

**Across the Lifespan: Homelessness Prevalence and Risk Factors Before, During, and After
Military Service**

Baylee C. Crone

Uniformed Services University of the Health Sciences

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Name of Candidate: Baylee Crone
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DISSERTATION AND ABSTRACT APPROVED:

DATE:

[Redacted Signature]

08/11/22

Dr. Natasha Schvey
DEPARTMENT OF MEDICAL & CLINICAL PSYCHOLOGY
Committee Chairperson

[Redacted Signature]

15 July 2022

Dr. Tracy Sbrocco
DEPARTMENT OF MEDICAL & CLINICAL PSYCHOLOGY
Dissertation Advisor

[Redacted Signature]

8 Aug 2022

Dr. Jeffrey Goodie
DEPARTMENT OF MEDICAL & CLINICAL PSYCHOLOGY
Committee Member

[Redacted Signature]

8/10/22

Dr. Keith Harris
DEPARTMENT OF VETERANS AFFAIRS
Committee Member

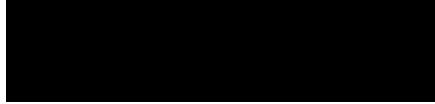
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Baylee Crone

Uniformed Services University
Date June 17, 2022

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Executive Summary

For the nearly 40,000 veterans living on the nation's streets, chronic, debilitating, and often untreated medical conditions significantly impede quality of life and longevity. This widespread homelessness threatens public health and safety. Veterans experiencing homelessness overwhelm local health systems and place a disproportionate strain on emergency services. Among active duty service members, homelessness can potentially collapse the stability essential to readiness and impede a smooth transition from DoD to VA health systems.

Efforts to end homelessness over the last 20 years created tension between health and housing systems that prevent and end homelessness. This tension stymies health service access and exacerbates homelessness risk. Resolving this tension requires identifying barriers to care at specific moments in time and across service settings. The current knowledge base, however, is insufficient to resolve this tension. Recent research fails to fully identify who is experiencing homelessness (i.e., homelessness prevalence) and presents an incomplete (and sometimes inaccurate) picture of the factors that are associated with homelessness (i.e., homelessness risk).

In an attempt to explain homelessness, several early studies of veteran homelessness conflated risk factors with causation. This was particularly the case with substance use disorders and mental health conditions, which were explanatory variables in the personal responsibility narrative that has plagued homelessness programs for generations. Early researchers also offhandedly dismissed the complicated relationship between race and homelessness, including the disproportionate numbers of black veterans among the homeless veteran population.

Most recent research on veteran homelessness risk factors uses retrospective analysis of VA data that may not be representative of all veterans experiencing homelessness. The dozens of studies addressing veteran homelessness risk factors use varying definitions and metrics, methodological processes, and rigor.

Even the best models of homelessness risk across the lifespan of service members include several “black boxes” of unidentified variables.

Understanding, ending, and preventing veteran homelessness is complex. To unpack this process, the next chapter reviews how rising tensions between homelessness and health initiatives developed over the last 40 years. It examines the relationship between homelessness and health within the framework of social determinants of health. We outline a model for understanding the complex experience of homelessness, including commonly accepted definitions of homelessness and their relationship to rapid rehousing and prevention efforts.

Homelessness prevalence and risk factors are explored within the context of a lifespan approach, including before, during, and after military service. What is currently known (and where gaps in research remain) is then discussed regarding homelessness prevalence, contemporary risk factors, and future risk factors across these three time segments.

The three chapters that follow include three manuscripts aiming to fill some of the gaps noted above. We explore homelessness risk factors before, during, and after military service, examine health access barriers impacting homeless veterans (and African American veterans in particular), and dive deeper into mental health treatment for veterans experiencing homelessness in Washington, DC. One study is already published, one is currently in review following a revise and resubmit request, and one is under review. Whenever possible, we looked beyond traditional VA homeless data systems to examine these research questions.

Finally, we consolidate our findings in the final conclusion chapter. Here, we draw together what was learned about homelessness prevalence and risk factors across the lifespan of service members. We outline novel findings, support for previous foundational research, and conundrums that should be answered to guide better care for vulnerable veterans. We also offer research recommendations to help guide the field.

Overview of Manuscripts

This dissertation aims to improve knowledge of homelessness risk at several points along the timeline. It aims to address some of these gaps in knowledge through review of existing literature and secondary data analysis. Generally, this information will help clarify the thread of homelessness risk across an individual’s lifespan with the goal of more effectively targeting prevention resources.

The studies that follow take into account the three major time periods across the lifespan (before service, during service, and after service) as well as the two levels of the homelessness domain (homelessness prevalence and homelessness risk factors). This knowledge across time periods more accurately depicts how homelessness and health interact to improve or degrade the lives of veterans, and design interventions to prevent or rapidly resolve homelessness. The conceptual model for these papers is expressed in Figure 1.

Figure 1



Manuscript One: Trauma Treatment for Homeless Veterans in a Department of Veterans Affairs PTSD Clinical Team

Status: Submitted June 2022 in *Community Mental Health Journal*, waiting on journal response.

Overview: “Trauma Treatment for Homeless Veterans in a Department of Veterans Affairs PTSD Clinical Team” addressed treatment initiation and treatment completion among veterans who accessed the DC VAMC's trauma services program (TSP) in 2019, with a particular focus on differences between veterans with and without a record of homelessness in the year prior to treatment. Somewhat surprisingly, this was the first study we could find to examine PTSD treatment among veterans with and without homelessness histories in a naturalistic treatment setting serving all eligible veterans. Our study found that the TSP is likely serving a disproportionately high number of veterans experiencing homelessness: the percentage of veterans served by TSP with a homelessness history is very large (over 25 percent). Additionally, the treatment completion rate for these homeless veterans was significantly lower than among housed veterans, even though initiation of treatment was similar in both groups. Taken together, approximately one quarter of veterans served by TSP are part of a clinically challenging population with housing instability, competing treatment needs, and other significant barriers to care. This situation may make it difficult for them to engage in and complete treatment.

Manuscript Two: Health Service Access among Homeless Veterans: Health Access Challenges Faced by Homeless African American Veterans

Status: Published July 2021 in *Journal of Racial and Ethnic Health Disparities*

Overview: “Health Service Access among Homeless Veterans: Health Access Challenges Faced by Homeless African American Veterans” provides a review of health access barriers faced by homeless veterans, with a particular focus on the barriers faced by African American veterans experiencing homelessness.. While the VA has improved programmatic connectivity between homeless service and healthcare services, access barriers continue to exist. These access barriers are reflective of general healthcare access issues faced by the general population, but are additionally complicated by veterans’ veteran and homelessness status. Several trends are elucidated here – namely, patterns of inconsistent and inappropriate use of health care services with a burden on emergency care – can allude to lessons learned about healthcare access during one’s military service. Homeless prevention and rapid re-housing services - especially those in community based settings with administrative links to healthcare settings - are ideal launch points for reaching homeless and at risk veterans and service members.

Manuscript Three: Risk Factors for Homelessness among Post-9/11 Era Veterans

Status: Submitted to *Armed Forces and Society*, received and responded to a Revise and Resubmit in March 2022.

Overview: “Risk Factors for Homelessness among Post-9/11 Era Veterans” is the first study of Post-9/11 veteran homelessness using military data, providing a more comprehensive, valid assessment of a wide range of risk issues. Not only does the study chart a new course for military homelessness and validate some findings common in VA data studies, it also provides a new understanding of previously opaque set of variables, brings new factors into the equation, and questions assumptions about homelessness with more support and popular media than in peer reviewed research. This paper expands our understanding of risk factors present before, during, and after military service, specifically targeting sexual orientation, rank, combat exposure, and PTSD and providing some confirmation for prevention efforts targeting those with trauma histories and from economically or otherwise marginalized sub groups.

Responses to Committee Proposal Comments

Comment 1: Revise review paper to include racial/ethnic minority health disparities. (M2)

Response: Previously, Manuscript Two (M2) was a literature review focused on health disparities experienced by homeless veterans. I appreciate the Committee's thoughtful suggestion to revise this manuscript to focus more specifically on health disparities among homeless minority veterans. I took four steps to respond to this comment. First, I reviewed all articles included in the review to identify how race was (or was not) addressed in the studies' methodology, results, and discussion. I also consulted with the USUHS Library services to ensure all appropriate articles were included in this review. Second, M2 was completely revised to include a new focus on health access disparities faced by African American homeless veterans experiencing homelessness. Specifically, the revised manuscript included a review of all included articles for information regarding race. Third, the revised manuscript included suggestions for future research to better capture the health care experiences of minority veterans experiencing homelessness, in particular African American homeless veterans. Finally, I submitted M2 to a journal focusing specifically on health issues impacting racial and ethnic minorities to ensure the widest possible reach for this review.

Dr. Sbrocco was consulted regularly during this process, as was the USUHS librarian, ensuring the review paper encompassed a full spectrum of available studies and was both conceptually and empirically sound. The paper was submitted to the Journal of Racial and Ethnic Health Disparities, where it was accepted for publication in August 2021.

A summary from the manuscript:

“One of the most striking outcomes when looking across studies included in this review is the paucity of data related to health access among African American homeless veterans. Specifically, of the over four dozen articles included in this review, only 21 included race as one of the primary variables at study. Race is included in 52 studies to establish a demographic profile of the sample, but without additional discussion thereafter. Homelessness research is not alone in this exclusion process. One recent review found that only 1.4 percent of biomedical systematic reviews included race or ethnicity in subgroup effect analyses (117).”

Additionally, I included additional discussion of race and ethnic minorities in Manuscript One (M1) and Manuscript Three (M3).

For example, the following sections were added to M3: “Non-Hispanic Black and Hispanic individuals were observed to have elevated risk of becoming and remaining homeless in a study that examined lifetime risk among a nationally representative sample (Fusaro et al., 2018). These inequities have been tied more generally to discrimination in housing and systemic limitations in economic mobility, structural racism, and to unequal treatment in and access to homeless services (Olivet et al., 2020); these observations also extend to veteran populations (Fargo et al., 2012; Montgomery et al., 2020)....

“Characteristics that represent risk factors for veterans mirrored the general population, namely the disproportionate homelessness risk faced by Black and low-income veterans.... The elevated risk for homelessness among Black veterans corroborates the large body of research that documents the stark racial disparity found in the homeless population (Carter, 2011; Crone et al., 2021; Los Angeles Homeless Services Authority 2018; Moses, 2019) even following service in a military has historically preceded civilian society in integration and dismantling of barriers for career advancement among racial and ethnic minorities. Additionally, socio-economic status was consistently associated with increased homelessness risk across models. This factor was operationalized into two variables: pay grade and educational attainment. The observed association between military pay grade and experiencing homelessness suggests a higher vulnerability among those in lower ranks as they reenter a civilian society at an economic disadvantage. This vulnerability may be more acute among minority veterans as they are more disproportionately represented among the lower military ranks than in senior leadership positions (Department of Defense Board on Diversity and Inclusion, 2020).”

Because the sample of M1 was largely composed of African American veterans served by the VA’s Trauma team, additional analyses by race were not feasible. However, this study’s results provide valuable information about the treatment completion challenges faced by African American homeless veterans in the Washington, DC area.

Comment 2: There’s concern that homelessness among AD may not exist (M1)

Response: As noted in the memo signed by all Dissertation Committee members in June, 2021, the Committee approved M1 change to a retrospective chart review project examining PTSD treatment initiation, engagement, and outcomes among a veteran sample receiving services at the DC VAMC. The Committee had previously approved of a brief online survey of health care providers to be conducted through USUHS. While completing a draft IRB proposal, I met regularly with USUHS' HRPPO office to gauge feasibility and timeline for survey approval. In several meetings and emails discussions, the HRPPO office expressed their verdict that student surveys of military populations would require a full DoD review (anticipated at a minimum of eight months). Although it was anticipated that changes to the interpreted applicability of the Paperwork Reduction Act (PRA) to student research would decrease this approval burden, changes failed to significantly decrease the approval timeline.

In consultation with Dr. Sbrocco, we developed three possible alternatives and the Committee agreed with our recommendation that I refocus on another in-process manuscript within the same overarching theme of this dissertation. The DC VAMC study team and I developed a manuscript on a subset of analyses related to homeless veterans. I am the first author on this manuscript, have written the majority of the manuscript, developed the data analysis plan, and ran the analyses. The Committee agreed to this plan and this manuscript became M1.

However, the lack of data surrounding active duty homelessness is insufficient to reject its possible occurrence. As a result, we continue to advocate for the developers of the Millenium Cohort Study to consider revising their questions on homelessness to target experiences with homelessness before and during active duty military service.

Comment 3: Put a bit more emphasis on other risk factors for homelessness including demographics, education, rank. (Introduction)

Response: Regarding demographics, the following sections have been added to the Introduction to more fully explore the impact of fixed demographic factors on homelessness risk:

“Race and Ethnicity. Not only are African American veterans overrepresented among study samples and the homeless veteran population, but race is a risk factor for homelessness. In fact, being African American was associated with a 1.5 times increased risk of homelessness among Veterans Health Administration (VHA) service users. Compared to being White, being African American increased the odds of homelessness almost four times in a recent study of VA mental health service users [8, 9]. Health access for minority veterans experiencing homelessness is unfortunately woefully understudied beyond noting the difference and including race as a covariate (Crone et al., 2021).

Sex, Sexual Orientation, and Gender Identity. A major feature of the post-9/11 service era is the high number of women who have served, particularly in an expanded range of occupations that include exposure to combat. While the total number of female veterans who experience homelessness is low, female gender is considered a risk factor for homelessness among veterans (Byrne et al., 2013). Two studies found that female veterans are two to four times more likely to experience homelessness than their non-veteran counterparts (Fargo et al., 2012; Gamache, 2003). However, studies on the Post 9/11 cohort have not found female

veterans to be more likely than their male counterparts to use VA homeless services (Blackstock et al., 2012). See Appendix C for a model outlining a possible causal pathway for homelessness among women veterans.

To date no studies on veteran homelessness have included sexual orientation as a risk factor variable. Homelessness among youth is also associated with negative health outcomes, including poor physical health, high risk behaviors, poor cognitive function, and higher emergency room utilization (Kulik et al., 2011; Edidin et al., 2012). Homelessness among LGBT youth is often attributed to economic issues, housing instability, family rejection, and abuse (Durso & Gates, 2012; Shelton et al., 2009; Van Wormer, 2003). LGBT youth report higher rates of mental illness including depression and higher rates of suicide attempts than non-LGBT identifying youth (Cochran et al., 2002; Gangamma et al., 2008). Sexual orientation among homeless veterans requires additional study.”

Additionally, the following information was added to the introduction regarding the relationship between demographic variables and homelessness prevalence:

“Race and Ethnicity

Racial and ethnic minorities have long been disproportionately represented among homelessness veterans. Beginning in the early 1990s, studies found that African American veterans were overrepresented among the homeless veteran population. African American veterans were noted to be disproportionately represented among the homeless veteran population when compared to the overall veteran population in Rosenheck and Fontana’s landmark 1994 study on veteran homelessness [7]. This study also noted that veterans who

identify as Black were more likely to experience prolonged or chronic homelessness following an initial homelessness episode.

PIT counts from 2009 have found that African American veterans were overrepresented among veterans experiencing homelessness. In 2019, African American veterans were disproportionately represented among the homeless veteran population when compared to non-homeless veterans (33 percent and 12 percent, respectively). Even more disturbing, between 2018 and 2019, while overall homelessness numbers (including among White veterans) declined, the number of African American veterans experiencing homelessness did not change significantly (Henry et al., 2020).

Veterans identifying as Hispanic were underrepresented among the homeless veteran population in the 2020 PIT, however their rates of unsheltered homelessness were disproportionately high and had increased since 2019. No other racial or ethnic categories were included in the 2020 PIT, and the AHAR report is limited in its interpretation of data.

Sex, Sexual Orientation, and Gender Identity

The most recent PIT fuels continued debate over homelessness prevalence among female veterans. In the 2020 PIT, female veterans represented less than 10 percent of the homeless veteran population and a disproportionate number of females were in unsheltered locations compared to non-veteran homeless women. In fact, this PIT reported a five percent decrease in homelessness among female veterans, while homelessness increased among male veterans. Homelessness prevalence rates are significantly higher among younger female veterans. Although less than nine percent of the total veteran population are female, 17 percent of all Post-9/11 era veterans are female (National Center for Veterans Analysis and Statistics,

2016). Fargo et al. (2012) found that these younger female veterans - especially those who identified as African American - had higher rates of homelessness than older female veterans.

Because female veterans were more likely than male veterans to turn to community-based homeless services outside of the VA system for housing and other assistance, it is possible existing studies undercount the numbers of female veterans experiencing homelessness. This is particularly the case when homeless female veterans are the primary caregivers for their children or when their housing issues are linked to intimate partner violence (Byrne et al., 2013). Existing research using VA data sources is therefore limited in its ability to define homelessness risk among women veterans in the post-9/11 era.

No prior studies have addressed homelessness prevalence for LGBT service members or veterans. However, most homelessness research on LGBT individuals is conducted with LGBT youth between the ages of 15 and 24 years of age, which could overlap with early periods of service for some service members (Eisenberg et al., 2019; U.N. General Assembly and Economic and Social Council, 2004). LGBT youth, in particular transgender youth, experience higher homelessness prevalence than non LGBT youth (Carter et al, 2019; Eisenberg et al., 2017; Fowler et al., 2009). Future demographic studies on veteran homelessness prevalence should include variables related to sexual orientation, but current data sets are limited in this domain.

For the first time, the PIT Count in 2020 included information on transgender service members. It identified 155 veterans who identified as transgender, and 109 who identified as gender non-conforming. Because this is the first year this information was gathered, no comparisons are possible at this time. The majority of these individuals resided in major cities (Henry et al., 2021). Unfortunately, no recent study has specifically examined

homelessness prevalence among transgender active duty service members and the 2020 AHAR did not offer any interpretation of its findings related to transgender homeless veterans.

Age

Although the overall number of veterans experiencing homelessness has gone down since 2009, the number of older veterans experiencing homelessness has increased (Henry et al., 2020). Using mainstream housed population metrics, one can define “older” as equal to or greater than 65 years of age. A disproportionately small homeless veteran population is included in this age bracket when compared to the overall veteran population. Using this metric is misleading, however. As noted above, for individuals over age 50 the experience of homelessness is associated with geriatric conditions occurring up to 20 years earlier than among the housed population (Brown et al., 2012, 2017).

If one follows other experts in the field and identifies “older” veterans as 50 years of age or older, one will find the most highly overrepresented group among the homeless veteran population, compared to housed veterans (Fargo et al., 2012). This is largely due to a cohort effect, where individuals who joined at the beginning of the All Volunteer Force (AVF) have been consistently at the highest risk for homelessness over the last 30 years (Rosenheck et al., 1994; Gamache et al., 2001; Culhane et al., 2013).

