault victims report heterogeneous muscular, gastrointestinal, sexual, and respiratory symptoms (Clum, Calhoun, & Kimerling, 2000). Many investigations have found an association between PTSD and self-reported physical health conditions (Barrett et al., 2002; Butterfield, Forneris, Feldman, & Beckham, 2000; Schnurr & Jankowski, 1999; Wagner, Wolfe, Rotnitsky, Proctor, & Erickson, 2000). It has been suggested that severity of PTSD, especially re-experiencing symptoms, is a predictor of self-reported physical symptoms in women who have been sexually assaulted (Zoellner, Goodwin, & Foa, 2000). Another

**TABLE 3: Physical Health Consequence of Military Sexual Trauma (MST)**

<i>Study</i>	<i>Sample Characteristics</i>	<i>Area Assessed</i>	<i>Assessment Measure</i>	<i>Finding</i>
Frayne et al. (1999)	3,632 women veterans using Veterans Affairs (VA) ambulatory care at one of 158 VA hospitals M age of MST = 42.6 ± 11.5 years M age of no MST = 48.8 ± 16.9 years	Physical symptoms, medical conditions	Self-report survey measuring demographics and recent physical symptoms and medical conditions	Women who reported sexual assault while in the military were more likely to report current or recent symptoms across almost all organ systems assessed. Several serious medical conditions were reported with more frequency in women veterans with MST.
Martin, Rosen, Durand, Knudson, & Stretch (2000)	1,128 male and female soldiers on active duty in the U.S. Army 555 = men, 49.2% 573 = women, 50.8%	Physical health symptoms	75-item checklist of symptoms based on the Cornell Medical Index Health Questionnaire	Completed rape and attempted sexual assaults predicted increased health symptoms
Sadler, Booth, Nielson, & Doebbeling (2000)	558 women veterans who served in Vietnam, post-Vietnam, and Persian Gulf War eras M age = 40 ± 9 (range = 20-83)	Health-related quality of life	SF-36	Women raped in the military had poorer health than women who were not. Women who were physically assaulted and raped had the most impaired health status across all domains.
Frayne, Skinner, Sullivan, & Freund (2003)	3,632 women veterans using VA ambulatory care at one of 158 VA hospitals M age of MST = 42.6 ± 11.5 years M age of no MST = 48.8 ± 16.9 years	Cardiac risk factors	Self-report of cardiac risk factors (diabetes, hypertension, obesity, cigarette smoking, alcohol use, sedentary lifestyle, hysterectomy, cholesterol)	Women with a history of MST were more likely to be obese, smoke, screen positive for problem alcohol use, to be sedentary, and to have had a hysterectomy before age 40.
Sadler, Booth, Mengeling, & Doebbeling (2004)	520 women veterans who served in Vietnam, post-Vietnam, and Persian Gulf War eras M age = 40.3	Health status	SF-36	Women who had multiple assaults during military service were most likely to report chronic health problems.
Kimerling, Gima, Smith, Street, & Frayne, 2007	Administrative data from 134,894 female and 2,900,106 male veteran outpatients who were treated in VHA health care settings nationwide in 2003 and who were screened for MST	Medical diagnoses abstracted from VHA administrative records	N/A	Liver disease and chronic pulmonary disease had moderate associations with MST in women and men. In women, obesity, weight loss, and hypothyroidism were significantly associated with MST, whereas AIDS was associated with MST in men.

study examining female veterans found that hyperarousal symptoms of PTSD were uniquely predictive of increased physical symptom reports and poorer assessments of health status (Kimerling et al., 2000).

In research examining physical health consequences associated with MST, research studies suggest that MST is associated with increased reporting of current physical symptoms (e.g., Frayne et al., 1999; Martin et al., 2000), impaired health status (Sadler et al., 2000), and more chronic health problems (Sadler et al., 2004). Women who have experienced MST

report significantly more physical symptoms compared to women veterans with no MST, including pelvic pain, menstrual problems, back pain, headaches, gastrointestinal symptoms, and chronic fatigue (Frayne et al., 1999). In a study examining the health status of a nationally representative, random sample of women veterans using VA ambulatory health care, Skinner (2000) found women who reported MST had poorer overall health functioning compared to women who reported no MST, as indicated by scoring poorer on every scale of the SF-36 Health Survey ([www.sf-36.org](http://www.sf-36.org)).

