

## Risk Factors for Homelessness among Women Veterans

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**Abstract:** **Background.** Women veterans are three to four times more likely than non-veteran women to become homeless. However, their risk factors for homelessness have not been defined. **Methods.** Case-control study of non-institutionalized homeless women veterans (n=33) and age-matched housed women veterans (n=165). Health, health care, and factors associated with homelessness were assessed using multiple logistic regression with a Monte Carlo algorithm to estimate exact standard errors of the model coefficients and p-values. **Results.** Characteristics associated with homelessness were sexual assault during military service, being unemployed, being disabled, having worse overall health, and screening positive for an anxiety disorder or post-traumatic stress disorder. Protective factors were being a college graduate or married. **Conclusions.** Efforts to assess housed women veterans' risk factors for homelessness should be integrated into clinical care programs within and outside the Veterans Administration. Programs that work to ameliorate risk factors may prevent these women's living situations from deteriorating over time.

**Key words:** Homeless people, women, hospitals, veterans/utilization, ambulatory care/utilization, health services accessibility, health services needs and demands.

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Homelessness is pervasive in the United States.<sup>1</sup> An estimated 2.3 to 3.5 million people experience homelessness in a given year, and an estimated 26% of homeless adults are veterans.<sup>2</sup> Women who have served in the United States military are three to four times more likely to become homeless than are non-veteran women, though the reasons for this are not clearly understood.<sup>3</sup> Women are one of the most vulnerable subpopulations among the homeless. Relative to homeless male veterans, homeless women veterans likely present different needs with respect to privacy, gender-related care, treatment for physical and sexual trauma, housing support, and care for dependent children.<sup>4-6</sup>

Although food, shelter, and clothing are the most immediate needs of the homeless, health care is also of fundamental importance.<sup>7</sup> Homeless families are less likely than housed poor families to report having a regular provider for preventive care or for sick care.<sup>8</sup>

In some vulnerable veteran populations, Dept. of Veterans Affairs (VA) health care use has been shown to diminish the prevalence of unmet health care need.<sup>9-10</sup> However, many VA-eligible women veterans report barriers to VA health care use.<sup>11-12</sup> The objective of this study was to determine risk factors for homelessness in non-institutionalized women veterans, and to contrast their health and health care use with those of a matched sample of housed women veterans.

## Methods

**Study design and subjects.** We employed a matched case-control design in which homeless women veterans in Los Angeles County were each matched with five housed women veteran historical controls. Matching criteria were geographic region, period of military service, and age group. For each homeless woman veteran, we identified all women veterans in the housed dataset who had the same starting and ending period of military service (pre-Vietnam era, Vietnam, post-Vietnam-to-9/11/01, post-9/11/01), were within five years of age, and resided in the Los Angeles area. We randomly selected five controls for each homeless woman veteran from those meeting all matching criteria. The Institutional Review Boards of the VA Greater Los Angeles Health care System and University of California, Los Angeles, and the Office of Management and Budget approved this study.

Homeless subjects were recruited between December 2005 and January 2006, using VA-affiliated and non-VA affiliated homeless service organization contacts. Outreach sites included four shelters, one drop-in center for homeless people, six transitional housing programs and residential substance abuse rehabilitation programs, the county jail, several soup lines, and direct outreach to people on the streets in Skid Row. The VA homeless women's coordinator also received referrals from VA clinicians, and was in contact with approximately 150 women at the time of this study. We advertised the study to this population and offered enrollment to the first 35 respondents. Enrollment criteria were being a woman veteran, and spending at least one night of the prior 30 in a shelter or transitional residential facility, a hotel paid for with a voucher, a car, an abandoned building, a nonresidential building, or another non-dwelling, or on the street. During the consent process, two potential subjects declined participation. We

conducted 60-minute face-to-face interviews (n=30) or telephone interviews (n=3) with 33 homeless women veterans. All respondents provided oral consent and were reimbursed \$25 for their time. Demographic characteristics were not available to compare non-participants to respondents.