Limitations exist in the understanding of homelessness prevalence among veterans. Prevalence data from AHAR reports rely on self-report data, including self-report of veteran status. It is likely that veterans who do not commonly identify as veterans - including female veterans - may fail to identify themselves in this report. Additionally, some veterans may fear reporting their gender identity or sexuality out of fear of reprisal or due to stigma. Prevalence

data from VA sources is also limited by VA service eligibility and usage rates: not all veterans experiencing homelessness are eligible for VA care, and not all of those who are eligible access care at the VA (Congressional Research Service, 2016; Gamache et al., 2000; O'Toole et al., 2003). Future study on homelessness prevalence should include broader data sources and include all stages of the lifespan - including an exploration of active duty homelessness.”

Additionally, see the response to Comment 1 above and Comment 4 below for more examination of changes made regarding racial and ethnic minorities and female veterans.

Regarding education and rank, the following section on education, rank, and income was added to the introduction.

“Income and Education. Although an intuitive and conceptual link exists between income and homelessness, the relationship is bidirectional and involves larger structural issues in the American economy. Employment prospects may be limited for veterans with military skills that do not translate well to the civilian workforce, but the shift in the labor market toward skilled labor is not unique to the veteran community. In fact, lower unemployment rates among veterans and access to job training programs may mean comparable or even improved access to employment opportunities.

However, while many homeless veterans work or receive benefits payments, this income is not a sufficient pull out of homelessness. The large majority of homeless veterans qualify as low-income. Income-adjacent issues (i.e., child support, court fees and fines, credit

issues/debt collection) continue to be among the major unmet needs of homeless veterans (CHALENG 2019). In one study of veterans referred to VA specialty mental health care services, being low income was a significant risk factor among those who experienced homelessness within a year after referral (Tsai et al., 2017). Programs targeting veteran employability often miss this vulnerable section of the veteran population. Among homeless veterans, financial strain is associated with adverse health consequences including suicidal ideation (Elbogen et al., 2021; Keller et al., 2021).

The state of homelessness similarly impacts employability and therefore income: veterans who experience homelessness have difficulty transitioning to and maintaining their roles in the workplace. Some wartime experiences are associated with wage potential after service. Service-connected disability is negatively associated with income for some veterans, possibly compounding homelessness risk. The causal mechanism between disability and income is unknown, but it is possible that access to and use of employment and income-focused programs following disability rating determines whether it is a risk or protective factor.”

4. Regarding women – clarify situation for women and homelessness (Introduction)

Response: To add additional clarification regarding female veterans’ experience with homelessness, I added and expanded upon two sections in the introduction, including “homelessness prevalence” and “fixed risk factors”. Those sections are as follows:

Homelessness prevalence:

“The most recent PIT fuels continued debate over homelessness prevalence among female veterans. In the 2019 PIT, female veterans represented 10 percent of the homeless veteran population and a disproportionate number of females in unsheltered locations compared to non-veteran homeless women. Homelessness prevalence rates are significantly higher among younger female veterans. Although only nine percent of the total veteran population are female, 17 percent of all Post-9/11 era veterans are female (National Center for Veterans Analysis and Statistics, 2016). Fargo et al. (2012) found that these younger female veterans - especially those who identified as African American - had higher rates of homelessness than older female veterans.

Because female veterans were more likely than male veterans to turn to community-based homeless services outside of the VA system for housing and other assistance, it is possible existing studies undercount the numbers of female veterans experiencing homelessness. This is particularly the case when homeless female veterans are the primary caregivers for their children or when their housing issues are linked to intimate partner violence (Byrne et al., 2013). Existing research using VA data sources is therefore limited in its ability to define homelessness risk among women veterans in the post-9/11 era.”

Regarding fixed risk factors:

Sex, Sexual Orientation, and Gender Identity. A major feature of the post-9/11 service era is the high number of women who have served, particularly in an expanded range of occupations that include exposure to combat. While the total number of female veterans who experience homelessness is low, female gender is considered a risk factor for homelessness among veterans (Byrne et al., 2013). Two studies found that female veterans

are two to four times more likely to experience homelessness than their non-veteran counterparts (Fargo et al., 2012; Gamache, 2003). However, studies on the Post 9/11 cohort have not found female veterans to be more likely than their male counterparts to use VA homeless services (Blackstock et al., 2012). See Appendix C for a model outlining a possible causal pathway for homelessness among women veterans.

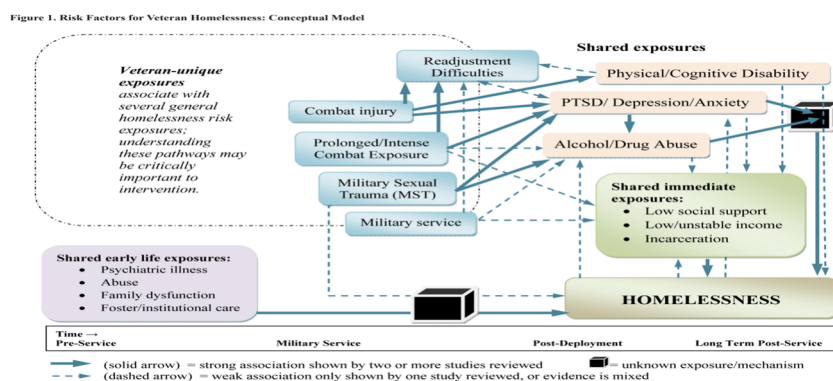
Comment 5: Clarify where the IOM and conceptual model came from. Clarify good vs. bad outcomes – what are they? (Introduction)

Response: For clarity and length, the IOM and additional conceptual model have been deleted from the introduction. Now, the introduction begins with a brief history of veteran homelessness showcasing the resulting tension between health and homelessness services within the VA system, followed by a review of homeless veteran health issues framed within social determinants of health (SDOH). This section now reads as follows:

“In mainstream homelessness research, housing is considered a public health issue and an essential social determinant of health (SDOH) (Donovan, & Shinseki, 2013; Health Affairs, 2018). As the VA developed its approach to health and homelessness, homelessness was recognized as a major factor impacting the health of individual veterans. Although the VA has a long history of addressing SDOH, the Department of Defense (DoD) has not engaged in efforts to directly advance non-medical social determinants of health, including housing

for those at risk of homelessness. Here, we explore how homelessness impacts both veteran health and the health systems serving these veterans.”

The introduction includes an added appendix referencing a standard model employed by homelessness researchers and developed by Balshem and colleagues. It is included here:



This is further clarified in Figures 2, 3, 4, and 5, which are detailed variations on Figure 2 copied below:

“Figure 2: Prevalence and Risk Factors Across the Lifespan



”

Comment 6: Regarding Homelessness vs. housing instability, clarify these concepts throughout (Introduction)

Response: This is primarily clarified in the introduction on page 14, using Perl’s (2005) definition of literal and imminent homelessness. These terms are used throughout the introduction to provide additional clarity. The section now reads as follows (emphasis added here):

“Defining Homelessness

Globally, homelessness is defined as a violation of basic human rights (United Nations, 1948). More generally, homelessness is defined using the definition from the McKinney-Vento Homeless Assistance Act, as amended by S. 896 Homeless Emergency Assistance and Rapid Transition to Housing (HEARTH) Act of 2009 and includes not having a “fixed, regular, and adequate nighttime residence” or residing “in a shelter or place not meant for human habitation” (The McKinney-Vento Homeless Assistance Act, 2009, May 20). For the purposes of these studies, homelessness is generally defined by veteran homelessness experts as a temporary, acute form of housing instability (Byrne, Montgomery, & Fargo, 2019).

Literal and Imminent Homelessness

One strategy for operationally defining the complex experience of homelessness is through the two major categories of homelessness: literal and imminent homelessness. In short, a person is literally homeless if they “lack a fixed, regular, and adequate nighttime

residence.” Imminent homelessness, on the other hand, is a prediction about a future state of homelessness. It is defined as having an eviction notice, lack of resources to secure a hotel/motel, and inability to stay with a family member or another homeowner that would necessitate the individual becoming homeless within the next 14 days (Perl, 2005).

Resolving literal and imminent homelessness requires employing rapid rehousing and prevention interventions, respectively. These types of homelessness are measured using research on prevalence and risk factors (See Figure 1).

Figure 1: Pathway for Conceptualizing Homelessness



Rapid Rehousing for Literal Homelessness

As shown in Figure 1, rapid rehousing includes the most common understanding of how homelessness ends: veterans who are literally homeless (i.e., living on the streets, in transitional or emergency housing, or in places not meant for human habitation) are moved into permanent housing as quickly as possible to provide an opportunity for restabilization. Kuhn and Culhane’s (1990) early cluster analysis of veteran homelessness using a sample of veterans accessing shelter services identified three clusters of literal homelessness: one

transitional homelessness episode, multiple homelessness episodes, or chronic homelessness. For the last 30 years, the large majority of programming aimed at ending homelessness among veterans has fallen into this rapid rehousing category.

Prevention for Imminent Homelessness

Prevention efforts have focused almost exclusively on two goals: stabilizing housing for the recently housed and retaining housing for those at acute risk of homelessness; these two groups of veterans are imminently homeless. Long-term success in the effort to end veteran homelessness requires preventing homelessness as much as it requires moving veterans off the streets.”

Comment 7: Cite studies on SM/transgender populations. Give a nod to this population at increased risk. Discuss potential mechanisms to explain why they’re at increased risk.

Consider the Minority Stress Theory. (Introduction)

Response: Wherever feasible, information about transgender service members experiencing homelessness was included in the Introduction. However, existing research on this population is limited. The main review of extant literature on the topic was included in the discussion of homelessness prevalence:

“No prior studies have addressed homelessness prevalence for LGBT service members or veterans. However, most homelessness research on LGBT individuals is conducted with LGBT youth between the ages of 15 and 24 years of age, which could overlap with early

periods of service for some service members (Eisenberg et al., 2019; U.N. General Assembly and Economic and Social Council, 2004). LGBT youth, in particular transgender youth, experience higher homelessness prevalence than non LGBT youth (Carter et al, 2019; Eisenberg et al., 2017; Fowler et al., 2009). As a result, future demographic studies on homelessness prevalence should include variables related to sexual orientation.

For the first time, the PIT Count in 2020 included information on transgender service members. It identified 155 veterans who identified as transgender, and 109 who identified as gender non-conforming. Because this is the first year this information was gathered, no comparisons are possible at this time. The majority⁷⁸ of these individuals resided in major cities. Unfortunately, no recent study has specifically examined homelessness prevalence among transgender active duty service members.”

To limit the length of this section and maintain consistency throughout the narrative, discussion was limited to research and data on homelessness among transgender service members and sexual minorities. Additionally, given how limited our understanding is of these particular sub-populations, no models have been objectively studied in reference to them.

Comment 8: Regarding National Guard: Explain more about their circumstances if you’re going to use these data. (M1)

Response: See 1 above for a review of the M1 topic substitution from Active Duty homelessness to mental health treatment among homeless veterans. However, I included a brief review of

available research about specific risk factors faced by National Guard and Reserve service members in the introduction (see pp. 21-22):

“Conversely, certain factors that generally contribute to homelessness risk could translate to an increased risk among the active duty population. Divorce and poor social support are closely related to homelessness and are disproportionately commonplace among active duty service members (Rosenheck & Fontana, 1994). Those in National Guard and Reserve status in particular may experience social isolation at higher rates than the general population (Mettraux, 2013). Specifically, they have lower marriage rates than the Active Duty population, but still have divorce rates over twice that of the civilian population (Hogan & Seifert, 2010). The heavy reliance on members of the National Guard, Reserves, and Special Forces during recent conflicts meant older and married service members - as well as their dependents - had to contend with disrupted family structures (CBO, 2007a; DoD, 2015; IOM, 2010; Waterhouse & O’Bryant, 2008). Physical distance from support systems as a result of deployments could additionally exacerbate social isolation and homelessness risk. Research on this time period is needed.”

Comment 9: Discuss limitations of not including SUD [Substance Use Disorder]. (M3)

Response: The coauthors of M3 and I expanded our discussion on SUD within the paper, given the important role substance use disorder plays in homelessness risk and the unfortunate reality that the MCS data sets’ lack of data on SUD limits our ability to interpret this crucial risk factor.

We first addressed the important role of substance use disorder in the introduction (emphasis added):

“While veterans have been a group set apart from the rest of the homeless population in the U.S. (Metraux & Moore, forthcoming), much research has shown that personal homelessness risk profiles among veterans are very similar to non-veterans (Balshem et al., 2011; Rosenheck et al., 1996). Factors that increase the risk of homelessness among both veterans and non-veterans alike include Black/African American race and ethnicity, *having mental health or substance use diagnoses*, and previous exposure to trauma.”

We then addressed the limitation in our discussion (emphasis added):

“Among the array of behavioral and mental health measures assessed in the study population, only diagnosis of manic depression and screening for depression/PTSD were statistically significant predictors in the multivariate model. Focusing on veterans with these risk factors could be beneficial for future prevention strategies. *Because the MCS data has limited information on substance use, our findings related to this specific risk factor – one of the most significant and consistent risk factors in studies on risk factors veteran homelessness – are limited.*

Comment 10: Clarify time frames and consider limiting the time frame for ease and clarity. For example, homelessness or housing instability “during or after” service. Define “period of homelessness” Either make the reader confident about the parameters or note this is unknown and it is a limitation. (M1)

Response: Please see the response to Comment 1 above for a review of the M1 topic substitution from Active Duty homelessness to mental health treatment among homeless veterans.

Across the Lifespan: Homelessness Prevalence and Risk Factors Before, During, and After Military Service

How We Got Here: A Brief History of Veteran Homelessness

Homelessness and health have always been functionally linked in the negative health experiences of veterans who are homeless. Research and programs serving homeless veterans moved more slowly in empirically establishing this link. A brief history of veteran homelessness shows a slow progression in this connection. Homelessness among veterans has grown from its foundation in local activism and economics through an evolving connection to national policy and health systems (Tsai, 2018). The current system is defined by tension between communities of care due to competing demands, stigma, and sometimes conflicting research about who is homeless and how homelessness occurs (and who is responsible).

Civil War through 2009

Veteran homelessness is a byproduct of every major American war since the 1860s¹. Records from the early post-war period (post-Civil War through post-World War I) reveal largely anecdotal evidence of former soldiers with physical and psychological wounds living in a state of penury while relying on the charity of local organizations or family members (Robertson, 1987). Veterans then faced the same economic hardships as other Americans through the Great Depression where large swaths of the American public experienced turbulent poverty and homelessness.

While the stimulus of World War II and the first GI Bill meant economic recovery for some veterans, those most in need remained on the streets (Dickson & Allen, 2006). For many of

¹ For a more comprehensive history of veteran homelessness, see Tsai, 2018. For a comprehensive history of American homelessness, see Kusmer, 2002.

these veterans, an escape from homelessness simply meant incarceration in prison or a mental health facility (McGuire, 2007; Tsai et al., 2014). The rapid deinstitutionalization of individuals in mental health institutions across the country that began in the 1960s meant massive surges in homelessness, including among veterans (Burt, 1992; Lamb, 1984, 2001; Rossi, 1989). During and after the Vietnam War, homeless veterans with medical, psychological, and economic issues relied on a disjointed and inconsistent array of services from local community and faith-based organizations and health centers. These disjointed but well-intentioned efforts leveraged their limited resources to make the experience of homelessness marginally less unpleasant for the veterans under their care (P. Dougherty, personal communication, May 12, 2020).

Later efforts (1990s - 2009) by the VA and the Department of Labor forged bridges out of homelessness and documented the extent of veteran homelessness for the first time (Rosenheck et al., 1989, 1991). The major homelessness researchers of the time found higher rates of homelessness among Vietnam Era veterans compared to the general public (Gamache, 2001; Rosenheck et al., 1994). They were surprised by these findings, as veterans at that time point had higher levels of education, higher incomes, and lower rates of unemployment than their non-veteran peers (Rosenheck & Fontana, 1994). At this stage, homelessness was still largely regarded as an individual economic problem.

Rosenheck and Fontana (1996) began to explore correlations between PTSD symptoms and readjustment difficulties. The public grasped onto this explanation linking a signature injury of that war - PTSD - to homelessness (Metraux & Smith, 2018). Smith and True (2014, as cited in Metraux & Smith, 2018) found that homelessness became largely equated with PTSD for these veterans, creating a proxy measure for wartime experience and possibly overestimating the direct relationship between a PTSD diagnosis and homelessness. The most rigorous study at the

time that examined the connection between homelessness and PTSD included a sample of Vietnam veterans and did not find a significant association (Rosenheck & Fontana, 1994), but that research was largely drowned out by this narrative connection.

Also in the early 1990s, individual advocates and small community-based service agencies from across the country formed the national advocacy organization the National Coalition for Homeless Veterans (NCHV). Under NCHV's leadership, policy makers charged with serving the veteran community - in particular the U.S. Senate and House Veterans Affairs Committees - began to acknowledge their responsibility to veterans experiencing homelessness and to build and finance community-based programs to serve them (P. Dougherty, personal communication, May 12, 2020). This process established the first functional connection between homelessness and health systems.

Over the next decade, the VA began to offer short-term housing grants in high-need communities and homeless-focused health care services based out of VA Medical Centers (VAMCs). The focus shifted from managing the homelessness state to offering a hand up out of homelessness through housing and health care services. Still, veterans remained on the streets and continued to fall into homelessness, driven in part by a surge in new homelessness episodes among post-Vietnam era veterans and by slow movement out of homelessness for veterans already on the streets (Rossi, 1990). The new process was helping, but it lacked sufficient information and direction to make a significant impact.

2009 - Present Day

Starting in 2009, the Federal government shifted its strategy toward rapidly moving veterans out of homelessness into housing following adoption of a national Housing First model

(US Department of Veterans Affairs, 2009)². The US Interagency Council on Homelessness (USICH) provided national-level strategic direction and planning across Federal agencies. Under this national campaign to end veteran homelessness, the federal government funded several targeted interventions to house veterans quickly (USICH, 2013). This campaign included six main interventions: the HUD-VA Supportive Housing (HUD-VASH) program, the Project-Based HUD-VASH program (PB HUD-VASH), the Grant and Per Diem (GPD) program, the Supportive Services for Veteran Families (SSVF) program, and the Homeless Veterans Reintegration Program (HVRP)³. These programs established Federal responsibility for aiding veterans experiencing homelessness.

The objectives of these programmatic interventions tied homelessness directly to health. The primary objective underlying many of these programs was to move veterans into housing without preconditions (i.e., with no test of sobriety and by removing zero tolerance policies). The secondary objective was to help veterans improve their quality of life through referral to health services (Housing and Urban Development, 2012). Even with these programmatic connections between homeless services and health, the focus had moved away from health and honed in on housing.

Also during this time, two major steps heralded the first significant wave of research on veteran homelessness. First, the U.S. Department of Housing and Urban Development (HUD) began asking about veteran status in their 2009 Point In Time (PIT) Count, first including veteran data as a supplemental report and later including veteran figures in its Annual Homelessness Assessment Report (AHAR) to Congress (Khadduri & Culhane, 2010)(See

² For a comprehensive review of the Housing First model, see Tsemberis and Eisenberg, 2000.

³ See USICH (2013) or Tsai & Byrne (2018) for more information about these programs.

