



Women Veterans

Gender Differences in Demographic and Clinical Correlates among Veterans with Musculoskeletal Disorders



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A B S T R A C T

Background: Studies suggest that women may be at greater risk for developing chronic pain and pain-related disability.

Methods: Because musculoskeletal disorders (MSD) are the most frequently endorsed painful conditions among veterans, we sought to characterize gender differences in sociodemographic and clinical correlates among veterans upon entry into Veterans Health Administration's Musculoskeletal Disorders Cohort ($n = 4,128,008$).

Results: Women were more likely to be younger, Black, unmarried, and veterans of recent conflicts. In analyses adjusted for gender differences in sociodemographics, women were more likely to have diagnoses of fibromyalgia, temporomandibular disorders, and neck pain. Almost one in five women (19.4%) had more than one MSD diagnosis, compared with 15.7% of men; this higher risk of MSD multimorbidity remained in adjusted analyses. Adjusting for sociodemographics, women with MSD were more likely to have migraine headache and depressive, anxiety, and bipolar disorders. Women had lower odds of cardiovascular diseases, substance use disorders, and several MSDs, including back pain

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conditions. Men were more likely to report "no pain" on the pain intensity Numeric Rating Scale, whereas more women (41%) than men (34%) reported moderate to severe pain (Numeric Rating Scale 4+).

Conclusions: Because women veterans are more likely to have conditions such as fibromyalgia and mental health conditions, along with greater pain intensity in the setting of MSD, women-specific pain services may be needed.

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The number of veterans accessing Veterans Health Administration (VHA) care increased from 6.8 million in 2002 to 8.9 million in 2013 (U.S. Department of Veterans Affairs, 2016). Although the veteran population is projected to decrease substantially by 2043, the proportion of women veterans is projected to increase (National Center for Veterans Analysis and Statistics, 2014). Understanding the unique health care needs of women veterans is a priority for VHA.

A recent report on pain and pain management from the Institute of Medicine (IOM) identified both women and veterans as vulnerable groups (Institute of Medicine of the National Academies, 2011). A review of non-veteran samples suggests that women have a higher prevalence of musculoskeletal pain, neuropathic pain, and fibromyalgia than men (Fillingim, King, Ribeiro-Dasilva, Rahim-Williams, & Riley, 2009). Similarly, rates of chronic pain are higher among women veterans relative to men (Haskell et al., 2012; Higgins et al., 2014), with prevalence rates as high as 78% (Haskell, Heapy, Reid, Papas, & Kerns, 2006). Among veterans reporting pain, women were more likely than men to have moderate/severe pain (Haskell et al., 2009). Among returning Operations Enduring Freedom/Iraqi Freedom/New Dawn (OEF/OIF/OND) veterans, musculoskeletal disorders (MSD), often associated with pain, are among the most frequently reported conditions, with prevalence especially high among women (Haskell et al., 2011). An examination of veterans with moderate or severe chronic pain receiving VHA care in the Pacific Northwest revealed several gender differences (Weimer et al., 2013). Specifically, women were more likely to have painful conditions including fibromyalgia, low back pain, migraine headache, neck or joint problems, and rheumatism/arthritis. Women veterans with chronic pain also had higher body mass index (BMI) and more mental health diagnoses, but fewer substance use disorders, than men (Weimer et al., 2013).

There are several gaps in the literature characterizing gender differences in pain-relevant disorders. Only two previous studies have specifically examined gender differences in the prevalence of painful disorders (Haskell et al., 2012; Weimer et al., 2013); the first included regional, not national data, and the second focused on OEF/OIF/OND veterans. Few studies examine MSD specifically in the larger veteran population. Additionally, little is known about presence of pain at MSD diagnosis and comorbidities of these conditions among veterans. Most studies focus on pain severity, not MSD, and have been limited to samples of OEF/OIF/OND veterans (Haskell et al., 2009, 2012). This limitation is particularly significant because these veterans are, on average, younger and more racially and ethnically diverse than previous veteran cohorts. It is important to examine gender differences in pain intensity, MSD, and comorbidities, given the high volume of veterans seeking health care each year for MSD and pain, and the increasing number of women seeking VHA care (Goulet et al., 2016).

The purpose of the current investigation is to characterize gender differences in relative proportion of specific pain-relevant diagnoses and sociodemographic characteristics, along with medical and mental health comorbidities at MSD diagnosis among veterans receiving VHA care.

Methods

Study Population

Electronic searches for *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9CM) codes consistent with MSD were conducted to define the cohort (Goulet et al., 2016).

Defining MSD

A total of 1,685 distinct ICD-9CM codes were identified and consolidated into 14 MSD groupings encompassing conditions of the back and neck, osteoarthritis, fractures, and inflammatory and degenerative disorders (Goulet et al., 2016). We searched VHA electronic clinical and administrative data for all outpatient and inpatient records with an MSD diagnosis noted between January 1, 2000, and December 31, 2013. For cohort inclusion, a veteran had to have two or more outpatient visits with an MSD diagnosis occurring within 18 months of one another, or one or more inpatient admissions with an MSD diagnosis (Justice et al., 2006). There were no other inclusion or exclusion criteria. The index date for entry into the cohort was defined as the date of the first observed outpatient clinic visit or inpatient admission with an MSD diagnosis. The second ICD-9CM code served to validate the first MSD diagnosis. It was possible for a veteran to meet criteria for more than one MSD diagnosis on the index date. Because a confirmatory outpatient visit within 18 months of the MSD index date was required, data included only those veterans identified with an MSD between 2000 and 2011. See Goulet et al. (2016) for a detailed description of the MSD cohort. The cohort was designed to be inclusive; therefore, we did not exempt patients whose MSD diagnoses changed between entry into the cohort and follow-up, because we have found that it generally does not change. For example, the diagnosis at time one was the same at time two in 95% of "osteoarthritis" diagnoses.

Variables

Sociodemographics

Sociodemographic characteristics of MSD Cohort members at the index date including age, gender, race/ethnicity, marital status, and OEF/OIF/OND status were examined.

Painful conditions (MSD)

We examined the most common diagnostic groups of MSD, including osteoarthritis, nontraumatic joint disorders (e.g., arthropathies, ankylosis), back pain, neck pain, osteoporosis, sprain and strain, fibromyalgia, fracture, traumatic joint disorder, rheumatoid arthritis, temporomandibular disorders (TMD), lupus, gout, spinal cord injury, "other" (all MSD which did not fit into the 14 specific diagnostic groupings), and MSD multi-morbidity (more than one MSD diagnosed at cohort entry).

Medical and mental health characteristics

High-prevalence, high-impact (Kazis et al., 1998; Yu et al., 2003) medical and mental health comorbid diagnoses were

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