Historical controls were selected from an existing dataset collected two years earlier from a population-based sample of housed women veterans interviewed about their military experiences, health, and health care use.<sup>11</sup> That study had a 93% response rate. This comparison group was chosen because it was the only available population-based women veteran cohort with comparable survey data.

**Survey measures.** The survey instrument included measures to assess homelessness risk factors and health and health care use. The Behavioral Model of Vulnerable Populations which describes factors predicting health care use is the conceptual framework that guided variable selection.<sup>13</sup> Survey items were drawn from both the housed women veteran's survey and from a survey instrument utilized in a previously fielded Los Angeles homeless women's survey.<sup>14</sup> Homelessness measures included length of time homeless and number of entries into and exits out of homelessness. Veteran-specific factors included period of military service, service-connected disability rating, and military sexual assault (MST) history. Types of regular source of care assessed included both traditional and non-traditional (e.g., shelter clinic) sites, and perceived inability to see a physician when needed. Measures of health care need included self-rated health in the prior four weeks (measured with the SF-12),<sup>15-16</sup> having any of 12 medical conditions ever diagnosed by a medical provider (cancer, heart attack, chronic lung disease, congestive heart failure, diabetes, pneumonia, stroke, osteoporosis, urinary incontinence, hypertension, arthritis, tuberculosis or a positive tuberculosis skin test) and/or a current pregnancy. Need for mental health or substance abuse treatment included ever having depression diagnosed and brief screeners for depression or anxiety, post-traumatic stress disorder (PTSD), hazardous alcohol use, and substance abuse.<sup>17-19</sup> Measures of health care utilization in the prior 12 months included having any medical provider visit, mental health service use, VA health care use (versus health care use outside the VA), or being hospitalized.

**Statistical analysis.** Because of the potential for small frequencies for some measures for the homeless women (e.g., the expected number with an annual income greater than \$20,000), Fisher's exact test was used to compare homeless and housed women veterans for all dichotomous measures. Characteristics of homeless and housed women veterans were compared using chi-squared tests for categorical variables and Student's t-test for continuous measures. Independent factors associated with the dependent variable of homelessness were assessed using a multiple logistic regression model with a Monte Carlo algorithm to estimate exact standard errors of the model coefficients and p-values.<sup>20-21</sup> All survey measures associated with homelessness at  $p < .2$  in univariate analyses were included in the logistic model, with the exception of measures with frequencies greater than 95% for a group, SF-12 component scores due to correlations with other health measures, and age because it was a matching criteria. Logistic regression analyses were calculated using LogXact, version 5.<sup>22</sup> All other analyses were conducted using the SAS statistical software system, version 8.2.<sup>23</sup>

**Results**

The study included 33 homeless women veterans and 165 housed women veteran controls. Homeless women veterans had an average of four entries into and exits out of homelessness. The median length of time homeless (over the woman’s lifetime) was 2.1 years (interquartile range 3.5). The median length of time since the woman’s last being stably housed was 1.0 years (interquartile range 1.8). Sixteen percent of the homeless women veterans had children under age 18 years living with them in the prior 12 months. We did not ask this question of housed women veterans.

Characteristics of each group are shown in Table 1. Homeless women veterans were significantly more likely than housed women veterans to be unemployed, disabled, and low-income; to have experienced MST; to be in fair or poor health; to have diagnosed medical conditions; and to screen positive for an anxiety disorder, PTSD, or tobacco