Appendix B). This step represented the first real prevalence data on veterans experiencing homelessness. Second, the VA centralized research on ending veteran homelessness through the National Center on Homelessness Among Veterans (NCHAV), a national center of excellence dedicated to research on veteran homelessness (VA, 2019b). These steps opened the door to better understanding homelessness prevalence and risk.

Researchers then identified a rapid increase in homelessness among Post-9/11 veterans, especially among female service members. Even more startling, the new generation of veterans were experiencing homelessness more quickly after discharge than older eras of veterans (VA, 2012). Again, the narrative connection between the signature wounds of these conflicts - PTSD and Traumatic Brain Injury (TBI) - gained minimal empirical support but dominated public perception of veterans experiencing homelessness (Metraux & Smith, 2018).

Over the past 11 years, this targeted national campaign led to massive decreases in homelessness among veterans across the country. The 2019 PIT Count identified 37,085 veterans experiencing homelessness. This represented a cumulative decline of 50 percent since 2009. This total represented the largest real decline since the AHAR began capturing data on veteran homelessness (Henry et al., 2020).

Trends are also positive: after an increase from 2016 to 2017 due largely to methodological improvements, the total number of veterans who experienced homelessness decreased during the 2018 and 2019 PIT Counts. Over 100,000 veterans moved off the streets into stable, safe housing (Henry et al., 2018). Three states and 78 communities have functionally ended veteran homelessness (USICH, n.d.).

Tension and Trade-Offs: Balancing Homelessness and Health Services

This history establishes a necessary but challenging tension - systems serving homeless veterans prioritize both health and homelessness (VA, 2017). However, many steps taken to fulfill one half of the objective move veterans further from the other. As stated by Tom O'Toole (2018): "one of the challenges we confront ... is whether the intent and focus should be on making homeless persons healthier or assuming a more ambitious goal of contributing to their leaving homelessness." This tension represents a necessary if fraught trade-off. Alleviating the tension requires understanding specific gaps in health service access for veterans experiencing homelessness (Cordasco, 2019).

Homelessness and Social Determinants of Health

In mainstream homelessness research, housing is considered a public health issue and an essential social determinant of health (SDOH) (Donovan, & Shinseki, 2013; Health Affairs, 2018). As the VA developed its approach to health and homelessness, homelessness was recognized as a major factor impacting the health of individual veterans. Although the VA has a long history of addressing SDOH, the Department of Defense (DoD) has not engaged in efforts to directly advance non-medical social determinants of health, including housing for those at risk of homelessness.

A model established by the Institute of Medicine (1988) can explain how homelessness and health are functionally linked through three major pathways: health issues lead to homelessness; homelessness leads to health issues; and concurrent homelessness and health issues. These pathways involve the actions of both the individual and the institutions within which the individual operates for health services. This model offers a framework for understanding the daily experiences of someone experiencing homelessness.

In the first pathway, an individual with health issues subsequently experiences homelessness. For example, an individual with substance use disorder or a schizophrenia spectrum disorder may be at higher risk for experiencing homelessness than an individual without one of these diagnoses, in the general and in the veteran population (Kuno et al., 2000; Susser et al., 1993; Tsai & Rosenheck, 2015). Institutional factors play a major role in this pathway, as protective and risk variables impact access to both medical care and homelessness services (i.e., available treatment programs and stigma, respectively) (Gelberg et al., 1997; O'Toole et al., 2015).

In the second pathway, an individual experiencing homelessness develops health issues as a result of the homelessness episode. For example, among the general population, exposure to the elements during homelessness episodes can lead to hypothermia, health-related illnesses, malnutrition, violence/trauma, and infections related to unsanitary conditions (Lane et al., 2018; Zhang et al., 2019). Again, institutional factors such as availability of healthy food options or “Not In My Backyard” (NIMBY)-ism regarding shelter services can help or hinder health for those experiencing homelessness (Badger, 2018; Smith et al., 2010).

In the third pathway, an individual experiencing homelessness will likely encounter difficulty accessing ongoing treatment for more chronic health issues. For example, a person experiencing homelessness who also has Hepatitis-C or HIV/AIDS may have difficulty maintaining a medication regimen while moving to a new location each day (Noska et al., 2017). Institutional factors can play a significant role here - when attempting to connect with medical services, the individual may face negative biases for both his homelessness and his health status. This may result in distrust and disengagement with the medical system. It could also result in redirection toward homeless services instead of needed medical care (Desai et al., 2003; O'Toole

et al., 2013). Here, we explore how homelessness impacts both veteran health and the health systems serving these veterans.

Impacts of Homelessness on Health

Homelessness is closely associated with serious health issues for individual veterans. In studies conducted over the last 20 years, researchers have found that homeless veterans have elevated levels of chronic and acute mental and physical health disorders relative to non-homeless veterans (O'Toole, 2018; O'Toole et al., 2003; Tsai & Rosenheck, 2015). They report more serious and higher rates of comorbid and tri-morbid health issues compared to their non-homeless peers (Schinka et al., 2016). These multiple morbidities can compound one another: Ding et al. (2018) found that homeless veterans with a co-occurring diagnosis had a higher risk of poor mental health outcome compared to homeless veterans without comorbid diagnoses.

Homeless veterans often experience chronic and untreated medical conditions. These conditions include higher rates of diabetes, cardiovascular disease, hepatitis, respiratory conditions, arthritis, and hypertension compared to their housed peers (Eibner et al., 2016; Harris et al., 2018; Morrison, 2009; O'Toole et al., 2013). Substance use disorder, alcohol abuse, and mental illness diagnosis rates are also higher among homeless veterans compared to non-homeless veterans (Raad, 2019).

Causal links are difficult to identify in these complicated processes relying largely on retrospective study and self-report. For example, while homeless veterans have attributed their homelessness status to their mental or substance use illness in some qualitative studies, other studies have identified mental illness diagnoses as a risk factor for homelessness (Dunn et al., 2015; Tsai & Rosenheck, 2015; Winkleby et al., 1993). It is possible that high disorder rates are

in part due to high exposure to disease and toxins from the environment experienced on the street (Barrow et al., 1999; Hibbs, 1994).

Untreated medical conditions contribute to early mortality for up to 90 percent of veterans experiencing homelessness (Gabrielian et al., 2014; O'Toole et al., 1999; Schinka, et al., 2016). In one study on homeless adult mortality more broadly, life expectancy was significantly lower for both men and women experiencing homelessness (64 years and 69 years, respectively) (Metraux et al., 2011). In fact, homeless veterans die almost 10 years earlier than their non-homeless veteran counterparts (Schinka, et al., 2016). In one study of homeless veterans with serious mental illness, homeless veterans lost between 18.9 and 24.3 years of life compared to housed veterans (Bergenheir et al., 2013).

Several studies have found significantly higher rates of all-cause mortality among homeless veterans when compared to non-homeless veterans (LePage et al., 2014). This early mortality is closely associated with chronic stress (Barrow et al., 1999). Compared to non-homeless veterans, while younger homeless veterans were more likely to die by homicide or drug overdose, older homeless veterans were more likely to die due to digestive diseases, mental health issues, or suicide (Schinka et al., 2012, 2016a, 2016b, 2017).

Poor health is particularly prevalent among aging homeless veterans. Older homeless adults generally have higher rates of geriatric conditions when compared to older housed adults, including older housed adults in extreme poverty (Brown et al., 2017; Garibaldi et al., 2005; Hecht & Cole, 2001). This aging cohort is younger but sicker than their housed veteran counterparts (Schinka & Byrne, 2018). Rates of chronic medical conditions are higher among this older veteran group when compared to their younger counterparts, however differences in mental health diagnoses - including substance use disorder - are narrower than differences in

medical diagnoses (Brown et al., 2015). As noted by Schinka and Byrne (2018), among homeless veterans, factors associated with homelessness may “accelerate the impact of chronological aging on age of onset, progression, and comorbidity for chronic diseases and may contribute to accelerated biological aging” (p.218). Across age groups, homeless veterans report significantly lower quality of life than housed veterans (Gabrielian et al., 2014).

Impact of Homelessness on Health Service Systems

Homelessness also strains general health care and veteran-specific health service systems. General population research finds that major health crises are the biggest drivers of health service utilization for people experiencing homelessness. However, most homeless people seek care through emergency rooms and not through primary or preventive care (Padgett, 1995; Feigal et al., 2014; Gelberg et al., 2000). Homeless veterans in particular tend to disproportionately utilize emergency services (Gilmer et al., 2009; Montgomery et al., 2017). Research over the last thirty years has found that veterans who are homeless tend to use services that meet acute needs, not long-term or preventive needs (O’Toole et al., 2007; Wenzel et al., 1995).

The disproportionate utilization burden impacts availability of emergency services. Homeless individuals spend more time hospitalized (Gulcur, 2003) and in the emergency room (Padgett, 1995) than non-homeless individuals. In Nelson et al., (2018), homelessness among a veteran sample was associated with both a greater number of outpatient encounters and inpatient days. Interestingly, these findings held in both VA and non-VA facilities (Nelson et al., 2018). Across systems of care, providers are often unwilling to discharge an individual who recently experienced a medical crisis back onto the streets.

Uneven use of health services is complicated by barriers to access. For example, qualitative interviews conducted by Weber et al. (2019) found that veterans often seek

emergency care because they feel they have no other option (i.e., because future medical needs are beyond their control so focus is on the present). Veterans who are homeless report difficulty accessing health services, especially if they have more complicated medical issues (Desai, 2003; Fischer, 1986; Gabrielian, 2014; Gordon, 2010; Kushel, 2001).

More recently, the aging homeless veteran population is straining end of life and nursing facilities. Lack of stable housing and other appropriate discharge options force difficult decisions upon medical providers: how best can they help a veteran experiencing homelessness to manage his symptoms near the end of his life (Hutt et al., 2016)? As a result of these difficult treatment decisions, homeless veterans are more likely to come straight from a hospital and to stay longer in the nursing facility, but less likely to die in a nursing facility (Jutkowitz, 2019). This strain may be impacting the quality of end of life care (Gruenewald, 2018; Hutt, 2016, 2018).

Conceptualizing Homelessness Across the Lifespan

Defining Homelessness

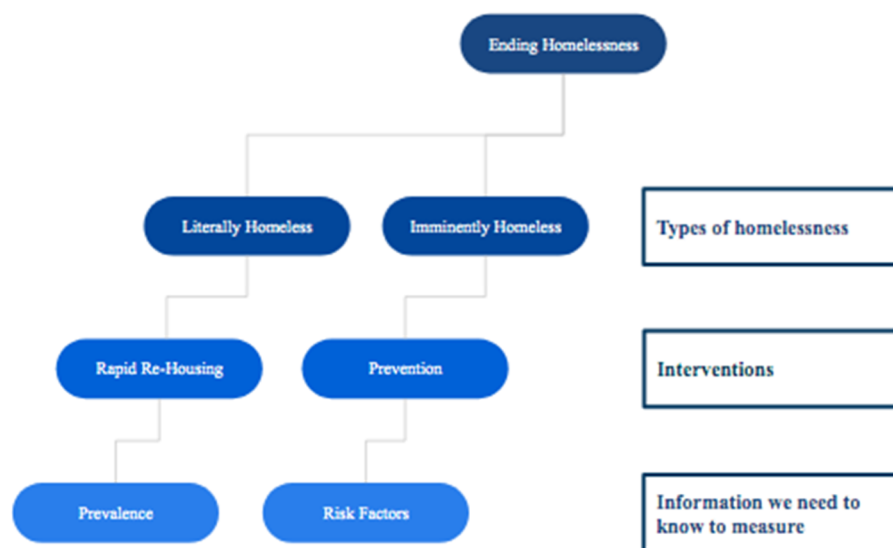
Globally, homelessness is defined as a violation of basic human rights (United Nations, 1948). More generally, homelessness is defined using the definition from the McKinney-Vento Homeless Assistance Act, as amended by S. 896 Homeless Emergency Assistance and Rapid Transition to Housing (HEARTH) Act of 2009 and includes not having a “fixed, regular, and adequate nighttime residence” or residing “in a shelter or place not meant for human habitation” (The McKinney-Vento Homeless Assistance Act, 2009, May 20). For the purposes of these studies, homelessness is generally defined by veteran homelessness experts as a temporary, acute form of housing instability (Byrne, Montgomery, & Fargo, 2019)⁴.

Literal and Imminent Homelessness

⁴ A comprehensive definition of homelessness can be found at Perl, 2015

One strategy for operationally defining the complex experience of homelessness is through the two major categories of homelessness: literal and imminent homelessness.⁵ In short, a person is literally homeless if they “lack a fixed, regular, and adequate nighttime residence.” Imminent homelessness, on the other hand, is a prediction about a future state of homelessness. It is defined as having an eviction notice, lack of resources to secure a hotel/motel, and inability to stay with a family member or another homeowner that would necessitate the individual becoming homeless within the next 14 days (Perl, 2005). Resolving literal and imminent homelessness requires employing rapid rehousing and prevention interventions, respectively. These types of homelessness are measured using research on prevalence and risk factors (See Figure 1).

Figure 1: Pathway for Conceptualizing Homelessness



Rapid Rehousing for Literal Homelessness

⁵ A robust discussion of these categories of homelessness can be found Perl, 2015.

As shown in Figure 1, rapid rehousing includes the most common understanding of how homelessness ends: veterans who are literally homeless (i.e., living on the streets, in transitional or emergency housing, or in places not meant for human habitation⁶) are moved into permanent housing as quickly as possible to provide an opportunity for restabilization. Kuhn and Culhane's (1990) early cluster analysis of veteran homelessness using a sample of veterans accessing shelter services identified three clusters of literal homelessness: one transitional homelessness episode, multiple homelessness episodes, or chronic homelessness. For the last 30 years, the large majority of programming aimed at ending homelessness among veterans has fallen into this rapid rehousing category.

Prevention for Imminent Homelessness

Prevention efforts have focused almost exclusively on two goals: stabilizing housing for the recently housed and retaining housing for those at acute risk of homelessness; these two groups of veterans are imminently homeless. Long-term success in the effort to end veteran homelessness requires preventing homelessness as much as it requires moving veterans off the streets.

Prevalence and Risk Factors

Homelessness can be further divided into prevalence and risk factors, employing a common division in epidemiology (Blumenthal, 2001). Rapid rehousing requires us to understand how many individuals are homeless (i.e., homelessness prevalence). Prevention requires knowing characteristics associated with increased risk of homelessness (i.e., risk factors). While prevalence involves a single facet, risk factors are multi-faceted, complex, and

⁶ The definition of "homeless veteran" is at 38 U.S.C. §2002. The McKinney-Vento definition of homeless individual is at 42 U.S.C. §11302(a).

interactive. The Balsham and colleagues' (2011) model (see Appendix A) identifies several risk categories and “black boxes” of unknown information regarding how homelessness occurs.

Homelessness Across the Lifespan

Most of the research on veteran homelessness focuses on prevalence and risk factors after service, not before or during service. Examining these two measures in more detail across the lifespan paves the way for understanding how homelessness works. This informs how interventions to rapidly resolve and prevent homelessness can be most effective (Kraemer et al., 1997, 1999; Offord, 2000). While no comprehensive models of homelessness exist for veterans across the lifespan, some proposed models are included in Appendix B. In the sections that follow, lifespan is broken into three segments: before service, during service, and after service (See Figure 2).

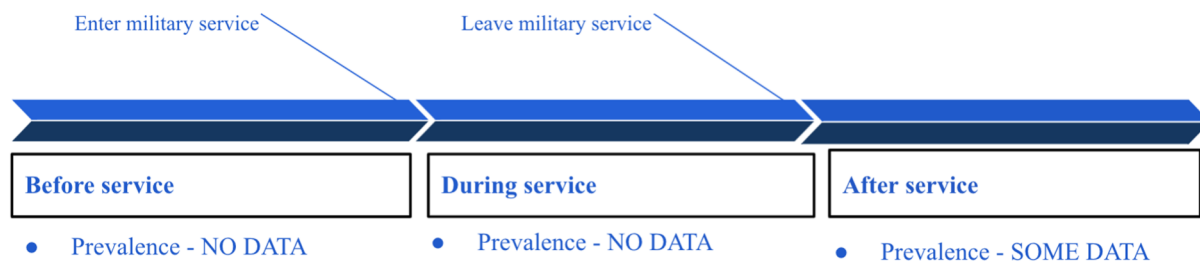
Figure 2: Prevalence and Risk Factors Across the Lifespan



Homelessness Prevalence Across the Lifespan (See Figure 3)

Figure 3

What is Known about Prevalence Before, During, and After Service



Homelessness Prevalence Before Military Service

Currently, no research exists on homelessness prevalence among individuals who later go on to serve in the military. Although youth homelessness is an important topic deserving of effort and attention from researchers and policymakers, a full examination of homelessness prevalence among youth is beyond the scope of this review. However, given that 1 in 30 adolescents between the ages of 13 and 17 experiences homelessness, it is possible that some of these children turn to military service as a pathway out of homelessness (Morton et al., 2018).

Homelessness Prevalence During Military Service

To date no study has examined homelessness prevalence during active duty service. This significant gap can be due to several factors. First, current datasets on active duty service members may not adequately capture homelessness experiences⁷. This would require, at a minimum, inclusion of ICD-9 or ICD-10 codes related to homelessness risk. Nearly all studies on homelessness among military populations have been conducted using VA data focused on post-transition events (Metraux et al., 2017). As noted below, assumptions about risk may have impacted the failure to ask this question in prior studies.

Homelessness Prevalence After Military Service

⁷ See <https://www.millenniumcohort.org/studytopics> for list of Millennium Cohort Study research topics and survey tools.

Homelessness prevalence research concerns service members after they leave military service, in particular among veterans. Over the course of 2019, over 118,000 veterans accessed emergency shelter or short-term housing. According to the 2019 PIT, on a single night in January 2019 37,085 veterans were homeless (Henry et al., 2020). This number increased to 37,252 in January 2020, and is projected to increase in the 2021 PIT given the detrimental impacts of COVID-19 on housing stability (Henry et al., 2021). Compared to their share of the U.S. adult population, veterans were overrepresented in the population of adults experiencing sheltered homelessness. Veterans made up eight percent of adults using emergency shelter or transitional housing programs compared to less than six percent of the U.S. adult population (Henry et al., 2020).

Race and Ethnicity

Racial and ethnic minorities have long been disproportionately represented among homelessness veterans. Beginning in the early 1990s, studies found that African American veterans were overrepresented among the homeless veteran population. African American veterans were noted to be disproportionately represented among the homeless veteran population when compared to the overall veteran population in Rosenheck and Fontana's landmark 1994 study on veteran homelessness [7]. This study also noted that veterans who identify as Black were more likely to experience prolonged or chronic homelessness following an initial homelessness episode.

PIT counts from 2009 have found that African American veterans were overrepresented among veterans experiencing homelessness. In 2019, African American veterans were disproportionately represented among the homeless veteran population when compared to non-homeless veterans (33 percent and 12 percent, respectively). Even more disturbing, between

2018 and 2019, while overall homelessness numbers (including among White veterans) declined, the number of African American veterans experiencing homelessness did not change significantly (Henry et al., 2020).