Compared to women veterans without MST, those with MST also reported significantly more cardiovascular risk factors including obesity, smoking, alcohol use, and sedentary lifestyles. They are also more likely to have had a hysterectomy before the age of 40 (Frayne, Skinner, Sullivan, & Freund, 2003). In the only known study examining physical symptoms in male veterans with MST, Kimerling, Gima, Smith, Street, and Frayne (2007) found that AIDS was significantly associated with MST. See Table 3 for a summary of studies examining physical correlates of MST.

### HEALTH CARE UTILIZATION

Estimates of MST prevalence rates among women VA users are substantially larger than the actual number of women veterans being treated for their MST. For example, of the women veterans who served in Iraqi Freedom and Enduring Freedom and have since separated from active duty, only 17% have received health care from the VA (Veterans Health Administration [VHA] Office of Public Health and Environmental Hazards, 2004). This suggests that the majority of women veterans with MST are either going untreated or are being treated by private or public providers. Public and/or private practitioners may find themselves presented with increased number of veterans for treatment in the near future, as questions have been raised about the VA's capacity to treat veterans returning from the Iraq and Afghanistan conflicts while maintaining PTSD services for veterans currently receiving them (U.S. Government Accountability Office, 2005).

In a study examining the differential impact of military, civilian adult, and CSA in a sample of 270 women veterans seeking VA care, Suris et al. (2004) found that civilian sexual assault was associated with a significant increase in health care utilization and cost of services, but there was no related increase in use or cost associated with MST. These researchers used structured interview results involving mental and medical health care utilization in addition to VA administrative databases. In a cross-sectional survey of women veterans using VA health

services, it was found that women who experienced repeated exposures to violence during military service reported significantly more outpatient physician visits than their nonvictimized or singly victimized peers, but type of violence (e.g., sexual vs. physical assault) did not have a significant influence on this finding (Sadler et al., 2004).

### CONCLUSIONS

Although MST has been of concern to organizations, such as the Department of Defense (DoD), Veterans Affairs, and Congress, since the 1990s, research involving the investigation of MST is still in its infancy. As a result, findings regarding the rates of veterans with MST have been unequivocal, and identification of risk factors associated with developing MST have been lacking. The VA's focus has been on providing treatment for MST, not doing epidemiological or prevention studies. The current review attempts to clarify the prevalence of MST among veterans, associated consequences, and risk factors by examining research that included prevalence rates of sexual assault occurring while veterans were on active duty, with particular focus on those that examined psychological and medical consequences.

Discrepancies in the literature regarding prevalence rates of MST appear to be related to a number of variables including data collection methods and definition of MST used, as well as overall purpose of the study. Among those studies that utilized face-to-face interviews, great variability was noted in reporting of MST, which may be due to the various forms and interview formats used to obtain information. When examining the purpose of data collection, higher prevalence rates were reported when veterans were evaluated in a treatment, compared to a research, setting. Therefore, veterans being evaluated in a treatment setting may be more willing to report higher incidences of MST than those in a research setting, due to perceived positive consequences of obtaining services and help. Alternatively, given that MST is positively correlated with mental and physical health problems, it is

likely found at higher base rates among treatment-seeking samples.

Although Congress provides a definition of MST in legislation, it is not uniformly used by researchers and clinicians, as it is not clinically specific enough. Thus, in reviewing the literature, the definition of MST was found to differ among researchers, which contributes to difficulties obtaining reliable prevalence rates. The type of respondent may also affect prevalence rates, as cohorts of female veterans differ in their involvement in military services performed. Furthermore, rates of reporting appear to significantly differ and are higher among veterans compared to current active duty personnel and DoD's estimates of sexual assault. DoD's prevalence rates are beyond the scope of this article, but they are consistently lower than rates in veteran populations. Reasons for this difference include the use of different definitions, reliance on crime reports and not surveys from service-seeking populations, and until recently, the lack of anonymity for victims if they did report the assault.

The MST literature, similar to the civilian sexual assault literature, indicates that there are a number of mental health consequences and symptoms associated with sexual trauma. Overall, MST was found to be associated with higher rates of depression, PTSD, and substance use. Although most studies reviewed indicated a significant relationship between MST and psychological symptoms or increased odds of meeting criteria for psychological diagnoses, studies have been inconsistent in the type of assessment measures used. Use of various assessment measures may result in a diagnosis being included or excluded from further investigation for some veterans, different diagnoses being assigned to the same veteran, or different severity level being assigned to the same diagnosis. This lack of uniform assessment makes definitive, comprehensive conclusions difficult.

