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WOMEN'S
HEALTH ISSUES

Original article

Characteristics and Health Care Preferences Associated with Cardiovascular Disease Risk among Women Veterans

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A B S T R A C T

Background: Women veterans are at increased risk for cardiovascular disease (CVD), but little is known about comorbidities and healthcare preferences associated with CVD risk in this population.
Methods: We describe the prevalence of CVD-relevant health behaviors, mental health symptoms, and health care use characteristics and preferences among participants of the National Survey of Women Veterans (conducted 2008–2009).
Findings: Fifty-four percent of respondents were at risk for CVD (defined as a diagnosis of hypertension, diabetes, current tobacco use, or obesity without CVD). In unadjusted analysis, ORs for being at risk for CVD were greater among those interested in gender-specific clinical settings (OR, 2.0; 95% CI, 1.2–3.4) and gender-specific weight loss programs (OR, 1.8; 95% CI, 1.1–2.9). ORs were also greater for women who were physically inactive (OR, 1.9; 95% CI, 1.1–3.3), with current symptoms of depression (OR, 2.5; 95% CI, 1.1–6.1), anxiety (OR, 2.1; 95% CI, 1.2–3.6), and posttraumatic stress disorder (OR, 2.4; 95% CI, 1.2–4.8). Adjusting for age, race/ethnicity, marital status, education level, employment, and source of health care use, the ORs for CVD risk were higher for women with current posttraumatic stress disorder symptoms (2.5; 95% CI, 1.1–5.3) and gender-specific health care preferences (2.0; 95% CI, 1.1–3.4), and gender-specific weight loss programs (1.9; 95% CI, 1.1–3.2).
Conclusions: Risk for CVD was common and preferences for gender-specific care and posttraumatic stress disorder were associated with being at risk for CVD. Women's health clinics may be a good location for targeted CVD prevention interventions for women veterans both in and outside the Veterans Health Administration.

Published by Elsevier Inc. on behalf of Jacobs Institute of Women's Health.

Cardiovascular disease (CVD) is the leading cause of death for women in the United States (Mozaffarian et al., 2015). Compared with civilian women, women veterans are at increased risk for CVD owing to a higher prevalence of traditional risk factors such as smoking (Farmer, Rose, Riopelle, Lanto, & Yano, 2011) and obesity (Das et al., 2005), and non-traditional risk factors such as depression (Lehavot, Hoerster, Nelson, Jakupcak, & Simpson, 2012), post-traumatic stress disorder (PTSD; Yaeger, Himmelfarb, Cammack, & Mintz, 2006) and low levels of social support (Frayne et al., 2006). CVD risk factors are common in the women veteran population who use Veterans Health Administration (VA) health care (Vimalananda et al., 2013); 66% aged 45 to 64 years and

80% of those aged 65 years and older have at least one major traditional cardiovascular risk factor (Rose, Farmer, Yano, & Washington, 2013; Whitehead et al., 2013). Despite this predisposition, women veterans have low awareness of their CVD risk. Fewer than 50% of women with risk factors endorse worry about CVD (Biswas, Calhoun, Bosworth, & Bastian, 2002) and those at greatest risk are the least concerned (Canter, Atkins, McNeal, & Bush, 2009). Similarly low levels of risk awareness are seen in the general U.S. female population (Mosca, Mochari-Greenberger, Dolor, Newby, & Robb, 2010), particularly among non-urban women and ethnic minority women (Villablanca, Slee, Lianov, & Tancredi, 2016).

Women typically develop CVD in their 60s and 70s, approximately 10 years later than men. The population of women veterans aged 45 years and older increased from 72,655 in fiscal 2003 to 165,898 in fiscal 2012 (Frayne et al., 2014), so there is large group of women veterans in the VA that is approaching the age of CVD onset. In addition, there is a growing obesity epidemic in the VA. The number of veterans age 45 to 54 years with obesity has increased over time from less than 10% in fiscal 2000 to more than 30% in fiscal 2010 (Vimalananda et al., 2013). Among women veterans specifically, 31% are overweight and 44% are obese (Breland et al., 2017). Thus, the morbidity owing to CVD among women veterans is expected to increase in the coming years (Whitehead et al., 2013).