Veterans identifying as Hispanic were underrepresented among the homeless veteran population in the 2020 PIT, however their rates of unsheltered homelessness were disproportionately high and had increased since 2019. No other racial or ethnic categories were included in the 2020 PIT, and the AHAR report is limited in its interpretation of data.

Sex, Sexual Orientation, and Gender Identity

The most recent PIT fuels continued debate over homelessness prevalence among female veterans. In the 2020 PIT, female veterans represented less than 10 percent of the homeless veteran population and a disproportionate number of females were in unsheltered locations compared to non-veteran homeless women. In fact, this PIT reported a five percent decrease in homelessness among female veterans, while homelessness increased among male veterans.

Homelessness prevalence rates are significantly higher among younger female veterans. Although less than nine percent of the total veteran population are female, 17 percent of all Post-9/11 era veterans are female (National Center for Veterans Analysis and Statistics, 2016). Fargo et al. (2012) found that these younger female veterans - especially those who identified as African American - had higher rates of homelessness than older female veterans.

Because female veterans were more likely than male veterans to turn to community-based homeless services outside of the VA system for housing and other assistance, it is possible existing studies undercount the numbers of female veterans experiencing homelessness. This is particularly the case when homeless female veterans are the primary caregivers for their children or when their housing issues are linked to intimate partner violence (Byrne et al., 2013). Existing

research using VA data sources is therefore limited in its ability to define homelessness risk among women veterans in the post-9/11 era.

No prior studies have addressed homelessness prevalence for LGBT service members or veterans. However, most homelessness research on LGBT individuals is conducted with LGBT youth between the ages of 15 and 24 years of age, which could overlap with early periods of service for some service members (Eisenberg et al., 2019; U.N. General Assembly and Economic and Social Council, 2004). LGBT youth, in particular transgender youth, experience higher homelessness prevalence than non LGBT youth (Carter et al, 2019; Eisenberg et al., 2017; Fowler et al., 2009). Future demographic studies on veteran homelessness prevalence should include variables related to sexual orientation, but current data sets are limited in this domain.

For the first time, the PIT Count in 2020 included information on transgender service members. It identified 155 veterans who identified as transgender, and 109 who identified as gender non-conforming. Because this is the first year this information was gathered, no comparisons are possible at this time. The majority of these individuals resided in major cities (Henry et al., 2021). Unfortunately, no recent study has specifically examined homelessness prevalence among transgender active duty service members and the 2020 AHAR did not offer any interpretation of its findings related to transgender homeless veterans.

Age

Although the overall number of veterans experiencing homelessness has gone down since 2009, the number of older veterans experiencing homelessness has increased (Henry et al., 2020). Using mainstream housed population metrics, one can define “older” as equal to or greater than 65 years of age. A disproportionately small homeless veteran population is included in this age bracket when compared to the overall veteran population. Using this metric is

misleading, however. As noted above, for individuals over age 50 the experience of homelessness is associated with geriatric conditions occurring up to 20 years earlier than among the housed population (Brown et al., 2012, 2017).

If one follows other experts in the field and identifies “older” veterans as 50 years of age or older, one will find the most highly overrepresented group among the homeless veteran population, compared to housed veterans (Fargo et al., 2012). This is largely due to a cohort effect, where individuals who joined at the beginning of the All Volunteer Force (AVF) have been consistently at the highest risk for homelessness over the last 30 years (Rosenheck et al., 1994; Gamache et al., 2001; Culhane et al., 2013).

Limitations exist in the understanding of homelessness prevalence among veterans. Prevalence data from AHAR reports rely on self-report data, including self-report of veteran status. It is likely that veterans who do not commonly identify as veterans - including female veterans - may fail to identify themselves in this report. Additionally, some veterans may fear reporting their gender identity or sexuality out of fear of reprisal or due to stigma. Prevalence data from VA sources is also limited by VA service eligibility and usage rates: not all veterans experiencing homelessness are eligible for VA care, and not all of those who are eligible access care at the VA (Congressional Research Service, 2016; Gamache et al., 2000; O’Toole et al., 2003). Future study on homelessness prevalence should include broader data sources and include all stages of the lifespan - including an exploration of active duty homelessness.

Homelessness Risk Factors Across the Lifespan (Figure 4)

Risk factors can be correlated with homelessness in that stage (contemporary risk) as well as with homelessness occurring later in the timeline (future risk). For example, adverse childhood experiences are associated with higher risk of childhood homelessness (contemporary

risk) and with adult homelessness (future risk). The following sections briefly review what is known about how risk factors during each of the three main stages are correlated with contemporary risk and future risk. Where limited military or veteran research exists, relevant civilian research is included as a reference⁸.

Figure 4: Contemporary and Future Risk Factors Before, During, and After Service



Risk Factors Before Service

Current research is severely limited regarding contemporary homelessness risk factors during childhood among children who later go on to serve in the military. However, some studies do show that early life experiences play a significant role in later homelessness risk for individuals in the general population and for those who go on to serve in the military (future risk). Research consistently finds that childhood trauma, including physical and sexual abuse, increases later homelessness risk (Rosenheck & Fontana, 1994; Metraux et al., forthcoming). This is especially true among veterans of the AVF, who have higher rates of childhood family instability than earlier generations of veterans (Tessler et al., 2002).

⁸ A comprehensive review of general homelessness risk factors can be found at Susser et al., 1993

Other adverse childhood events such as parental neglect or living within the foster care system can also increase future homelessness risk (Balshem et al., 2011; Koegel et al., 1995; Susser et al., 1991). Psychiatric treatment before the age of 18 and diagnosis of conduct disorder are likewise associated with homelessness among veterans (Rosenheck & Fontana, 1994).

Risk Factors During Service

Similar to prevalence data, no research exists on contemporary risk factors for homelessness among active duty populations during their active duty status. However, reliable income, accessible health services, and housing stability should all protect against homelessness. Similar structural support built into military service - such as base housing or basic allowance for housing (BAH) - should, in theory, protect active duty service members from experiencing homelessness. Early research has quantified how structural supports serve as protective factors against homelessness among the general population (Shinn et al., 1998).

Conversely, certain factors that generally contribute to homelessness risk could translate to an increased risk among the active duty population. Divorce and poor social support are closely related to homelessness and are disproportionately commonplace among active duty service members (Rosenheck & Fontana, 1994). Those in National Guard and Reserve status in particular may experience social isolation at higher rates than the general population (Metraux, 2013). Specifically, they have lower marriage rates than the Active Duty population, but still have divorce rates over twice that of the civilian population (Hogan & Seifert, 2010). The heavy reliance on members of the National Guard, Reserves, and Special Forces during recent conflicts meant older and married service members - as well as their dependents - had to contend with disrupted family structures (CBO, 2007a; DoD, 2015; IOM, 2010; Waterhouse & O'Bryant,

2008). Physical distance from support systems as a result of deployments could additionally exacerbate social isolation and homelessness risk. Research on this time period is needed.

There is, however, some research support for future risk related to active duty service. Risk factors include pay grade, military sexual trauma, PTSD diagnoses in service, deployment, and combat exposure.

Pay Grade

“Most (70–78 percent) of the homeless veterans were enlisted and in the pay grades of E1–E4, compared with 39–51 percent of the domiciled veterans.” (VA study, 2012).

Military Sexual Trauma

Homelessness risk among female veterans is often discussed in tandem with military sexual trauma (MST) because female service members report MST at significantly higher rates than male service members (Benda, 2006; Brignone et al., 2016b; Hamilton et al., 2011). The connection between MST and homelessness, however, transcends gender. One study found MST to be significantly linked to higher homelessness risk among male and female veterans (Washington et al., 2010). MST is also associated with other major homelessness risk factors (i.e. mental health issues) that could exacerbate homelessness (Pavao et al., 2013).

PTSD, Deployment, and Combat Exposure

Some sources draw a direct connection between multiple service-related experiences that can impact homelessness risk, including repeated deployments, combat exposure, and PTSD (U.S. Interagency Council on Homelessness, 2015). However, not all individuals who deploy experience combat, not all individuals who experience combat develop PTSD, and not all individuals who develop PTSD deployed or experienced combat (Blake et al., 1990). Conflating

these three variables runs the risk of exacerbating existing stigma about combat experience, deployments, and PTSD.

The empirical evidence to support the association between PTSD and homelessness is weaker than the popular belief (Rosenheck et al., 1996). Of concern, however, is the high prevalence rates of PTSD among veterans who are homeless (Tsai et al., 2013). Some veterans experiencing homelessness have identified PTSD as a contributing factor to their continued difficulties achieving and maintaining housing stability (Metraux et al., 2017). For other veterans, however, having a PTSD diagnosis was a protective factor; this could be due to the increased accessibility of services at VAMCs that come with a PTSD diagnosis (Edens et al., 2011).

Of four studies looking directly at PTSD and homelessness risk among Post-9/11 veterans specifically, two found PTSD to modestly increase risk while two found no significant relationship between PTSD and homelessness when other factors were taken into account (Blackstock et al., 2012; Edens et al., 2011; Elbogen et al., 2013; Metraux et al., 2013).

While several studies have attempted to understand how deployment impacts homelessness risk, results are still largely inconclusive. Two studies reported a substantially higher risk of homelessness among Post-9/11 veterans with deployment experience compared to veterans without deployment experience (Metraux et al., 2013; VA Office of the Inspector General, 2012). In contrast, another study found that deployment among Post-9/11 veterans was associated with a significantly lower risk of homelessness, and a fourth study was unable to draw any definitive conclusions about the relationship between deployment and homelessness risk (Edens et al., 2011; Tsai et al., 2016).

Since the 1990s, researchers have attempted to examine how combat exposure impacts homelessness risk, with consistently inconclusive findings. A study by Elbogen and colleagues (2013) using the VA's National Post-Deployment Adjustment Survey found a significant, positive bivariate association between combat experience and homelessness. However, this association became non-significant when other covariates were introduced into the regression model. Unfortunately, the large majority of studies examining homelessness among veterans do not differentiate between aspects of deployment experience, including combat exposure (Blackstock et al., 2012; Brignone et al., 2016a, 2018; Gundlapalli et al., 2015; Metraux et al., 2013, VA Office of the Inspector General, 2012).

Discharge Status

Recent media and advocacy group reports have brought attention to the large number of Other Than Honorable (OTH), Bad Conduct, or Dishonorable discharge designations among Post-9/11 veterans (Phillips, 2013; Veterans Legal Clinic, 2016). These discharges render veterans ineligible for many VA services⁹. A report by the US Government Accountability Office (2017) found that 62 percent of veterans with these discharge statuses also had diagnoses of PTSD and/or TBI. A 2016 survey in Minnesota found that 11 percent of veterans who were homeless reported negative discharges (Wilder Research, 2016).

Veterans with these negative discharge statuses may be at higher risk of experiencing homelessness. For example, Gundlapalli et al. (2015) found that Post-9/11 veterans with negative discharges accounted for over 20 percent of those who became homeless over a five year period, even though they comprised 5.6 percent of the study sample. Unfortunately, quantifying these

⁹ See CRS Report R43928, Veterans' Benefits: The Impact of Military Discharges on Basic Eligibility, by Umar Moulta-Ali and Sidath Viranga Panangala.

results on a national scale is complicated because these veterans are largely ineligible for VA services, including most homelessness services. Understanding homelessness risk among this population will require additional study of discharge status.

Risk Factors After Service

Risk factors for homelessness among the veteran population have been the most extensively studied. Fortunately, this research base allows for a closer examination of the relationship between health and homelessness for veterans. However, most of this research is dated (~1990s) or limited by samples from VA service users who are not representative of all veterans experiencing homelessness. The following fixed and variable risk factors either have close associations with homelessness among veterans or represent significant gaps in existing literature.

Fixed Risk Factors

Race and Ethnicity. Not only are African American veterans overrepresented among study samples and the homeless veteran population, but race is a risk factor for homelessness. In fact, being African American was associated with a 1.5 times increased risk of homelessness among Veterans Health Administration (VHA) service users. Compared to being White, being African American increased the odds of homelessness almost four times in a recent study of VA mental health service users [8, 9]. Health access for minority veterans experiencing homelessness is unfortunately woefully understudied beyond noting the difference and including race as a covariate (Crone et al., 2021).

Sex, Sexual Orientation, and Gender Identity. A major feature of the post-9/11 service era is the high number of women who have served, particularly in an expanded range of occupations that include exposure to combat. While the total number of female veterans who experience

homelessness is low, female gender is considered a risk factor for homelessness among veterans (Byrne et al., 2013). Two studies found that female veterans are two to four times more likely to experience homelessness than their non-veteran counterparts (Fargo et al., 2012; Gamache, 2003). However, studies on the Post 9/11 cohort have not found female veterans to be more likely than their male counterparts to use VA homeless services (Blackstock et al., 2012). See Appendix C for a model outlining a possible causal pathway for homelessness among women veterans.

To date no studies on veteran homelessness have included sexual orientation as a risk factor variable. Homelessness among youth is also associated with negative health outcomes, including poor physical health, high risk behaviors, poor cognitive function, and higher emergency room utilization (Kulik et al., 2011; Edidin et al., 2012). Homelessness among LGBT youth is often attributed to economic issues, housing instability, family rejection, and abuse (Durso & Gates, 2012; Shelton et al., 2009; Van Wormer, 2003). LGBT youth report higher rates of mental illness including depression and higher rates of suicide attempts than non-LGBT identifying youth (Cochran et al., 2002; Gangamma et al., 2008). Sexual orientation among homeless veterans requires additional study.

Variable Risk Factors

Mental Illness. Mental health diagnoses emerged as significant risk factors for homelessness among veterans in the early 1990s. Early research found that the presence of a psychiatric disorder increased homelessness risk for veterans, but the effect size (0.08) was relatively low (Rosenheck & Fontana, 1994). More recent research is limited by study samples. For example, Blackstock et al. (2012) and Elbogen (2013) found any mental health diagnosis to be associated with homelessness. However, these studies included only homeless OIF/OEF veterans.

Several studies have identified PTSD diagnosis during veteran status as associated with

homelessness, but again the samples are often limited to specific population subsets (Edens et al., 2011). For example, the sample used in O'Connell et al. (2008) was limited to veterans in permanent supportive housing who had long histories of chronic homelessness, and the sample used by Washington et al. (2014) included only female homeless veterans.

Justice Involvement. Among the general population, a cyclical, self-reinforcing pattern exists between incarceration and homelessness (Balsham, 2011; Benda et al., 2003; Metreaux; 2008), with high rates of drug use and mental illness - themselves homelessness risk factors - among those in this cycle. Homeless veterans in particular have high rates of involvement with the criminal justice system. Incarceration is related to social isolation, difficulty finding and securing stable employment and housing, and lack of treatment for mental illness including substance use disorders. Each of these factors likely increases the risk of homelessness, but we simply do not have the empirical support for these claims from current research.

Substance Use Disorders. Substance use disorders - particularly alcohol abuse - present significant risk factors for homelessness among veterans (Tsai & Rosenheck, 2015). Early research on Vietnam-era veterans found their substance use rates to be significantly higher than their same-aged peers, largely attributed to military cultural norms around alcohol use (Rosenheck & Fontana, 1994; Winkleby & Fleshin, 1993). This trend continues among Post-9/11 veterans (Ames & Cunradi, 2004; Ames et al., 2009; Lande et al., 2008). In fact, for this later generation of veterans, combat exposure and deployment experience are closely associated with problematic drinking behaviors including binge-drinking and other alcohol related problems (Bray et al., 2012; Jacobson et al., 2008; Institute of Medicine, 2013; Santiago et al., 2010).

Abuse of prescription drugs may contribute to homelessness risk among veterans. Opioid misuse is a major public health crisis among the general population, a pattern consistent with the

experiences of many Vietnam-era veterans who struggled with opioid and heroin addiction at high rates (Robins et al., 1975). For veterans of recent conflicts, however, prescription drug use and misuse presents the most pressing substance use challenge for military and veteran providers (Bray et al., 2012). Misuse of prescription pain medications is more likely to be reported among those veterans who report heavy alcohol use (Bray et al., 2012). The relationship between prescription drug misuse and homelessness requires further research.

Income and Education. Although an intuitive and conceptual link exists between income and homelessness, the relationship is bidirectional and involves larger structural issues in the American economy. Employment prospects may be limited for veterans with military skills that do not translate well to the civilian workforce, but the shift in the labor market toward skilled labor is not unique to the veteran community. In fact, lower unemployment rates among veterans and access to job training programs may mean comparable or even improved access to employment opportunities.

However, while many homeless veterans work or receive benefits payments, this income is not a sufficient pull out of homelessness. The large majority of homeless veterans qualify as low-income. Income-adjacent issues (i.e., child support, court fees and fines, credit issues/debt collection) continue to be among the major unmet needs of homeless veterans (CHALENG 2019). In one study of veterans referred to VA specialty mental health care services, being low income was a significant risk factor among those who experienced homelessness within a year after referral (Tsai et al., 2017). Programs targeting veteran employability often miss this vulnerable section of the veteran population. Among homeless veterans, financial strain is associated with adverse health consequences including suicidal ideation (Elbogen et al., 2021; Keller et al., 2021).

The state of homelessness similarly impacts employability and therefore income: veterans who experience homelessness have difficulty transitioning to and maintaining their roles in the workplace. Some wartime experiences are associated with wage potential after service. Service-connected disability is negatively associated with income for some veterans, possibly compounding homelessness risk. The causal mechanism between disability and income is unknown, but it is possible that access to and use of employment and income-focused programs following disability rating determines whether it is a risk or protective factor.

Social Support. Early studies identified poor social support as a significant risk factor for homelessness (Rosenheck & Fontana, 1994), although this variable has been defined and measured differently across studies. More concretely, being unmarried continues to function as a significant risk factor (Blackstock, 2012; Rosenheck & Fontana, 1994; Washington, 2010). Again, this variable requires continued study as poor social support impacts health as well as homelessness risk.

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Trauma Treatment for Homeless Veterans in a
Department of Veterans Affairs PTSD Clinical Team

Baylee Crone
Uniformed Services University of the Health Sciences
U.S. Department of Veterans Affairs

Melanie Arenson
U.S. Department of Veterans Affairs

Ranon Cortell
U.S. Department of Veterans Affairs

Elisabeth Carlin
U.S. Department of Veterans Affairs

Abstract

Veterans experiencing homelessness are likely to experience Post Traumatic Stress Disorder (PTSD). The experience of homelessness itself is traumatic, and PTSD may exacerbate homelessness risk for veterans. Often, PTSD goes untreated in this subpopulation of veterans. Our study examined trauma-focused treatment (TFT) and non-TFT initiation and completion in a sample of housed and homeless veterans being served by a PTSD clinical team in Washington, DC. Findings included a high percentage of veterans who experienced homelessness in the sample and lower treatment completion rates among homeless veterans compared to housed veterans. This difference was no longer significant when comparing only those veterans who engaged in treatment, reinforcing the critical role of treatment engagement in successful treatment completion across populations.