Along with increased mental health consequences, MST has also been found to be associated with negative physical health consequences. Research examining physical functioning of female veterans with MST suggests they experience more physical symptoms than female veterans who have not experienced MST, including pelvic pain, menstrual problems, back pain,

headaches, gastrointestinal symptoms, and chronic fatigue. Furthermore, the symptoms of PTSD have been found to be associated with, or predictive of, self-reported physical symptoms as well as poorer health status assessment. Overall, MST appears to place veterans at increased risk for more physical complaints and poorer health functioning.

Although MST research has not specifically focused on risk factors occurring prior to military service, many have included an examination of characteristics that may be considered precursors to sexual assault while on active duty. These factors appear to be consistent with those found in the civilian sexual assault literature, including age and history of previous sexual assault. Women who enter the military at younger ages and are of enlisted rank appear to be at increased risk for MST. Furthermore, women who had previous assaults, especially CSA, reported higher incidences of MST.

Although sexual assault in any environment can be associated with detrimental effects, one can hypothesize that the consequences of MST may differ from nonmilitary sexual assault in some important ways, resulting in more severe physical and mental health consequences. The nature of the perpetrator-victim relationship has been found to be associated with severity of subsequent symptoms (Bownes, O'Gorman, & Sayers, 1991) and in MST; the perpetrator may be a coworker, supervisor, or personnel with higher rank. The veteran may be required to continue working with his or her perpetrator, which is less likely to occur in many civilian situations. Although today's military is an all-volunteer force, military personnel are not considered to be volunteers in the usual sense of the word. They are unable to leave their duty stations without permission and they are subject to disciplinary action, including court-martial, if they attempt to leave. Consequently, military personnel who are sexually assaulted are unable to transfer to another duty station easily or quit their jobs. Because of this, they are often forced to have repeated contact with their perpetrator. This is not the case in the civilian work environment.

The unit cohesion that usually provides a protective barrier in the military setting may not be available to a military person who has been assaulted by another member of the unit



(Norwood, Ursano, & Gabbay, 1997). In addition, unit cohesion may decrease a military person's chance of reporting, as this would result in breaking the code and potential ostracization. It has been hypothesized that such unique aspects of the military system might intensify the severity of symptoms seen after sexual assault (Frayne et al., 1999), especially given that military personnel may be under conditions of chronic stress and have less time to seek treatment and/or social support.

### IMPLICATIONS FOR TREATMENT AND RESEARCH

Congress has mandated the VA to provide treatment for sexual trauma that occurred while on active duty (Veterans Health Care Act of 1992, Public Law 102-585; Veterans Health Programs Extension Act of 1994, Public Law 103-452; Veterans Health Programs Improvement Act, House of Representatives 3936). This review of the MST literature indicates that military personnel who are sexually assaulted while on active duty have multiple negative outcomes. By having a better understanding of what factors lead to poor outcomes, better identification, prevention, and treatment intervention methodologies can be designed and disseminated. Interventions that are specifically designed for, and are accessible to, veterans with MST histories are likely to reduce the utilization and cost of care after the initial outlays for treatment. Specifically designed sexual trauma treatments should also contribute to a decrease in symptoms and increase in quality of life for women veterans being served. An understanding of the burden of diseases and impact on health care utilization associated with military sexual assault would assist the VA in planning for the health services needs of the veteran population as well as informing the civilian sector on these veterans' special needs.

Lack of consistency in definitions and methodologies among studies has led to difficulties in accurately identifying the number of veterans who experience MST. Therefore, researchers may benefit from using a standard survey format to obtain more specific and accurate rates of MST among veterans. Furthermore, an agreed-upon definition of MST would likely

contribute to greater accuracy of prevalence rates of MST. It would be beneficial for researchers to differentiate types of MST (e.g., attempted rapes, completed rapes, threat of force for sexual relations, verbal harassment) to aid in specification of prevalence rates of the varying types of MST discussed in the literature. Because of changing views on women's roles socially, as well as in the military, and increased education regarding MST, retrospective investigations of MST prevalence rates comparing cohorts of veterans across different time periods will provide a more accurate assessment. In addition, prospective longitudinal studies to determine causal linkages among MST and health outcomes are needed.

Although a number of studies have found an association to exist between MST and increased incidence of mental health issues, researchers use a wide variety of assessment instruments. As a result, it is difficult to compare studies as well as accurately identify which symptoms and diagnoses veterans with MST are experiencing. Therefore, the use of standardized assessments in study protocols would be beneficial. Furthermore, there is limited research on premorbid psychiatric functioning of women with MST. This risk factor for subsequent traumatization needs to be further investigated in order to assist in better understanding outcomes in this research area.