**Table 1.**  
**CHARACTERISTICS OF HOMELESS AND MATCHED HOUSED WOMEN VETERANS BY HOUSED STATUS**

	<b>Homeless women veterans (n=33)</b>	<b>Housed women veterans (n=165)</b>	<b>p-value</b>
<b>Socio-demographic characteristics</b>			
Age at interview, y, mean (SD)	49.7 (6.9)	47.5 (7.5)	.11
Race/ethnicity			.0172
White	36.4%	53.3%	
Black	54.6%	26.6%	
Hispanic	6.1%	11.0%	
Other	3.0%	9.1%	
Racial/ethnic minority	63.6%	46.8%	.09
College graduate	9.1%	35.8%	.0019
Employment status			
Working	6.1%	56.1%	<.0001
Unemployed	25.8%	7.3%	.0054
Disabled	61.3%	18.9%	<.0001
Married	9.7%	46.1%	<.0001
Annual Income ≤\$20,000	96.9%	22.3%	<.0001
Health insurance	32.3%	62.8%	.0025
<b>Military service characteristics</b>			
Ending period of military service			.99
Vietnam War era	18.2%	17.0%	
Post-Vietnam to 9/11/01	78.8%	80.0%	
Post 9/11/01	3.0%	3.0%	

(Continued on p. 85)

**Table 1. (continued)**

	<b>Homeless women veterans (n=33)</b>	<b>Housed women veterans (n=165)</b>	<b>p-value</b>
VA Service-connected disability rating			.08
50–100%	15.2%	15.0%	
10–40%	12.1%	30.6%	
Not service connected	72.7%	54.4%	
Sexual assault during military service	53.3%	26.8%	.0088
<b>Health characteristics</b>			
Overall health fair or poor	57.6%	28.5%	.0021
Self-reported physical health in prior 4 weeks, mean (SD) <sup>a</sup>	33.4 (11.5)	43.0 (12.7)	<.0001
Self-reported mental health in prior 4 weeks, mean (SD) <sup>a</sup>	39.4 (11.4)	47.6 (12.7)	.0009
1 or more diagnosed physical health conditions (lifetime)	97.0%	82.4%	.0332
Pregnant in prior 12 months	3.0%	1.8%	.52
Diagnosed depression (lifetime)	72.7%	46.1%	.007
Screened positive for (prior 4 weeks)			
Depression screen positive	33.3%	23.0%	.27
Anxiety disorder screen positive	45.5%	13.9%	<.0001
PTSD screen positive	74.2%	32.7%	<.0001
Psychotic symptoms	36.4%	not measured	
Substance use			
Current tobacco use	63.6%	24.2%	<.0001
Hazardous alcohol use in prior 12 months	21.2%	37.0%	.11
Current or prior polysubstance abuse	32.4%	not measured	
<b>Health care utilization</b>			
Has usual provider for care	72.7%	77.6%	.65
Ambulatory care or emergency department visit for physical health in prior 12 months	100.0%	94.6%	.36
Mental health care use in prior 12 months	100.0%	35.2%	<.0001
Any outpatient VA health care use in prior 12 months	100.0%	58.2%	<.0001
Hospitalized in prior 12 months	32.3%	15.3%	.0388
Unmet need for health care in prior 12 months	21.2%	17.7%	.63

<sup>a</sup>Range 0–100 where higher scores denote better health

SD = standard deviation

VA = Veterans Affairs

PTSD = Post-Traumatic Stress Disorder

use. Homeless women had lower mean self-reported physical health (9.7 points on a 100-point scale; 95% confidence interval [CI] 4.9, 14.5 points) and mental health (8.2 points; 95% CI 3.4, 13.0) scores than housed women. Homeless women veterans were significantly less likely to be college graduates, employed, married, or have health insurance, and were more likely to have used mental health services, VA health care, or been hospitalized in the prior 12 months.

**Independent predictors of homelessness.** The adjusted odds ratios for risk factors and characteristics associated with homelessness are shown in Table 2. Being unemployed and disabled were significant risk factors for being homeless, whereas being married and being a college graduate were protective. Having fair or poor health, which was correlated with being disabled, was a significant risk factor for being homeless when substituted for being disabled in the model. Experiencing MST and screening positive for an anxiety disorder were both highly correlated with screening positive for PTSD, and all were also significantly associated with being homeless. Adjusted odds ratios in Table 2 are from the model that included MST and screening positive for an anxiety disorder. The adjusted odds ratio for screening positive for PTSD was from a model where this variable substituted for the other two.