Trauma Treatment for Homeless Veterans

Military service members and Veterans are at high risk for developing Post Traumatic Stress Disorder (PTSD), a psychiatric diagnosis following an exposure to actual or threatened death, injury, or sexual violence resulting in a range of symptoms including re-experiencing, avoidance, and changes to mood and arousal (Gates et al., 2012). In fact, PTSD disproportionately impacts the Veteran community: compared to the civilian rate of five to 10 percent (Kessler et al., 1995), Veteran PTSD diagnosis rates hover around 14 to 16 percent (American Psychiatric Association [APA], 2013; Hoge et al., 2004; Lehavot et al., 2018).

Veterans also face the challenge of homelessness. On one night in 2019, over 37 thousand Veterans across the United States experienced homelessness (U.S. Department of Housing and Urban Development [HUD], 2020). Over the course of one year, over fifty

thousand homeless Veterans and nearly 20 thousand Veterans at high risk of homelessness were helped by just one major VA homeless program - the Supportive Services for Veteran Families (SSVF) program (Abt Associates, 2021). For the last 30 years, Veterans have been disproportionately represented among the homeless population (Henry et al., 2020). Fewer Veterans call our nation's streets home now than when the Federal effort to end Veteran homelessness began in earnest in 2009. However, the number of homeless Veterans increased in 2020 and is expected to increase in the coming years (Henry et al., 2020).

Unfortunately, PTSD and homelessness often co-occur. Prevalence rates of PTSD among homeless Veterans vary by study; however, recent large studies found one third of homeless Veterans had a reported PTSD diagnosis (Carlson et al., 2013; Ding et al., 2019; Tsai et al., 2012; Tsai et al., 2013), a rate considerably higher than the general homeless or Veteran populations (Livingston et al., 2019; Maguen et al., 2012; O'Connell et al., 2008; Tsai & Rosenheck, 2015). Even more striking, some researchers hypothesize that actual rates of PTSD in the homeless Veteran population are higher, yet remain undocumented due to disconnects between systems of care and stigma around both mental health treatment and homelessness (Boyd et al., 2016; Harris et al., 2018; Ijadi-Maghsoodi et al., 2016; Kenny & Yoder, 2019; Sestito et al., 2017).

Additional studies have attempted to identify the mechanistic factors that maintain the relationship between PTSD and homelessness, with several suggesting that traumatic exposures may pave a pathway into homelessness for Veterans (Culhane & Kane, 2013; Goodman et al., 1991; Hamilton et al., 2011; Metraux et al., 2013; North et al., 1994; Rosenheck & Fontana, 1994; Taylor & Shapre, 2008; Tsai & Rosenheck, 2015; Perl, 2015). It is likely that PTSD itself is a significant risk factor for homelessness. Early research on Vietnam era Veterans identified

PTSD as a risk factor for homelessness (Rosenheck & Fontana, 1994; Van Voorhees et al., 2019), and more recent studies have found some support for this relationship among Post 9/11 Veterans as well (Blackstock et al., 2012; Donoho et al., 2018; Edens et al., 2011, Elbogen et al., 2013; Metraux et al., 2013; Smith & True, 2014). In a study by Metraux and colleagues (2017), PTSD was a key factor leading to circumstances - such as difficulties maintaining employment and family relationships - directly impacting homelessness risk.

Furthermore, homelessness itself is a traumatic event with physical and psychological impacts including repeated exposure to violence and social disaffiliation (Blackstock et al., 2012; Goodman et al., 1991; Tsai et al., 2020; Washington et al., 2010). It also increases the likelihood of subsequent trauma due to increased exposure to crime and decreased sensitivity to danger (Perron et al., 2008; Williams & Hall, 2009). The experience of homelessness worsens other negative health factors - including environmental exposures, poor diet, or decreased sleep quality - that are also associated with PTSD (DeViva et al., 2021).

Untreated PTSD among the homeless Veteran population creates a significant health burden (APA, 2013). The experience of homelessness itself exacerbates the myriad mental and physical health challenges Veterans experience (Ding et al., 2018; Malte et al., 2017; Raad, 2019; Tsai & Rosenheck, 2015). In fact, homeless Veterans experience higher rates of comorbid health issues that are often untreated and lead to early mortality (O'Toole et al., 2003; O'Toole, 2018; Tsai & Rosenheck, 2015). In the general and Veteran population, PTSD is closely associated with self-reported poor health, medical comorbidities (Kulka et al., 1990), and mental health issues including depression, anxiety, substance use, and suicide (Centers for Disease Control [CDC], 1988a; CDC, 1988b; Rauch et al., 2010). Among homeless Veterans, the compounded burden of homelessness and PTSD exacerbates existing health barriers and

perpetuates poor health, early mortality, and pressure on health care systems (Crone et al., 2021; Metraux et al., 2017; Schinka, 2016).

Addressing PTSD among Veterans served by VA Medical Centers, therefore, means serving those who experience the acute and chronic crises of homelessness and PTSD concurrently. Unfortunately, engaging this subset of the Veteran population with health services presents unique challenges (Kip et al., 2016). Several barriers block homeless Veterans from engaging with the VA medical services that they need most, including lack of reliable transportation, competing economic and medical needs, and distrust of the medical system (Crone et al., 2021). As a result, they may face additional barriers to engaging in and completing treatment. Homeless Veterans also face difficulty accessing specialty and primary health services and instead rely more on emergency medical services (Cox et al., 2017; Gabrielian et al., 2014; LePage et al., 2014; McGuire & Rosenheck, 2005; Tsai et al., 2013). This top-heavy reliance on emergency services disconnects homeless Veterans from the specific health care services that would target their more chronic medical needs, including mental health treatment to address PTSD.

Gold standard treatments employed by the VA have been effective at treating PTSD in the general Veteran population. These trauma-focused treatments (TFT) include those treatments that specifically target the traumatic event and its resulting sequelae (Weber et al., 2021). Cognitive Processing Therapy (CPT), Prolonged Exposure (PE), Eye Movement Desensitization and Reprocessing (EMDR), and written narrative exposures therapies such as Written Exposure Therapy (WET) are TFT widely accepted for the treatment of PTSD within DoD and the VA (Cook et al., 2019; Cahill et al., 2009; Dinnen et al., 2014; Foa et al., 2009; U.S. Department of Veterans Affairs [VA] & U.S. Department of Defense [DoD], 2017).

Unfortunately, despite their empirical support, these gold standard treatments are not without their challenges: low retention and high rates of dropout are common, even in residential treatment programs for PTSD (Chard et al., 2011; Dinnen et al., 2014; Garcia et al., 2011; Gros et al., 2011; Steenkamp & Litz, 2013). This non-completion significantly decreases the likelihood that PTSD symptoms will diminish (Szafranski et al., 2014; Tuerk et al., 2012). Some research has started to identify factors common among Veterans who discontinue PTSD treatment within the VA, such as higher baseline levels of PTSD symptom severity, psychiatric comorbidity, and significant alcohol use (Garcia et al., 2011; Lu et al., 2011; Szafranski et al., 2014; van Minnen et al., 2002), but these studies do not measure and report on the potential impact of homelessness on treatment discontinuation among those Veterans experiencing homelessness.

Non-TFTs are also effectively utilized within the VA system to assist Veterans with managing the broader coping and symptom management issues often associated with PTSD (Weber et al., 2021). They are also useful in assisting Veterans who may otherwise be at high risk for treatment discontinuation. These can include Skill Training in Affective Regulation (STAIR), Mindfulness-Based Stress Reduction (MBSR), Acceptance and Commitment Therapy (ACT), and SIT (stress inoculation training).

To date, however, few studies on TFT and non-TFT PTSD treatments with Veterans have included homelessness as a study variable to compare outcomes between housed and homeless Veterans, and the treatments themselves have not been adapted for or empirically tested with homeless Veterans who have PTSD (Dinnen et al., 2014; Hopper et al., 2010; Kip et al., 2016). This limits our ability to understand how these treatments work for homeless Veterans and to adequately plan interventions to meet them where they are. Furthermore, we currently know very

little about how homeless Veterans are treated for PTSD in naturalistic settings. This gap hinders our understanding not only of homeless Veterans' self-reported PTSD symptoms, but also treatment engagement and completion in working VA clinics.

Our study aims to explore these foundational aspects of PTSD treatment - engagement and completion - among homeless Veterans compared to their housed peers served by a VA PTSD Clinical Team. This treatment was provided in a naturalistic setting at the Washington DC VA Medical Center (DC VAMC) and included both TFTs of PE, CPT, WET, and EMDR, as well as non-TFTs including STAIR, MBSR, and ACT, among others. Included as part of a larger retrospective chart review, this specific study aims to compare treatment engagement and completion between housed and homeless Veterans. We hypothesized that homeless Veterans would be less likely to engage in treatment than housed Veterans, and would be less likely to complete treatment compared to housed Veterans. Given the limited empirical evidence on the treatment of PTSD among homeless Veterans, we also aimed to explore the effectiveness of individual and group TFT and non-TFT for PTSD within a naturalistic setting.

Methods

1. Participants

The data for the present study included 298 Veterans served by the DC VAMC's Trauma Services Program (TSP) during calendar year 2019. The TSP is a specialty mental health outpatient clinic with a wide variety of staff including psychologists, social workers, nurses, peer support specialists, a recreational therapist, a program support assistant, psychology postdoctoral fellows, and clinical trainees.

To enroll in the program, Veterans engage in an assessment and treatment planning session, in which the clinician determines that PTSD is a primary diagnosis and the Veteran is interested in and available to begin weekly or bi-weekly, time-limited therapy to target PTSD symptoms. Veterans must report a Criterion A trauma during the time they were in military service (though not necessarily “military” related), including but not limited to experiences of combat, sexual violence, natural disaster, or life-threatening accident. In addition, if a Veteran experiences a Criterion A stressor prior to their military service that then was exacerbated by experiences within the military (i.e., verbal sexual harassment during military service that intensified symptoms related to a prior sexual trauma/abuse), they are also eligible for services within the TSP. Between the time of referral to TSP and treatment engagement, Veterans complete the self-report Posttraumatic Stress Disorder Checklist for DSM-5 (PCL-5).

2. Measures

2.1 Demographic characteristics: Demographic variables relevant to this study included age, sex, patient self-report race/ethnicity, branch of service, and era of service. All demographic variables were obtained from the VA’s Computerized Patient Record System (CPRS).

2.2 Baseline characteristics: Baseline variables relevant to this study included housing status, first treatment PCL-5 score, diagnosis of depression, diagnosis of substance use disorder, and PTSD disability rating. All baseline variables were obtained from CPRS.

For the purposes of this study, a binary homeless variable represented housing status. “Homeless” was defined as either: 1. recorded homelessness or housing instability in any medical record note; 2. a positive screen of either question of the Homelessness Screening

Clinical Reminder (HSCR); or 3. documented use of VA homeless programs. One or more of these must have occurred in the year prior to assessment at the TSP, including the day of assessment.

Total score on the PCL-5 was used to measure PTSD symptom severity. The PCL-5 is the standard within this clinical setting and has been proven to be reliable and valid with a Veteran population (Blanchard et al., 1996; Bovin et al., 2016). The PCL-5 was defined as the first recorded PCL-5 in the CPRS record up to 30 days before assessment or on the day of the assessment.

DSM-5 diagnoses of depression and/or substance use disorder were based on the diagnostic determination of the TSP provider conducting the initial assessment. This diagnostic determination was made based on the Veteran's responses to standard intake questions asked during the initial assessment. For the purposes of this study, diagnoses of depression and substance use disorder are represented as binary yes/no (Y/N), with Y indicating the presence of a diagnosis of depression and/or substance use disorder in the initial TSP assessment CPRS record.

PTSD disability ratings are also represented as binary yes/no (Y/N), with Y indicating the presence of any disability rating above zero for PTSD.

2.3: Treatment outcomes: Treatment outcomes primarily focused on treatment engagement and treatment completion. Treatment engagement was defined as completing two or more TSP sessions following the initial assessment and subsequent enrollment in TSP services. Treatment completion was defined as completing at least two thirds of the standard sessions in a treatment protocol following enrollment; this includes both Veterans who engaged in treatment and those who were enrolled but never engaged in treatment.

This study also included the treatment outcomes of treatment type and treatment setting. Treatment type included either TFT or non-TFT. TFTs included PE, CPT, EMDR, and WET. Non-TFTs included coping skills/supportive therapy as well as STAIR, MBSR, and ACT. Treatment settings included individual treatment or group treatment.

3. Data collection procedure

This study is derived from a retrospective chart review study approved by the DC VAMC Institutional Review Board (IRB) assessing PTSD treatment engagement and outcomes among Veterans served by the TSP. Data for this study was extracted between January 2021 and May 2021 by the study team overseen by the PI and the Research Coordinator.

4. Data analysis

For these analyses, homeless Veterans were compared to their housed peers on demographic and clinical characteristics and treatment outcomes. Measures of central tendency were conducted to uncover basic characteristics of the homeless and housed Veterans samples in this data set. Chi-square and independent sample t-tests were used to compare homeless and housed Veterans on categorical and continuous demographic and clinical characteristics as well as treatment outcomes. Additionally, chi-square tests were used to test more granular treatment outcomes among homeless veterans in this sample. Because some veterans engaged in more than one treatment type and/or in more than one treatment setting, analyses with these two variables included episodes of care.

Statistical significance was set at the $p < 0.05$ level and analyses were completed using SPSS. A recent effectiveness study examining evidence-based psychotherapies for PTSD in an ecologically valid sample (Doran & DeViva, 2018) found a large effect size (Cohen's $d = 1.55$). However, given the number of hypotheses being examined in the present study, power analyses

were conducted with an expected moderate effect size. Using G*Power software (Faul et al., 2007), a power analysis was conducted, assuming a medium effect size (partial eta squared = .06).

Results

Demographic Characteristics

Of the Veterans included in this study, 25.6% (n=60) had experienced homelessness in the year prior to their treatment window. The homeless Veterans in this sample were demographically similar to their housed peers on age, sex, race/ethnicity, branch of service, and period of service. The mean age of housed Veterans was 52.5 (sd=13.4) years, and the mean age of homeless Veterans was 50.4 (sd=13.8) years. Although on average housed Veterans were over two years older than homeless Veterans, they were not significantly older than homeless Veterans ($t(296)=1.055$; $p=.432$). The sample was overwhelmingly male (78.9%) and African American (72.9%).

Across the entire sample, the majority of Veterans served in the Army (59.6%); this remained the case in both the homeless and housed Veteran groups. Across all Veterans in the study, a plurality served in OIF/OEF (37% OIF/OEF period), followed by multiple service periods (18% multiple periods) and Vietnam (16% Vietnam period). This pattern largely held across the housed and homeless Veteran groups, however the homeless Veteran group had more Vietnam Veterans represented in the group (N=12) than those who served across multiple periods (N=2). A summary of demographic characteristics of the sample is presented in Table 1.

Clinical Characteristics

Homeless and housed Veterans were also similar in clinical characteristics. A summary of clinical characteristics is presented in Table 2. The average (mean) first treatment PCL-5 score

for housed Veterans was 57.3, while the average first treatment PCL-5 score for homeless Veterans was 58.8. The groups were not statistically different on this variable ($t(215) = -0.685$; $p = .494$).

The majority of Veterans in both groups were given a DSM-5 diagnosis for depression (154 yes - 63%; 90 no - 37%) but not for SUD (208 no - 81%; 50 yes - 19%). Among those veterans with available depression data, although housed Veterans had marginally higher rates of depression than homeless Veterans (64% and 62%, respectively), the groups were not significantly different ($\chi^2(1) = 0.348$, $p = .555$). Housed and homeless Veterans were equally likely to screen positively for SUD (19.5% and 18.9%, respectively; $\chi^2(1) = 0.011$, $p = .916$).

The majority of Veterans in both groups did not have a disability rating for PTSD (See Table 1; Total: no - 192 (64%); yes - 107(36%); Homeless: no - 44 (73%); yes - 16(27%); Housed: no - 148 (62%); yes - 91(38%)). The groups were not significantly different on this variable ($\chi^2(1) = 2.716$, $p = .099$).

Treatment Outcomes

All treatment outcomes are presented in Table 3. Over two thirds of Veterans who were assessed engaged in treatment (76.6%). No significant difference was found between homeless and housed Veterans on treatment engagement (70% and 78%, respectively; $\chi^2(1) = 1.817$, $p = .178$). Additionally, no significant demographic differences were found between treatment engagers and those who did not engage in treatment.

However, homeless and housed Veterans did significantly differ on treatment completion: while 50% of housed Veterans completed treatment, only 36% of homeless Veterans completed treatment. This includes all Veterans who were enrolled in the program, including

those who were enrolled but never engaged in treatment. Housed Veterans were 1.8 times more likely to complete treatment than homeless Veterans ($\chi^2(1)=4.055$, $p=.044$), however this treatment effect was small ($-.117$). When considering *only* those Veterans who engaged in treatment, homeless and housed Veterans no longer significantly differed on treatment completion. ($\chi^2(1)=3.085$, $p=0.079$).

Among all veterans in the study, both treatment setting (individual or group) and treatment type (TFT or non-TFT) were associated with treatment completion. Episodes of care for Veterans in group therapy were more likely to result in completed treatment (48% vs. 37%, $\chi^2(1)=4.713$, $p=.030$), as were Veterans in TFT (50% vs. 39%, $\chi^2(1)=4.678$, $p<.031$). There were no significant differences in engagement rates based on treatment setting or treatment type. When examining episodes of care for housed Veterans only, part of this pattern held - housed Veterans in group therapy were more likely to complete treatment than those in individual therapy, but there was not a significant difference in completion by treatment type. However, among the homeless Veteran sample, there were no significant differences in completion based on treatment type or setting. Nonetheless, this lack of significant differences may be due to the small sample size and lack of statistical power within this subset of the sample. See Table 4.

Discussion

To our knowledge, this is the first study to examine PTSD treatment engagement among homeless Veterans and housing instability in a naturalistic setting. Three major findings resulted from this study, including: the high percentage of Veterans experiencing housing instability in the sample, differences in treatment completion between homeless and housed Veterans, and variations in engagement and completion between various types of treatment.

First, over 25% of Veterans being served by the DC VAMC TSP experienced recent (past-year) housing instability. As noted above, comparisons are limited by the paucity of attention paid to housing and homelessness within Veteran trauma treatment research. Direct comparisons to other studies are also challenging due to the differing definitions of homelessness employed by various studies. For example, the HCSR includes both acute homelessness as well as risk of homelessness, so it is comparable to studies using ICD-9/10 codes but wider than the definition employed by studies using VA homeless program utilization. However, the rate identified in this study is higher than the homelessness rate among Veterans in the general homeless population (10.2%; Henry et al., 2020), and higher than the homelessness rate among all VA-using Veterans (4.2%; Tsai et al., 2021). Another possible comparison could be the percentage of Veterans served by the SSVF program over one year, given that the SSVF program serves both acutely homeless Veterans and those at high risk of homelessness. For example, the SSVF program served 70,596 Veterans in FY2019, which is 0.4% of the Veteran population and 1.5% of the Veterans served by the VA system. Comparisons are not clear cut, but what is clear is the significantly high number of Veterans experiencing homelessness served by the DC VAMC TSP.