A considerable amount of research has found that sexual trauma has negative effects on self-reported physical health, with greater self-report of MST being related to greater self-report of health problems. Self-report measures of physical health can be valid indicators of actual illness, but they should be interpreted with caution because they may be influenced by psychological health. Therefore, it may be beneficial for researchers to include a physician's diagnosis, and/or laboratory tests, in their investigations in order to increase reliability and generalizability of findings. In addition, examining prior physical history, in addition to current functioning, has important implications for research in this area, as the degree to which chronic illness is an effect of violence is unknown.

A growing body of literature has found a link between PTSD and physical health, with those who report PTSD symptoms more likely

to have a greater number of physical health problems than those who do not have PTSD. However, existing research has not been able to conclusively determine that PTSD causes poor health, suggesting that a factor associated with PTSD may be the actual cause of increased health problems. Therefore, it would be beneficial to gather detailed data on veterans' prior mental and physical health status at varying times in relation to timing of assaults, which could be done using self-report and past medical and mental health records.

Identification of risk factors may aid in the detection and prevention of MST among active duty personnel as well as reservists. Consequently, research would aid in the development of prevention measures by fully addressing and assessing for risk factors among MST survivors such as previous child abuse history (sexual and physical), previous incidents of other attacks (e.g., physical assault by significant others), age of enlistment, and family functioning. Research would also benefit from identifying how demographic variables (e.g., socioeconomic status, ethnicity, educational level) may be associated with veterans' experiences of symptoms associated with MST. Although incidents of MST appear to be about equal among men and women, the majority of MST studies have focused on women. Therefore, research should address the impact of MST on men and how this compares with its impact on women. Men with MST may experience different physical and mental

health symptoms than their female counterparts. Furthermore, they may have different risk factors associated with later MST than female veterans with MST.

In response to the number of military personnel experiencing sexual assault during their military service, public law and VA directives mandated the appointment of an MST coordinator at each VA medical facility. The VHA also implemented a universal screening program for MST. Any veterans who screens positive for MST is eligible for counseling and treatment for any MST-related injury, psychological condition, or illness, free of charge (VHA Office of Public Health and Environmental Hazards, 2004). The First National Survey of MST Practice (Street, Kelly, & Kimerling, 2006) involved surveying MST representatives from VA medical centers in order to collect systematic information on VA health care practices related to MST. Results indicated that approximately 9 out of 10 VA facilities have a mandatory universal screening policy in place and use the national reminder software to document the screening. However, it was reported that some facilities use clerks to screen for MST, and sometimes in a public location, instead of using mental health professionals in a private area. Nearly 100% of facilities surveyed provide MST-related counseling. The VA has also developed a military sexual trauma self-study module that provides screening and treatment strategies for mental health professionals (Turner & Frayne, 2004).

## IMPLICATIONS FOR PRACTICE, POLICY, AND RESEARCH

### *Research*

- Researchers are encouraged to use standardized definitions of military sexual trauma (MST) and assessment procedures.
- Differential sexual assault reporting rates between active duty military personnel and veterans should be examined to get a more accurate picture of prevalence rates.
- More research is needed to accurately examine prevalence rates and consequences of MST on active duty and veteran men.
- Identification and specification of essential components for MST treatment to reduce consequential symptoms is needed.
- Gathering detailed trauma history information in order to determine valence of each contributory trauma on outcomes would allow for a more thorough understanding of the impact of MST relative to other trauma including childhood sexual abuse.
- Examine moderators and mediators of response to MST, such as social support, response to disclosure, self-blame, military culture/climate.
- Examine the Veterans Affairs (VA) environment of care and organizational support for the health professionals who provide care.

### *Practice and Policy*

- Screening for sexual assault in men, as well as in women, should be a routine part of a psychiatric and/or psychological evaluation. Utilization of evidence-based screening measurements is recommended.
- Although Congress has acknowledged that MST must be screened for and treated, no specific guidelines have been proposed to address the severe consequences associated with it.
- Evaluate the effectiveness of treatments for post-traumatic stress disorder and associated symptoms resulting from MST.

- Provide clinicians with education about the unique characteristics of rape while on active duty and disseminate appropriate treatment guidelines specifically for MST.
- Gather data and create VA organizational measures to assess frequency and quality of MST services and to assess follow-up care after a positive MST screen.

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