**Discussion**

Among women veterans, being unemployed, disabled, or unmarried were the strongest predictors of homelessness. Interestingly, in the non-veteran population, lack of

**Table 2.**  
**CHARACTERISTICS ASSOCIATED WITH CURRENT HOMELESSNESS AMONG 198 WOMEN VETERANS<sup>a</sup>**

	Odds ratio (95% CI)	Adjusted odds ratio (95% CI)
Unemployed	4.4 (1.6, 11.9) *	13.1 (2.7, 63.0) *
Disabled	6.8 (3.0, 15.4) **	12.5 (3.5, 45.0) **
PTSD screen positive	5.9 (2.5, 14.1) **	4.9 (1.9, 12.7) **
Sexual assault during military service	3.1 (1.4, 6.9) *	4.4 (1.4, 14.0) ***
Anxiety disorder screen positive	5.1 (2.3, 11.6) **	4.1 (1.3, 13.2) ***
Overall health fair or poor	3.4 (1.6, 7.3) *	3.2 (1.3, 7.9) ***
College graduate or higher	0.2 (0.1, 0.6) *	0.2 (0.04, 0.9) ***
Married	0.1 (0.04, 0.4) **	0.1 (0.01, 0.4) **

\*p<.01  
\*\*p<.001  
\*\*\*p<.05

<sup>a</sup>Not significantly associated in adjusted analysis: ethnic minority, health insurance, VA service connected disability, diagnosed depression, current tobacco use, hazardous alcohol use in prior 12 months, hospitalized in prior 12 months.

financial resources and social resources are significant homelessness risk factors as well. One of the few studies to compare veteran with non-veteran homeless women found that veteran homeless women had higher rates of employment, educational attainment, and being married—all resources that should make them more resilient to homelessness.<sup>3,24-25</sup> Despite this, that study found a three to four times greater risk of homelessness among veteran than among non-veteran women. In this study, we found that homeless women veterans had an MST prevalence of 53%. Its added effect on top of other risk factors may help explain women veterans' higher risk for homelessness. Programs to alleviate homelessness in women veterans should also address MST and its associated health consequences.<sup>26</sup>

Being homeless was associated with a 9.7-point decrement in self-reported physical health. A decrement of this magnitude is clinically relevant, with a 10-point decrease in physical component scores in other veteran studies being associated with a 1.4-fold increased odds of death following coronary artery bypass grafting.<sup>27</sup> Homeless women veterans also had high levels of mental health co-morbidity. This suggests that a comprehensive program to meet their gender-specific needs must ensure timely access to physical and mental health care services. Though mental health and substance abuse co-morbidity were more prevalent in homeless than in housed women veterans, they were not universal. Therefore, while programs that deliver both primary care and mental health care are essential,<sup>28</sup> medical programs should also target homeless women veterans who do not suffer from serious mental illness or substance abuse.

Despite their poorer health, homeless adults in other studies are less likely than the general population to use outpatient medical services, but more likely to be hospitalized, often for a preventable condition.<sup>29</sup> Our research corroborates the high rates of co-morbidity among homeless women veterans. However, after controlling for co-morbidity, homeless and housed women veterans had similar rates of having a regular provider for health care, hospitalization, and unmet health care need. This could be the result of VA's investment in primary care (with enrollment increasing from 45% in 1996 to 95% by 1999),<sup>30</sup> and suggests that access to VA health care may mitigate some access barriers experienced by non-veteran homeless populations. Other research has found that access to VA benefits is also associated with better housing outcomes for hospitalized homeless veterans.<sup>31</sup>

The relatively high number of women veterans in our sample with a VA service-connected disability may be an artifact of the age and period of military-service-matching-criteria used. Of our homeless sample, 82% served since the post-Vietnam era. This group is younger than women veterans as a whole, a difference not dissimilar to age differences between homeless and housed male veterans. Compared with older women veterans, younger women veterans have much higher rates of VA service-connected disability.