Second, we failed to find the hypothesized difference between housed and homeless Veterans on treatment engagement. It is possible that the homeless Veterans in our sample who engaged with services had already self-selected into a treatment-seeking group and were therefore as likely as housed Veterans to engage in treatment; this would be consistent with prior study finding homeless Veterans with diagnosed or probable PTSD were more likely to seek out mental health treatment than homeless Veterans with other mental illness diagnoses (Harris et al., 2018) or non-Veterans (Lehavot et al., 2018).

Third, we uncovered novel findings in our hypothesis that homeless Veterans are less likely to complete treatment than housed Veterans. Among all Veterans in the sample, Veterans experiencing homelessness completed treatment at lower rates than their housed peers, despite the fact that the groups were statistically similar in demographic and baseline characteristics. This difference in treatment completion among all Veterans could be explained by the competing demands for time in the homeless population discussed above (Chinman et al., 2014; Klein et al., 1998; Min et al., 2007; Resnik et al., 2017; Van Voorhees et al., 2019; van Vugt, 2012).

From what we can gather, there seems to be a significant difference in completion rates among Veterans who are homeless and those who are housed. However, the significance disappears when we look at the completion rates *only* of those Veterans who are engaged in treatment. This could mean that if all Veterans are engaged, they are in a better position to complete treatment, irrespective of housing status. The goal, then, would be to engage Veterans meaningfully and quickly following enrollment so they have the best chance for treatment success. The limited sample size of this study hinders our ability to test the differences between homeless and housed Veterans at various points such as between enrollment and engagement and at various points doing treatment. Because every active VA trauma treatment clinic already has access to data about Veteran treatment outcomes and demographics through CPRS, a larger study could help answer these questions by running a few basic analyses using existing data.

Future studies on VA services - to include PTSD treatment specifically - should account for homelessness to understand the treatment needs of those they serve. A wider set of variables will help discern differences in treatment engagement and outcomes, especially in larger studies with greater generalizability. This includes the HSCR and use of VA homeless programs, as well

as ICD-9 or ICD-10 codes, which are particularly effective in capturing homelessness episodes of minority-identified Veterans (Tsai et al., 2021).

A second step would involve uncovering how homeless Veterans access PTSD treatment. Assessing clinical differences between Veterans who did and did not access PTSD treatment can uncover how, when, and with what information homeless Veterans decide to prioritize addressing their PTSD symptoms. This step could include focus groups of homeless Veterans to identify specific themes and potential barriers to care. The next step includes understanding the course of care itself. Specifically, how do homeless Veterans make the decision to engage in PTSD treatment before, after, or concurrently with other services? This involves identifying who impacts and informs this process within the VAMC and the Veteran's community, as well as the barriers and benefits that inhibit or promote treatment along the way. We also need a clearer understanding of how services for homelessness and health intersect. This knowledge equips clinicians to provide more holistic care that will best support the Veteran's treatment goals. Some existing VA systems - peer support models, HPACTs - already make use of these intersections in care to support Veterans and providers.

Finally, future study should assess the effectiveness of treatment. Process metrics (i.e., number of sessions, completion, duration) should be paired with outcome metrics on health (i.e., self-report and objective scales for PTSD) and homelessness. Overlaps between the symptoms of PTSD and the outcomes of homeless episodes complicate the process of parsing apart the trajectories of each pathway. For example, homeless Veterans report experiencing social isolation, sleep difficulties, negative beliefs about others and the world, self-blame, negative affect, irritability, and decreased concentration (Schinka, 2019; Speed et al., 2020; Tsai & Rosenheck, 2015). Some PTSD symptoms may be magnified and reinforced during

homelessness, which involves shame-inducing stigma, alienation, and unstable and unsafe environments. As a result, treatment for PTSD among homeless Veterans may not be as effective if homelessness is not simultaneously addressed. Currently, however, no treatment protocols focus on connecting to care for both. Future study of PTSD and homelessness should focus on which PTSD symptom clusters are associated with homelessness at baseline, and how scores on those clusters shift as PTSD and homelessness are addressed. Similarly, homeless program evaluations should assess how clinical symptoms, including PTSD, shift from pre to post housing placement; PTSD symptoms are unlikely to fully resolve from housing placement alone, but movement into stable housing may provide a necessary foundation for addressing the sequelae of PTSD.

It is likely that data for many of these areas of study already exist in some capacity within existing VA datasets or can be identified through inclusion of a homelessness variable in future trauma treatment studies. The impact of taking these steps are profound - clinical care guidelines demand that we understand how treatments work in significant and vulnerable populations before widely applying a model. There is precedent for adapting treatments to better meet the needs of individuals experiencing homelessness; a similar philosophy should be applied to research on Veterans with PTSD who may be experiencing homelessness.

Limitations of this study can serve as a springboard for trauma and homelessness research and practice. Our sample included only those Veterans who engaged in services through the Trauma Services Program at the DC VA Medical Center. As a result, our findings may reflect the characteristics and experiences of those Veterans who follow through with assessment at the DC VAMC TSP. In particular, the homogeneity of this sample in terms of sex and race/ethnicity made more in-depth analyses on these characteristics unfeasible. Some studies

have begun to address the disparities in treatment engagement faced by African American and female Veterans at risk of or experiencing homelessness (Lehavot et al., 2018); future studies should examine PTSD treatment engagement and completion among homeless female Veterans and Veterans who identify as members of racial and ethnic minority groups.

Additionally, the sample size and effect sizes in this study were relatively small, meaning our findings may not be generalizable to all homeless Veterans or possibly not to all homeless Veterans in the DC area served by the DC VAMC. Additionally, this study's correlational design limits our ability to draw causal conclusions. With its large research capacity, the VA's National Center for PTSD and National Center on Homelessness among Veterans are uniquely positioned to conduct the large-scale epidemiological studies that can better clarify these important questions. Finally, although the assessment process included screening questions to diagnose depression and substance use disorder, we do not have information about subsequent or concurrent treatment for these disorders.

Homelessness among Veterans is a public health crisis impacting Veterans, their families, and the service networks built to meet their physical and mental health needs. Federal, state, and local programs must continue to improve in the management of the long-term causes and sequelae of homelessness so it becomes and remains a rare, brief, non-recurrent, and preventable experience for Veterans at risk or with homelessness histories. This longer term management requires attending to the factors highly correlated with homelessness, to include untreated PTSD.

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Table 1 Demographic Characteristics of Housed and Homeless Housed Veterans

		Housed (N/Mean) (%)	Homeless (N/Mean)(%)	Test of Difference, t or chi square	Significance
Age (N = 298)		52.47	50.42	0.619	0.432
Sex (N = 299)				0.231	0.631
	Male	190 (79%)	46 (77%)		
	Female	49 (21%)	14 (23%)		
Race (N = 270)				3.442	0.328
	Black	168 (79%)	50 (89%)		
	White	34 (16%)	4 (7%)		
	Asian/Pacific Islander	5 (2%)	1 (2%)		
	Hispanic	7 (3%)	1 (2%)		
Branch of Service (N = 292)				7.198	0.303
	Army	143 (61%)	31 (54%)		
	Marines	34 (14%)	9 (16%)		
	Air Force	29 (12%)	7 (12%)		

	Navy	26 (11%)	9 (16%)		
	Coast Guard	3 (1%)	0 (0%)		
	Multiple	0 (0%)	1 (2%)		
Period of Service (N = 285)				12.353	0.055
	OIF/OEF	82 (35%)	24 (44%)		
	Multiple	50 (22%)	2 (4%)		
	Vietnam	35 (15%)	12 (22%)		
	Peacetime	34 (15%)	8 (15%)		
	Gulf War	25 (11%)	8 (15%)		
	Korea	3 (1%)	0 (0%)		
	WWII	1 (<1%)	1 (2%)		
VA Service Connected Disability for PTSD (N = 299)				2.716	0.099
	Yes	148 (62%)	44 (73%)		
	No	91 (38%)	16 (27%)		

Table 2 Self-Reported Baseline Characteristics of Housed and Homeless Housed Veterans

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		Housed (N/Mean) (%)	Homeless (N/Mean) (%)	Test of Difference, t or chi square	Significance
First treatment PCL-5 score (N = 216)		57.3	58.8		
Depression (N = 244)				0.348	0.555
	Yes	123 (64%)	31 (60%)		
	No	69 (36%)	21 (40%)		
Substance Use Disorder (N = 258)				0.011	0.916
	No	165 (80%)	43 (81%)		
	Yes	40 (20%)	10 (19%)		
PTSD disability rating				2.716	0.099
	No	148 (62%)	44 (76%)		
	Yes	91 (38%)	14 (24%)		

Table 3 Treatment Outcomes for Housed and Homeless Veterans

		Housed (N/Mean) (%)	Homeless	Test of Difference, t or chi square	Significance	Effect Size, d or Phi

Engaged in treatment (N = 299)				1.817	0.178	
	Yes	187 (78%)	42 (70%)			
	No	52 (22%)	18 (30%)			
Completed treatment (N = 298)				4.055	0.044	-0.117
	Yes	120 (50%)	21 (36%)			
	No	119 (50%)	38 (64%)			
Completed treatment, engagers only (N = 231)				3.085	0.079	
	Yes	122 (65%)	21 (50%)			
	No	67 (35%)	21 (50%)			

Table 4 Treatment Type and Setting

		All Veterans (n = 406)		Housed Veterans (n = 327)			Homeless Veterans (n = 79)		
Treatment Setting	Individual	Group	Test of Difference, Significance	Individual	Group	Test of Difference, Significance	Individual	Group	Test of Difference, Significance
Engaged			1.509,			0.00,			1.429,

Treatment				p = 0.219			p = 0.992			p = 0.232
	Yes	129 (76%)	191 (81%)		121 (89%)	170 (89%)		25 (74%)	38 (84%)	
	No	41 (24%)	45 (19%)		15 (11%)	21 (11%)		9 (26%)	7 (16%)	
Completed Treatment										
	Yes			4.713, p < 0.05*			7.271, p < 0.05*			0.437, p = 0.509
	No									
	Yes	63 (37%)	113 (48%)		50 (37%)	99 (52%)		13 (38%)	14 (31%)	
	No	107 (63%)	123 (52%)		86 (63%)	92 (48%)		21 (62%)	31 (69%)	
Treatment Type		TFT	Non-TFT		TFT	Non-TFT		TFT	Non-TFT	
Engaged Treatment										
	Yes	125 (84%)	195 (76%)	3.631, p = 0.057	112 (90%)	179 (88%)	0.362, p = 0.548	19 (76%)	44 (81%)	0.318, p = 0.573
	No	24 (16%)	62 (24%)		12 (10%)	24 (12%)		6 (24%)	10 (19%)	

Completed Treatment				4.678, p < 0.05*			2.212, p = 0.137			3.106, p = 0.078
	Yes	75 (50%)	101 (39%)		63 (51%)	86 (42%)		12 (48%)	15 (29%)	
	No	74 (50%)	156 (61%)		61 (49%)	117 (58%)		13 (52%)	39 (71%)	



Health Service Access Among Homeless Veterans: Health Access Challenges Faced by Homeless African American Veterans

Baylee Crone¹ · Stephen Mettraux² · Tracy Sbrocco³

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Abstract

Veteran homelessness is a public health crisis, especially among the disproportionate number of minority veterans in the homeless veteran population. African American homeless veterans in particular face unique challenges accessing appropriate health care services to meet their medical needs. Their needs are often underrepresented in the literature on veteran homelessness. Drawing together over 80 studies and government reports from the last two decades, this review provides a timely synopsis of homeless veterans' health care access, with a particular focus on the barriers faced by African American veterans. This review employs Penchansky and Thomas' Access Model to frame health access barriers faced by homeless veterans, dialing in on what is known about the experience of African American veterans, within the five dimensions of access: Availability, Accessibility, Accommodation, Affordability, and Acceptability. Actionable guidance and targeted interventions to address health access barriers for all veterans are delineated with a focus on the need to gather further data for African American homeless veterans and to consider tailoring interventions for this important and underserved group.

Keywords Homeless · Veteran · Health service · Health access · Health disparities · Health model

Introduction: Homeless Veterans and Unmet Medical Needs

Although ending homelessness among veterans has been a national policy goal for over 20 years, thousands of veterans still call our nation's streets home every night [1]. A recent annual survey on homelessness found that 37,878 veterans were homeless on a single night and over 118,000 veterans accessed emergency shelter or short-term housing over the course of one year [1, 2]. These annual surveys also found that, since 2009, veterans were not only disproportionately represented among the overall homeless population but also that African American veterans in particular were overrepresented among veterans experiencing homelessness. Even more disturbing, between 2018 and 2019, while overall

veteran homelessness numbers (including among White veterans) declined, the number of African American veterans experiencing homelessness did not change significantly [3].¹

Beginning in the early 1990s, research studies found that African American veterans were overrepresented among the homeless veteran population. Homeless African American veterans are often overrepresented in study samples compared to studies on the general veteran population, especially in studies conducted in nonrural areas [4–6]. African American veterans were noted to be disproportionately represented among the homeless veteran population when compared to the overall veteran population in Rosenheck and Fontana's landmark 1994 study on veteran homelessness [7]. This study also noted that veterans who identify as Black were more likely to experience prolonged or chronic homelessness following an initial homelessness episode.

Subsequent studies confirmed not only that African American veterans are overrepresented in study samples and in the homeless veteran population but also that race is a risk factor for homelessness. In fact, being African American was

✉ Baylee Crone
baylee.crone@usuhs.edu

¹ Uniformed Service University of the Health Sciences, Bethesda, MD, USA

² University of Delaware, Wilmington, DE, USA

³ Uniformed Service University of the Health Sciences, Bethesda, MD, USA

¹ For a thorough examination of racial and ethnic disparities as they relate to homelessness, please review Fusaro VA, Levy HG, Shaefer HL. Racial and ethnic disparities in the lifetime prevalence of homelessness in the United States. *Demography*. 2018;55(6):2119–2128. doi:10.1007/s13524-018-0717-0.

associated with a 1.5 times increased risk of homelessness among U.S. Department of Veterans Affairs' (VA) Veteran's Health Administration (VHA) service users. Compared to being White, being African American increased the odds of homelessness almost four times in a recent study of VA mental health service users [8, 9].

In general, homelessness taxes veterans' health. Veterans experiencing homelessness are more likely to experience chronic stress and to be exposed to diseases and toxins from their environment [10–12]. Chronic, untreated medical conditions are common among homeless veterans and often include diabetes, cardiovascular disease, hepatitis, respiratory conditions, arthritis, and hypertension [13–17]. These untreated medical conditions significantly decrease quality of life and contribute to early mortality for up to 90 percent of veterans experiencing homelessness [12, 18–20]. Health outcomes specifically for minority veterans experiencing homelessness are understudied.²

Some research shows, however, that systemic and cultural barriers prevent many homeless veterans—including African American veterans—from adequately using the right health services to match their medical needs [21]. From overreliance on emergency medical care to underutilization of preventative care, this pattern of disconnect between medical need and appropriate treatment is well documented within the VA's VHA system [22]. Fortunately, this disconnect can be addressed through improvements in fit between health service users (homeless veterans) and health service providers (to include the VA). For veterans experiencing homelessness, improved fit can lead to increased access and better health outcomes.

Increased Access

Increased access to health services benefits both veterans and the health care systems that serve them. It holds some of the keys to improve veterans' health and facilitate more efficient health care delivery [23]. Improving health care access is a notoriously complicated process [12]. Health service access models can help identify specific points of intervention to narrow gaps in care [24]. These conceptual models also provide a useful template for conceptualizing and categorizing population-specific deficits in care [25].

Until very recently, most health service conceptual models have left out populations experiencing homelessness, focusing only on the needs of the general (i.e., healthy and housed) population. Additionally, most conceptual models of health service are used to predict general patient satisfaction or

emergency resource utilization, not to account for the unique factors impacting individuals experiencing homelessness [26]. This approach misses the important interactions between the health service system and any classically underserved subpopulations—including homeless minority veterans [27].

Fortunately, the recent focus on meeting the health needs of historically underserved populations has reshaped our understanding of health care disparities [28]. In response, some conceptual models of health service have been revised to better capture the experiences of people who are homeless.³ The resulting models—such as the Gelberg-Andersen Behavioral Model for Vulnerable Populations—include barriers consistent with homelessness—including psychological distress and stress, mental health issues, poverty, and competing demands for time [26, 29–36].

No health service access conceptual model has specifically focused on homeless veterans and the health care services they use [35, 36]. Although not specifically developed for use with homeless veterans, Penchansky and Thomas' Access Model (Access Model) may provide an ideal framework for understanding the fit between homeless veterans and health service systems and allow for the examination of factors that may disproportionately impact African American veterans. From their 1981 paper "The Concept of Access," the authors defined access as follows:

"[Access is] the opportunity or ease with which consumers or communities are able to use appropriate services in proportion to their needs... [It includes] the interface between potential users and healthcare resources, and would be influenced by characteristics of those who supply as well as those who utilize the services" [37].

The Access Model is unique in that it specifically addresses the fit between *individuals* and *systems*. By focusing on the fit between the two parties, it avoids the common pitfall of many health service access models—blaming access gaps on the individual or the system [35, 38].

The Access Model consists of five dimensions that define this fit between the individual and the health care system [37]. The dimensions include (1) Availability, (2) Accessibility, (3) Accommodation, (4) Affordability, and (5) Acceptability [39]. These dimensions are points of interaction between individuals and the health service system that either facilitate or stymie access to health services [40]. See Table 1 for definitions of these dimensions.

² For a thorough review of homeless veterans' health, see Weber J, Lee RC, Martsof D. Understanding the health of veterans who are homeless: a review of the literature. *Public Health Nurs.* 2017;34(5):505-511. doi:10.1111/phn.12338.

³ See the comprehensive review of the Gelberg-Andersen Behavioral Model in Gelberg, Andersen, and Leake [2000] and the updated Gelberg-Andersen Behavioral Model for Vulnerable Populations in Gelberg et al. [2000], Gelberg, Browner, Lejano, and Arangua [2004], and Stein et al. [2007].

Table 1 Dimensions of Access and Descriptions

Dimension name	Dimension description
(1) Availability	The extent to which the volume and type of services match consumer needs.
(2) Accessibility	The fit between the location of services and the location of clients.
(3) Accommodation	The fit between how services are organized and the patient's ability to accept this structure.
(4) Affordability	The price of care—after insurance—relative to the patient's available income and the patient's perception of worth relative to cost.
(5) Acceptability	The provider and patient mutual attitudes and perceptions.

While generally distinct concepts, these dimensions have some functional overlap when the model is applied to a specific population, such as African American homeless veterans. This paper aims to explore what is known about the health service access barriers among veterans who are homeless and to dial in on what is known for African American homeless veterans in particular. Second, we aim to discover what is known about tools/interventions to address the barriers faced by these veterans. The goal of this literature review is to integrate previous work in order to provide actionable policy and program suggestions to policy makers and advocates charged with filling gaps in health service access for this underserved population. Where little is known about African American veterans experiencing homelessness, we explore what is available, provide what was identified for the general homeless veteran population, and call for further research in key areas in order to obtain further information that will enable the development of tailored programs for African American veterans.