Approximately one-half of CVD deaths in the United States are due to modifiable risk factors that could be addressed through effective behavior change (Patel, Winkel, Ali, Narayan, & Mehta, 2015). Tailoring interventions to the culturally relevant needs of the target population can be effective (Fox et al., 2016), including for CVD risk factor reduction (Houston et al., 2011; Tussing-Humphreys, Fitzgibbon, Kong, & Odoms-Young, 2013). Within the VA, concerns over women veterans' health care needs and delivery preferences have led to successful health care delivery innovations, such as the creation of designated women's health providers (Bean-Mayberry et al., 2015; Maisel et al., 2015) and clinics designed for women veterans (Washington, Bean-Mayberry, Mitchell, Riopelle, & Yano, 2011a). Building on these adaptations, it is possible that tailoring CVD prevention efforts to the needs of the women veteran population could lead to greater success with patient engagement and risk reduction behavior changes.

To deliver tailored and effective CVD prevention, we need to improve our understanding about the characteristics, comorbid conditions, and health care preferences associated with cardiovascular risk among women veterans. This study contributes to the existing literature by comparing populations of women veterans not at risk for CVD with those at risk for CVD with respect to key health behaviors and preferences. In addition, our analysis draws from a sample of women veterans who both receive care within the VA and those who do not. Our specific objectives are to 1) describe health care use characteristics and preferences, health behaviors, and comorbidities among women veterans at risk for CVD compared with those not at risk for CVD, and 2) explore the relationship between CVD risk status and comorbid conditions, CVD health behaviors, and health care use characteristics and preferences.

Materials and Methods

Data from the National Survey of Women Veterans (NSWV) was used for this study. The NSWV is a national, telephone-based survey conducted in 2008 and 2009 (Washington, Bean-Mayberry, Riopelle, & Yano, 2011b; Washington, Farmer, Mor, Canning, & Yano, 2015; Washington, Sun, & Canning, 2010). The survey sampling frame was created by combining administrative datasets from the VA, the Veterans Benefits Administration, and the Department of Defense; the sampling frame included more than 50% of living women veterans (Washington et al., 2010). This approach yielded a population-based, stratified random sample of women veterans representing all geographic regions and Veterans Integrated Service Networks. Stratification was based on use or nonuse of VA health care and military service era (Washington et al., 2010). Women were eligible for inclusion if they were a veteran in any of the regular armed forces, or if they were a member of the national guard or reserves and called up to active duty. Women were excluded if they were a VA employee, on current active duty, or residing in an institution (e.g., hospital or nursing home).

In total, the residences of 10,638 women veterans were randomly sampled to receive a mailed information packet including opt out information. Study staff contacted those women who did not opt out and screened them for eligibility before completing the informed consent process and conducting a computer-assisted telephone interview. Of those contacted, 970 reported that the potential subject could not be located and 3,214 refused screening for eligibility criteria. Seventy percent (*n* = 4,535) of the 6,454 screened were found to meet eligibility criteria. Of the 4,535 eligible participants, 86% (*n* = 3,899) consented to participate in the survey. Because this survey was stratified to attain a desired demographic distribution, some strata were already at goal and so 3,611 were enrolled in the study; of note, women who use VA care were oversampled and represented more than one-half of the enrolled participants (Washington et al., 2011b). For this analysis, 3,587 participants with complete data regarding CVD risk factors were included. The NSWV was approved by the Institutional Review Board of the VA Greater Los Angeles Health System and the Office of Management and Budget; additionally, the Institutional Review Board at the Durham VA Medical Center approved this secondary analysis.

Measures

All survey items included in the questionnaire were self-reported. The questions included a combination of previously existing, validated measures as well as questions created specifically for this survey.

Dependent Variable: CVD Risk

For the purposes of this analysis, two mutually exclusive categories of women veterans were defined: 1) those at risk for CVD, defined as women without a history of CVD who reported receiving a diagnosis of hypertension or diabetes, or who were current smokers, or had a calculated body mass index of 30 kg/m^2 or greater, and 2) those not at risk for CVD, defined as those women not meeting criteria for either having a history of CVD or being at risk for CVD. Smoking status was assessed by asking about a lifetime history of 100 or more cigarettes and current smoking every day, some days, or not at all. For this analysis, which focuses on factors that may influence primary prevention of CVD, we excluded women with a history of CVD. We defined this category as those who had received a diagnosis of heart attack, stroke, or congestive heart failure.