Homeless women veterans reported a homelessness history characterized by frequent entries into and exits out of homelessness, suggesting that this group arises from a much larger population of unstably housed at-risk women. Indeed we found that a sizable minority of our housed controls had risk factors for homelessness. Many of these women may have been homeless in the past, or may become homeless in the future. Resources to alleviate homelessness and its consequences may have the potential to

prevent the tenuous living situations of at-risk women veterans from deteriorating into homelessness. Therefore, interventions to address homelessness should be aimed at both alleviating homelessness and its consequences, as well as preventing homelessness in at-risk women. Efforts to assess housed women veterans' risk factors for homelessness should be integrated into clinical care programs within and outside the VA. Programs that ameliorate these risk factors may prevent their living situations from deteriorating over time. While we found in unadjusted analysis that racial/ethnic minorities were more likely to be homeless, once we controlled for other factors associated with being a racial/ethnic minority (such as overall poor health), racial/ethnic minority status was no longer associated with homelessness. This suggests that such characteristics must be attended to in order to address homelessness among racial/ethnic minority women.

Because of their focus on seriously mentally ill populations, prior studies have been limited in their capacity to identify factors that increase women veterans' homelessness risk.<sup>32</sup> This study's strengths are its enrollment of non-institutionalized women veterans, and its use of a relevant control group to identify unique risk factors and problems of homelessness among women veterans. However, given the transitory nature of homelessness, this study, like other studies of homeless populations, was limited in its ability to establish a complete sampling frame from which to draw a sample. We addressed this limitation by restricting our sample to homeless women veterans utilizing homeless service locations in one geographic region (Los Angeles County), though the representativeness of our sample is unknown. Nonetheless, findings from this research are likely applicable to homeless women veteran populations in other large urban areas.

The cross-sectional nature of this study makes it difficult to ascertain whether some factors were causal rather than a consequence of homelessness. For example, poor physical and mental health may predispose to homelessness or develop as a consequence. Despite this uncertainty, if left untreated these factors are likely to serve as barriers to ending homelessness, and therefore should be addressed.<sup>13,33-34</sup> Because the homeless women veteran sample was obtained 15 months after the housed women veteran sample, issues of historical bias from the Gulf Coast hurricanes of 2005 and the Operations Enduring Freedom (the U.S. military action in Afghanistan, which began in October 2001) and Iraqi Freedom (the Iraq War, which began in March 2003) might have affected our findings. Lastly, our study was limited in not having measures of drug abuse specific morbidity.

## Conclusion

Despite federal attention to homelessness,<sup>35</sup> it and its attendant health consequences persist as major problems.<sup>1,2,36</sup> A patchwork of programs delivers services to homeless women veterans. These include a finite number of VA contract shelter beds and transition programs for homeless women veterans, an intervention program for seriously mentally ill or addicted homeless women, and availability of a broader network of services for homeless veterans. Despite the availability of a much larger number of temporary residential programs and other services for homeless veterans, given the male-dominated gender ratio, many of these programs cannot accommodate or are not structured to address the privacy and other gender-specific concerns of women,

particularly women with children or those with trauma histories.<sup>4-6,24</sup> VA health care, however, has changed over time to better address women's unique health care needs.<sup>37-38</sup> For homeless women veterans who require treatment of PTSD, depression, military sexual trauma, or tobacco use, expanding the geographic availability of female-only treatment programs will facilitate access to needed care. Program adjuncts are also warranted, to focus beyond military sexual trauma treatment to also target or increase intensity of interventions for women veterans with additional risk factors for homelessness. Expanded availability of college education, job training, and transitional housing is needed for all homeless women veterans. Future research should be directed toward identifying the most cost-effective methods for providing these services.

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