Methods

This narrative review assessed trends and patterns in health access among homeless veterans, and in particular among African American homeless veterans. Articles were reviewed for findings related to each of the five access dimensions: (1) Availability, (2) Accessibility, (3) Accommodation, (4) Affordability, and (5) Acceptability. This review attempted to make a unique contribution by drawing together findings on health access for veterans and examining the available data on African American veterans who are homeless within this context.

Studies were identified using an iterative search process. The initial search was conducted in PsycINFO using the following search terms and phrases: (“homeless veteran” AND “health access”) OR (“homeless” AND “veteran” AND “health”). The initial PsycINFO search was limited to English language articles published between January 1980 and December 2018.

Based on the limited results obtained from the PsycINFO search, the authors chose to expand the search by using the

same terms for homeless veterans and health access to search in PubMed, Google Scholar, and PowerSearch, a search and discovery platform comprised of the Uniformed Services University of the Health Sciences (USUHS) library's collections. Additionally, the authors completed a hand search of references from the included articles to identify additional relevant articles and searched the gray literature for applicable government reports and documents. Following the review of the initial PsycINFO search results retrieved in December 2018, the PsycINFO search was updated in May 2021 to capture relevant publications released through the end of 2019. At this time, the search was also run with the expanded list of databases and online searches to retrieve additional relevant papers from these other sources.

Studies were included in this narrative review if they included a sample of concurrent or recently homeless veterans and included study variables related to the interaction of veterans and the health system and if they were either qualitative or quantitative studies (or review of these studies). Where research specific to veterans experiencing homelessness was dated, limited, or absent completely, limitations are noted and supplemental topic-relevant general homeless population or nonhomeless population research was included as a point of reference for the reader, with the need for additional research on these specific topics noted throughout.

Results

This review presents findings across the identified studies and reports for the 5 dimensions of the Access Model. Each dimension includes a series of barriers as well as targeted tools and interventions to address the specific barriers. Seventy-five articles and six government reports were identified using this strategy. Of these, 50 articles focused on one domain and 31 articles included information on more than one domain. Twenty-four of these articles offered information on addressing access barriers across all dimensions. See Table 2 for a detailed overview of the articles on barriers by dimension and Table 3 for an overview of articles on tools and interventions by dimension. For both tables, the 5 dimensions are listed across the top with the articles grouped based on whether they

Table 2 Articles Including Barriers by Dimensions

	Article information		Five dimensions of access				
	Article author	Article year	(1) Availability	(2) Accessibility	(3) Accommodation	(4) Affordability	(5) Acceptability
More than one dimension	Armstrong et al.	2006	X				X
	GAO	2000	X	X			
	Kushel et al.	2001			X		X
One dimension	O'Toole et al.	2013	X				X
	Baggett et al.	2010				X	
	Blue-Howells	2019					X
	Cheney et al.	2018	X				
	CRS	2016c	X				
	D'Amore et al.	2001		X			
	Desai et al.	2003					X
	Doran et al.	2014					X
	Feigal et al.	2014	X				
	Fischer et al.	1986					X
	Fortney et al.	1995		X			
	Gabrielian et al.	2014					X
	Gabrielian et al.	2017					X
	Gamache et al.	2000	X				
	Gelberg et al.	1997				X	
	Gelberg et al.	2000	X				
	Gilmer et al.	2009	X				
	Gilmer et al.	2020					X
	Gordon et al.	2010					X
	Gulcer et al.	2003	X				
	Gundlapali et al.	2015			X		
	Harris et al.	2018		X			
	Hamilton et al.	2012					X
	Henwood	2013		X			
	Hill et al.	2013					X
	Jones et al.	2017					X
	Kinchen et al.	1991			X		
	Kushel et al.	2006		X			
	Metraux et al.	2017		X			
	Montgomery et al.	2017	X				
	O'Toole et al.	2003	X				
	O'Toole et al.	2015					X
	Padgett et al.	1995	X				
	Priester et al.	2016		X			
	Rae & Bees	2015					X
	Rosenheck & Fontana	1994		X			
	Semeah et al.	2017					X
	Shulman et al.	2018				X	
	Syed et al.	2013		X			
	Tsai et al.	2017		X			
	Tsai et al.	2018				X	
	Weber et al.	2018			X		
	Wen et al.	2007					X

Table 2 (continued)

Article information		Five dimensions of access				
Article author	Article year	(1) Availability	(2) Accessibility	(3) Accommodation	(4) Affordability	(5) Acceptability
Wenzel et al.	1995	X				
Zuccherro et al.	2016				X	
Zur et al.	2014				X	

addressed one or multiple dimensions. The dimensions addressed are indicated by an “X” in the corresponding box by dimension.

In the 81 studies and reports, 27 (33 percent) made no mention of race whatsoever. Fifty-two of the studies included race in the descriptions of the demographics of the study sample, while 22 of the studies included race as a control variable. While only two studies stated that they took race into consideration during recruitment, 22 studies presented findings and conclusions in their results or discussion specific to race.

Studies are summarized below by dimension, starting with the specific barriers impacting access to health care within each dimension. Next, intervention strategies that target these barriers are discussed by dimension. Although there is a paucity of data for African American veterans, for studies in this review that did include race as a primary variable of the study,

relevant findings related to race or ethnic identity are noted within the discussions on access.

Barriers to Access and Interventions/Tools by Dimension

Availability Dimension

According to the Access Model, *Availability* is defined as the extent to which the volume and type of services match consumer needs. It generally includes the number of providers, the number of facilities, available technology, and the quantity of specialized programs and services. Availability issues can emerge due to perceptions of *lack* of Availability. Twenty-three articles and reports included in this review addressed

Table 3 Articles Including Tools/Interventions by Dimensions

	Article information		Dimensions				
	Article author	Article year	(1) Availability	(2) Accessibility	(3) Accommodation	(4) Affordability	(5) Acceptability
More than one dimension	CRS	2018	X	X			
	Weissman et al.	2005	X				X
One dimension	Blue-Howells	2019	X				
	Chinchilla et al.	2020		X			
	Cretzmeyer et al.	2014	X				
	Corrigan et al.	2015					X
	Corrigan et al.	2017					X
	CRS	2016a	X				
	CRS	2016b	X				
	Harris et al.	2018					X
	Molinari et al.	2013					X
	Montgomery et al.	2017					X
	Resnick et al.	2016		X			
	Suris et al.	2017	X				
	Tsai et al.	2018	X				
	Van Voorhees et al.	2019					X
	VHA Homeless Programs	2013			X		

the dimension of Availability. Fourteen articles identify Availability barriers, and nine provide some guidance on tools and interventions targeting Availability barriers. Of articles in this review under this dimension, 13 include race in their descriptions of sample demographics and five include race primarily as a control variable. Only three articles discussed race, with only one article identifying and discussing significant differences in outcomes by race.

One pervasive theme across articles is the expansiveness of the VA's VHA system. The VHA is the nation's largest integrated health care system: in addition to 172 VA Medical Centers (VAMCs), the VHA network includes over 1,000 community clinics across 23 Veteran Integrated Service Networks (VISNs) [41]. In addition to these VHA facilities, the VA provides outside network care services as needed through the Veterans Choice Program (VCP) and the Maintaining Systems and Strengthening Integrated Outside Networks Act of 2018 (Mission Act). These additions allow veterans to access outpatient, inpatient, and emergency care in the community [42]. This system provides health care services to over 6.7 million eligible veteran patients, representing a massive Availability asset unique to the veteran population. The VA is currently the largest federal investor in telemedicine, using mobile phones, video conferencing, and asynchronous communication to meet medical needs for remote patients [43].

Given the expansive reach of the VA health system to veterans overall, the assumption could be made that homeless veterans routinely access available VA health care and that the dimension of Availability is adequately fulfilled. However, research included in this review shows that available health insurance does not always translate into available health services. O'Toole and colleagues examined sources of usual care for homeless veterans in and around Pittsburgh and Philadelphia and found that (compared to homeless nonveterans) homeless veterans had significantly higher rates of insurance coverage, with a significant component of this difference attributable to VA coverage [44]. However, O'Toole and colleagues also found that while 65 percent of homeless veterans had health coverage, only 41 percent used that coverage to access health services. Studies in this review support the finding of an Availability barrier for those homeless veterans who have coverage and do not use it.

A homeless veteran may be eligible for health services at the VA but may fail to use his VA insurance coverage. This phenomenon is particularly acute among African American homeless veterans: in a 2003 study on the federal program Health Care for Homeless Veteran (HCHV), researchers found that while there was no difference in initial VA appointments, homeless veterans who identified as African American were less likely to receive follow-up care [45]. Reasons for these differences were not quantified by Desai and colleagues, and no subsequent study has explored this gap in access for

African American homeless veterans [45]. Distrust may be one factor in this Availability barrier: among the general population, distrust in the medical system is associated with worse health outcomes [46], and among veterans, lack of faith in the VA system is associated with decreased use of mental health services [47].

Additionally, health service eligibility does not necessarily translate into Availability of the right kinds of services that veterans experiencing homelessness need to meet their most pressing health needs. Over the last twenty years, research on homeless individuals in general has found that they are more likely to seek care through emergency rooms and not through primary or preventive care [26, 48, 49]. Older research on homeless veterans found a similar pattern. That is, they tend to use services that meet acute needs rather than long-term or preventive needs, leading to repeat visits and hospitalizations [50]. More recent studies on homeless veterans find that they still often utilize emergency services as the first access point for care [16, 51, 52] with lower rates of outpatient service use [45]. Lack of discharge options means veterans who are homeless stay longer than necessary in hospitalization or emergency services [48, 49, 51]. Although four of these studies included race as a control variable, none addressed race variables in their findings or discussion.

Other veterans are not eligible for health care services within the VHA. For veterans with a short Active Duty service record or a discharge status below honorable, for example, VHA health care eligibility may be partially or fully restricted [53]. Recent research shows that homeless veterans have a disproportionate number of discharges below honorable [54]. For these and many other veterans, Availability is limited by eligibility. No studies included in this review specifically address the relationships between race and discharge status among homeless veterans.

VA-ineligible homeless veterans would instead need to seek medical care through employer-sponsored programs or limited community or state health service programs [44]. Fulfilling paperwork requirements for public assistance is considerably more difficult for individuals experiencing homelessness. Although this has not been examined with homeless veterans seeking public health services, it is likely that this general homeless population pattern persists among veterans experiencing homelessness [55].

Several tools and interventions can address Availability barriers for homeless veterans who are eligible for health care but do not use it and for veterans who are not eligible for health care (two major barriers identified in this review). Efforts to move VA services into the community—primarily through Community-Based Outpatient Clinics (CBOCs) and Community Resource and Referral Centers (CRRCs)—help meet homeless veterans where they are [56]. Local community-based programs and community leaders play a critical role in educating veterans about their eligibility for

health services [57]. Mobile clinics also reach veterans who are not engaged with the VA system, including those with high homelessness chronicity [58]. These interventions and tools address Availability barriers by bringing services closer to the veterans who are eligible for health care but are not accessing it.

For homeless veterans facing Availability barriers because they are currently ineligible for VA health care, discharge upgrades and expansions in health care eligibility for veterans with an other than honorable discharge status could significantly increase eligibility to promote Availability [59, 60]. These strategies address Availability barriers to improve health care access. Unfortunately, these strategies have yet to be evaluated for their effectiveness in reaching African American veterans experiencing or at risk of homelessness.

Accessibility Dimension

In the Access Model, *Accessibility* is defined as the fit between the location of services and the location of clients. Barriers could include transportation, geographic barriers, or distance between a service user and a service location. Thirteen articles and reports addressed the dimension of Accessibility. Eleven articles and reports identify Accessibility barriers. One article offered tools/interventions for addressing Accessibility issues, and a government report presents another tool to address Accessibility barriers although it was not studied specifically for this purpose. Six articles in the dimension included a discussion of race when reviewing the demographic profile of study participants, and three primarily included race as a control variable. While one article discussed the general impact of race on homelessness risk, it failed to take the step of connecting race to one of its variables of study—social isolation. Two other articles in this dimension discussed race as a primary focus of the study, with one presenting significant results.

Although transportation can be an Accessibility barrier for all populations, it is particularly impactful for veterans experiencing homelessness [55, 61–63]. Among the general homeless population, limited disposable income means fewer funds available for public transportation, and homeless individuals are less likely to own working vehicles [33]. Among homeless veterans—especially those in rural areas—this transportation gap exacerbates chronic disease burden in already underserved communities and reinforces activities that lead to poor health, such as poor diet or limited exercise [64].

The social isolation commonly experienced by homeless veterans may also exacerbate Accessibility issues. Social isolation is prominent among homeless veterans: two studies found that they report increased social distance and higher levels of social isolation [8, 13]. Early research on veteran homelessness risk factors found that not having social support during the first year after discharge from the military and

being unmarried were associated with subsequent homelessness [7]. More recent research on Post-9/11 veterans found that relationship dissolution was closely related to homelessness risk [65]. According to two studies, not only do veterans experiencing homelessness have less support physically going to and from medical appointments, but social isolation can also limit social pressure to pursue needed medical care, knowledge of available services, or even a desire to pursue care more broadly [14, 55]. Chinchilla and colleagues (2019) found no significant differences between African American and White veterans on measures of community adjustment [66]. Beyond Chinchilla and colleagues' study, social isolation among African American homeless veterans was not a focus area in these studies.

Some interventions hold potential for addressing the Accessibility barriers of transportation and social isolation. However, research is limited on their effectiveness at directly targeting Accessibility issues for homeless veterans in general and for homeless African American veterans in particular. For example, the Veteran's Choice Program (VCP) was developed specifically to increase health access for veterans who were a considerable geographic distance from a VAMC or who needed specialty services not otherwise available in a defined waiting period [42]. This program could, in theory, address some transportation barriers faced by homeless veterans; however, no research was found on the effectiveness of this expansion in managing health care for homeless veterans or in reaching vulnerable African American veterans. Decreased social isolation can be accomplished through expansion of housing programs that reinforce safety and community—such as Project-Based HUD-VASH [66]—a program that has housed a disproportionately high percentage of homeless African American veterans in recent years.

Accommodation Dimension

Accommodation is defined as the fit between how services are organized and the patient's ability to accept this structure. This dimension also includes the patient's perception of the reasonableness of the organization of services. Four articles identified Accommodation barriers, and one report included in this review provided interventions addressing Accommodation barriers. One article in this dimension addressed medication adherence and race, and two others mentioned race in their review of demographics.

This review revealed one major Accommodation barrier: medication regimen planning. Among the general population, Kinchen and colleagues (1997) found that over 30 percent of homeless respondents reported that they could not comply with a medication regimen [67]. Individuals experiencing homelessness may struggle to adhere to treatment due to the difficulty of managing medication while homeless, even if the medication is available and otherwise accessible [68]. Several

compounding factors can lead to medication nonadherence, including limited provider follow-up, lack of refrigeration resources, or lack of secure settings for medications [67].

Recent research on medication adherence for homeless veterans is limited. However, one study found that homeless veterans who are otherwise engaged with their medication regimen may still be unable to complete it due to factors dependent on their homelessness status (e.g., limited food to take with medications that must be taken with meals and lack of refrigeration) [69]. Another study of homeless veterans with hepatitis C found that receipt and use of appropriate medications were significantly lower among homeless veterans when compared to housed veterans [70]. In this study, African American veterans in general were more likely to begin treatment. However, this difference was no longer statistically significant when limited to those veterans experiencing homelessness. As noted by Gundlapalli and colleagues (2015), this lack of treatment initiation could be due to the burden that treatment places on individual veterans seeking care. Providers may fail to initiate treatment with homeless veterans because of this anticipated burden. In this case, initiation of treatment involving needed medications may have been stymied by the veterans' and the providers' determination that the structure of services was unreasonable.

Interventions to provide medication assistance can address this specific Accommodation barrier. When the veteran does not have secure facilities for medications, the provider can work with a local community-service agency, such as a VA Grant and Per Diem (GPD) provider or Medicaid or state-funded managed care provider, which provides medication management, medication monitoring, or individual storage [71].

Affordability Dimension

In the general model, the *Affordability* dimension includes the price of care—after insurance—relative to the patient's available income and the patient's perception of worth relative to cost. Affordability barriers for the general population are centered on cost (e.g., expensive procedures or medications outside of the patient's income or the patient's unwillingness to pay for preventive care or longer-term treatment). For homeless veterans, however, health service Affordability is also about opportunity costs. As noted in Table 2, five articles and one government report included in this review identified Affordability barriers. No articles quantified interventions/tools for addressing Affordability barriers. Only two articles in this dimension included race in their demographic discussion, and none of the articles in this section specifically addressed race-specific Affordability issues. In fact, half of the articles in this dimension made no mention of race at all.

As noted above, the VHA system is generally a no- or low-cost option for those homeless veterans who are enrolled,

eligible, aware, and able to travel to health services. Homeless veterans are unique in their ability to access multiple health care resources, including other mainstream sources such as private insurance, Medicaid, and Medicare [72]. In states that voluntarily chose to expand their Medicaid programs after the passage of the Affordable Care Act, homeless individuals including veterans had even greater access to low- or no-cost health services [73]. As a result, the Affordability domain focuses less on financial cost and more on opportunity cost when applied to homeless veterans.

Competing priorities function as Affordability barriers to health service access when veterans must weigh the cost of accessing health care versus addressing other needs [32]. Veterans experiencing homelessness must secure priorities that may be higher on their list of needs (e.g., shelter for the night or legal assistance) [60]. For example, a veteran may want to attend a medical appointment, but doing so would require taking time off work and losing out on needed income. For some homeless individuals, finding daily resources like food and shelter takes precedence over seeking medical care [23, 74]. Homeless veterans who otherwise have access to no-cost or low-cost health services may still not be able to afford care if the trade-offs prove too costly. Addressing Affordability barriers requires managing competing care needs, yet no published studies identified in this review explicitly explored competing care needs among homeless veterans.

Acceptability Dimension

The dimension of *Acceptability* includes the provider and patient mutual attitudes and perceptions. Acceptability focuses on agreement between the provider and the patient. No articles in this search focused specifically on the agreement between homeless veterans and the providers who serve them; however, four articles focused on Acceptability in the general homeless population, and 21 articles and reports indirectly addressed barriers and interventions targeting Acceptability. Fourteen articles in this dimension included race in their description of demographics, and six used race primarily as a control variable. Three studies included in this dimension discussed findings directly related to race. Another study included race in their methods but failed to discuss any findings related to race.

Homeless veterans' perception of their providers—a major component of Acceptability—centers on trust, stigma, and collaboration. In one early qualitative study by Wen and colleagues (2007), homeless patients characterized an experience of “unwelcomeness” defined by rude treatment, rushed

⁰ Buck, D.S., Monteiro, F., Kneuper, S. et al. Design and validation of the Health Professionals' Attitudes Toward the Homeless Inventory (HPATHI). *BMC Med Educ* 5, 2 (2005). <https://doi.org/10.1186/1472-6920-5-2>.

appointments, and discrimination based on housing status. One participant reported that he perceived his African American race to be a factor in his perception of unwelcomeness in health care encounters [75]. In a more recent study, homeless veterans reported more negative primary care experiences than housed veterans across seven of eight domains of care. These negative experiences applied not only in interpersonal domains but also in veteran perception of the thoroughness of treatment and their role in medication decision-making [76]. In some cases, homeless veterans reported delaying entry into primary care services due to a lack of trust in providers and perceived stigma as a result of their homelessness status [77]. For homeless female veterans, the perception of lack of suitable services may compound the difficulty of accessing care because of their homelessness and their gender [78].

No study identified in this review focused on clinician perception of homeless veterans specifically. One general population study using a subset of questions from the Health Professional Attitudes Toward the Homeless Inventory (HPATHI) found that emergency department clinicians self-reported neutral to positive feelings toward homeless patients [79];⁴ the authors did not relate this perception to the actual provision of care in the study, but suggested strategies for engaging emergency room clinicians in homelessness initiatives to generate a closer working relationship. Other studies have documented the perception of clinician bias as a factor in suboptimal care and decreased intent to engage in services among the general homeless population [80, 81].

Other studies on homeless veteran care providers give some insight into their relationship with the veterans they serve. A review of provider and patient needs found that case managers' core objectives are generally based on the mission of their agency, potentially creating conflict with the goals of the veteran [59]. Another study of case managers found that 88 percent reported experiencing some form of violence or aggression during housing visits. These care providers may not feel safe visiting the locations where homeless veterans reside, especially when these locations are in neighborhoods with histories of violence [82]. It is possible that provider fear and safety concerns could limit treatment access, but more study is needed.

Diversion into substance use treatment programs may represent another Acceptability disconnect between veterans and providers. In several studies, veterans who were homeless reported difficulty accessing health services that may have actually been available in their care facility, especially if the veteran had complicated medical issues [4, 45, 46, 68, 83–85]. For example, one study of homeless veterans seeking primary care services found that these veterans were more likely to be quickly diagnosed with a mental health condition and less likely to be diagnosed with a chronic disease condition than veterans in a housed comparison group [16]. Another found

that a diagnosis of substance abuse—common in the homeless veteran population—was associated with a decreased likelihood of receiving general health care services, even when the veteran was contacted specifically for medical outreach. Even veterans in VA Health Care for Homeless Veterans sites with more robust mental health resources had low rates of medical follow-up [45]. This could mean, for example, that a homeless veteran could be first directed to a substance use or mental health treatment program before she is directed to care for her medical issue.

Peer navigators are one intervention to address Acceptability barriers by improving veteran perception of and trust in health systems and providers. Although the exact job tasks of peer navigators vary by location, in general, VA peer navigators are veterans who have experience with homelessness and/or with navigating the VA health care system and can therefore serve as resources for their peers. These peer support resources have shown promise in supporting African American homeless veterans [86]: one study in particular found that homeless African Americans perceived peer navigators to be a useful source of practical logistical information and a resource for troubleshooting creative ways to engage meaningfully in the health system [87]. Another study on peer navigators found that ninety percent of homeless veterans accessing peer navigator services identified as members of minority groups; when peer navigators share demographic characteristics and identities with those they serve, veterans may feel more trusting and be more amenable to accessing care [56]. Peer navigators' shared experiences allow for interpersonal support and empathy, leading to positive health and housing outcomes [14, 52, 56, 88–90].

Interventions Working Across the Five Dimensions

Each of the interventions discussed above targets dimension-specific barriers to health access but likely also has some spill-over impact on health access barriers in other dimensions. For example, peer navigators primarily target Acceptability barriers, but they can help veterans manage competing care needs (Affordability) or help veterans identify other services for which they are eligible (Availability). Other interventions impact health access barriers across dimensions; 24 articles covered these cross-dimension tools. Because they cannot be easily categorized in one dimension, they are described separately here. Of these articles, 12 included race in the demographic profile of study participants, and five used race primarily as a control variable. An additional two articles in this section provided significant results and discussions related to race.

Affordable Housing

Housing stability not only is a major social determinant of health but also continues to be a critical method for supporting

improved quality of life, pursuing needed health services, and meeting health needs [55, 65, 91–93]. Supportive housing is associated with decreased hospitalizations, length of stay in hospital, and incarceration [94]. These positive outcomes of supportive housing benefit homeless African American veterans [21].

Affordable housing is an intervention working across several dimensions of access: a secure home can improve medication adherence (Accommodation); housing stability could decrease bias from care providers (Acceptability); a housed setting could provide the community that promotes social support systems (Affordability). Housing stability allows veterans to devote financial resources to other basic or preventive needs (e.g., transportation to medical appointments, Availability and Accessibility) [95].

Enrollment in Primary Care

For many veterans experiencing homelessness, primary care enrollment can be a gateway to other health services [96, 97]. In several studies, primary care enrollment is associated with decreased emergency department use and better use of general health services, a step toward addressing Availability barriers. It is also associated with increased medication regimen adherence (Accommodation) among homeless veterans [16, 98]. Receipt of primary care services is also protective against future eviction [99]. Promoting primary care enrollment could address the uneven utilization of services and help promote treatment adherence.

Colocated Services

Colocation of services involves placing homeless services and medical services in the same physical space. In one study, colocation of homeless-specific services with the emergency department was favored by patients and clinicians while in another the colocation of on-site nursing care resources decreased emergency department visits and improved medication adherence and outcomes [100]. Colocation's effectiveness is magnified by program improvement initiatives aimed at achieving concrete benchmarks and integrating services. Several of these initiatives have shown promising preliminary success when applied to VA programs serving homeless veterans, such as the Getting To Outcomes (GTO) program or the Maintaining Independence and Sobriety through Systems Integration, Outreach, and Networking (MISSION) intervention [101–105].

The VA's Homeless Patient Aligned Care Teams (H-PACTs) in particular have led to dramatic decreases in emergency room visits and hospitalizations [106]. H-PACTs work across several dimensions. By colocating medical and homeless program staff members, H-PACTs utilized at some VAMCs offer a valuable template for increasing health

service Availability at all VA sites (Availability) [70]. Integrating a mental health pharmacy resource into an H-PACT location can improve medication adherence through education and more rapid responses to patient concerns (Accommodation) [107]. H-PACTs can transport veterans to at least their first medical appointment (Acceptability). In fact, in a study by O'Toole and colleagues, veterans who were transported to a medical interview in an H-PACT system were more likely to then engage in a subsequent first medical appointment [106]. Although this review did not identify any specific benefits to homeless African American veterans in regard to colocation of services, it is likely that further expansion of H-PACTs across VAMCs will bridge gaps in care across veteran groups. This particular area of care is deserving of future investment and study.

Expanded Use of Remote and Virtual Resources

Remote and virtual platforms and tools resolve several barriers to access by shrinking the distance, response time, and (when employed effectively) formality of traditional in-person medical appointments. In one study, 89 percent of veterans had a mobile phone and health was the second most common reason for using their phones [108]. For recently housed veterans, in-home health information technologies—including the Care Coordination Home Telehealth (CCHT) program—hold promise for closing some of the Availability gaps for veterans managing chronic illnesses [109].

Discussion

One of the most striking outcomes when looking across studies included in this review is the paucity of data related to health access among African American homeless veterans. Specifically, of the over six dozen articles included in this review, only 21 included race as one of the primary variables in the study. Race was included in 52 studies to establish a demographic profile of the sample, but without additional discussion thereafter. Homelessness research is not alone in this exclusion process. One recent review found that only 1.4 percent of biomedical systematic reviews included race or ethnicity in subgroup effect analyses (116).

⁰ For a thorough discussion of the benefits and drawbacks of including race in research, please review the following articles: Sen, M. & Wasow, O. (2016). Race as a bundle of sticks: designs that estimate effects of seemingly immutable characteristics *Annual Review of Political Science*, 19, 499–522; Ioannidis J.P., Powe, N.R., Yancy, C. (2021). Recalibrating the use of race in medical research. *JAMA*, 325(7), 623–624. doi:10.1001/jama.2021.0003; and Flanagan A, Frey T, Christiansen SL, Bauchner H. (2021). The reporting of race and ethnicity in medical and science journals: comments Invited. *JAMA*, 325(11), 1049–1052. doi:10.1001/jama.2021.2104.

How to best integrate race variables in research—especially medical research—can be polarizing. While many progressive researchers are in favor of advancing beyond a pure essentialist approach to race's inclusion in research, the process by which race can be methodologically constructed or disaggregated is still undecided. For example, some scholars advocate for treating race more as a composite measure and less as an immutable characteristic [110]. Given how sparingly race is addressed in the homeless veteran literature, we suggest that race be used as an incremental variable where appropriate while more comprehensive sociological and biological variables are developed and defined [111]. We also suggest that researchers make every effort to adopt precise terminology based on fairness and equity (112).⁵ Knowing that health outcomes are worse for African American homeless veterans, we believe that additional attention should be given to this specific group of veterans in future health literature.

Several steps can be taken to begin addressing this omission. Experts and leaders should reexamine foundational research that included race using a contemporary conceptual and methodological lens. Wherever possible, this group of evaluative experts and leaders should include representatives from the population of study. In this case, that would mean including African American veterans who have experience with or are experiencing homelessness. This evaluation process would involve looking not only at the analyses used in the foundational studies but also at the data gathering process itself. For example, we would want to know how information on race was obtained, and if the findings map onto our current understanding of race and health disparities.

While important for establishing the generalizability of the results, including race in the discussion of demographics is conceptually and statistically insufficient. We encourage researchers to consider during the study design phase if race (or another comparable measure) is linked in a meaningful way—either through conceptual modeling or previous study—to the variables of interest and to adjust study design accordingly. For example, a future study on COVID-19 vaccine uptake among homeless veterans in the shelter system should not only gather race data to establish the study's generalizability but also critically examine whether homeless African American veterans faced any additional or unique barriers to access.

The fact that African American veterans are disproportionately overrepresented among the homeless veteran population is established by over a decade of comprehensive population reports, as noted above. This long-standing reality has not adequately propelled research that explains the disparity, let alone evaluated the role of health care and health service access in homelessness. Addressing the long-term health-related factors that exacerbate or are exacerbated by homelessness requires more study of the specific barriers African

American veterans face when trying to access health care. While several fields play a role in addressing the disproportionate lack of access among homeless African American veterans, the health care system including but also beyond the VA system is uniquely positioned to meet the needs of these veterans using some of the strategies noted below.

Continuing to look across the studies included in this review, the authors were able to identify tools/interventions and barriers that either increased or decreased health access, respectively. While certain tools/interventions had the largest impact in one dimension, several others crossed dimensions. Fig. 1 provides an overview of the barriers and tools/interventions identified in this review across Access Model dimensions as they relate to health access.

Four of the identified high-impact tools—affordable housing, primary care enrollment, colocation, and virtual resources—work across dimensions and can be expanded through advocacy and program coordination. First, to increase affordable housing stock, advocates can support ongoing housing development initiatives such as Project-Based HUD-VASH or GPD's Transition In Place. Local advocates can work with Public Housing Authorities to increase their project-based allocations of housing vouchers in support of development projects. Continued case management is essential at these project-based sites, so local advocates and VA partners should ensure sufficient HUD-VASH and other case management services to meet the needs of veterans as they transition into independent housing.

Second, to enroll homeless veterans in primary care services, experts suggest tailoring outreach services so they are accessible to the veteran and targeted in their focus [44, 94, 112, 113]. This process can go beyond simply orienting veterans to the clinic by providing brief interventions to provide immediate relief [25]. In fact, O'Toole and colleagues predicted a dose-effect in this process—if one outreach event can increase engagement in primary care, a sustained effort will likely have a magnified effect [98].

To facilitate colocation, VAMCs can support local community providers by providing office, meeting, and training space within CRRCs or other community-based clinics. Where feasible, H-PACTs should be expanded to ensure close physical and mission proximity for major partners serving veterans experiencing homelessness. Finally, VA can expand and continue the use of virtual appointments even after the acute COVID-19 era. Providers should be conscious of how veterans connect virtually by putting in place social media policies and relying on phone calls over text messaging or email.

Within the individual dimensions, barriers and interventions are often closely linked. The Availability studies, for example, show several barriers to access that are closely linked to the tools in this dimension. We cannot assume that all homeless veterans have full health service access simply

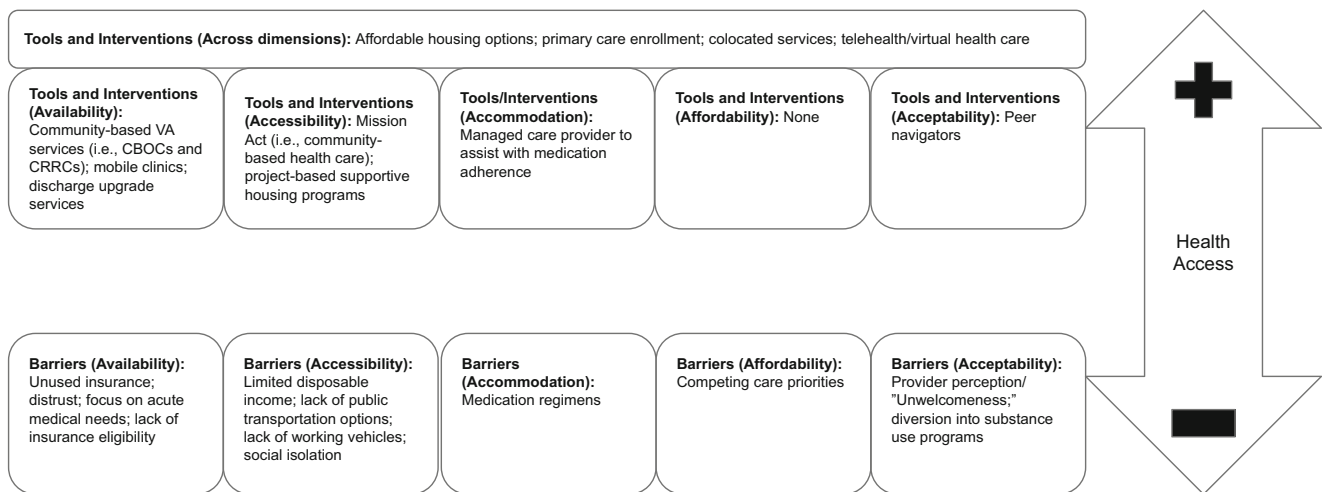


Fig. 1 Barriers and tools by dimension and across dimensions

because the VHA system exists. Even veterans who are eligible for VA care may not find these resources available to them. While homeless veterans may be able to access VHA services, their pattern of health service utilization implies that specific health services (e.g., preventive or specialty care) may not always be available. This is especially the case at VAMCs without H-PACTs to integrate homeless and health services. Availability hurdles exist even in the era of the VCP/Mission Act which was designed to mend gaps in access. Geared toward housed veterans, many VA services may not adequately reach the most underserved veterans.

Availability tools target these barriers: local community providers are particularly well suited to address Availability barriers with tools like mobile clinics and discharge upgrade services. To make better use of the VCP, local VAMC, CBOC, and CRRC staff can identify how homeless veterans in their service networks are accessing services outside of the VA. Community-based organizations can help identify active temporary addresses for veterans to receive VCP information. These adjustments can reach homeless veterans who do not have a usual source of care, who access available health services that do not match their medical needs, who are ineligible for VHA care, and who do not register for the health care for which they are eligible—including VA health care.

The Accessibility, Accommodation, and Affordability studies, on the other hand, present fewer interventions to target significant barriers. Among homeless veterans, the Accessibility dimension magnifies the role of transportation, social isolation, and geographic distance. A veteran experiencing homelessness may have fewer social reinforcements from family and friends regarding their health management, and they may feel helpless or overwhelmed regarding health decisions. As noted above, medication adherence may be the largest Accommodation barrier to health access among homeless veterans. Traveling to and attending medical appointments

may prove too time- or resource-intensive, and therefore, a veteran may miss or never schedule appointments.

In these cases, the interventions identified in this review should be expanded, and additional measures can and should be taken to fully address barriers. The current VCP does not account for the burden homeless veterans face traveling shorter distances for medical care while relying on public transportation. Therefore, legislative or regulatory changes to the VCP regarding allowable transportation costs could improve access under this dimension.

To improve medication adherence, community-based managed care providers can offer basic medical services and medication management on site, so the veteran can engage with medical care on their own time. However, medical providers within the VA system can also play a more significant role in addressing this barrier: when medical providers are aware of a veteran's housing status, they can have a frank conversation about how best to manage needed medication and possible side effects.

The Homelessness Screening Clinical Reminder (HSCR) can be a useful tool for gaining information about a veteran's housing status. However, on its own, it is insufficient to connect veterans to health care. In one study, one-third of veterans who screened positive were not connected to triage services; the next step after screening must include triage and referral [114]. When a veteran screens positive for homelessness or risk using the clinical reminder, they can quickly be connected to triage services through homeless programs. This triage process is particularly important for homeless veterans over 45, who are less likely than their younger peers to connect to services after screening [115], also lowering rates of follow-up for those with service connections. These tools should supplement—not replace—a compassionate conversation with the veteran about the best methods for engaging with needed medications.

To improve Affordability, providers should aim to minimize the cost of receiving care in terms of time and effort. Many community providers can help meet Affordability gaps through the provision of their regular services. Some community agencies like GPD programs and Supportive Services For Veteran Families (SSVF) programs can help meet pressing unmet needs so health care rises higher on the list of priorities. Several Veteran Service Organizations (VSOs) offer transportation to and from medical appointments to decrease the time demand required by transportation itself. Health care providers do not need to know every resource in every community their VAMC serves, but they can develop a few contacts in the community who can serve as a lifeline for veterans in need who are consistently unable to afford attending medical appointments.

Addressing the Acceptability barrier of provider bias (or even the perception of provider bias) is a uniquely complicated process. The first step is to foster awareness within service agencies to recognize and identify implicit biases as it applies to their homeless clients, especially African American homeless veterans. At an organizational level, VA programs can utilize the VHA's Health Equity Action Plan's organizational assessment of health equity to identify implicit biases in their system of care. Integration of community member perspectives can also combat biases by ensuring the community's language and priorities are represented in health service materials and services.

This review has several limitations. This framework provides a means to organize and understand the key issues impeding access and identifying levers for improvement and yet is limited in that it relies on existing research identified through this review. There continues to be a paucity of research on health care access and health care disparities among homeless veterans, in particular among African American veterans. Where gaps in recent research exist, we must either rely on dated research or marginally comparable nonveteran studies. It is possible that homeless veterans interacting with the health service system may actually access health services in significantly different ways than we were able to identify here. Earlier attempts to apply health access models to vulnerable populations found that relative components of the conceptual model took on varied weight, so we can expect the weight of dimensions to shift as this topic is studied further.

Data Availability Not applicable

Code Availability Not applicable

Declarations

Ethics Approval This study did not require IRB approval.

Consent to Participate Not applicable

Consent for Publication All authors provided consent for publication.

Conflict of Interest The views expressed in this manuscript are those of the authors and do not reflect the official policy of the Uniformed Services University, Department of Army, Navy, Air Force, Department of Defense, or U.S. Government. The identification of specific products, scientific instrumentation, or organizations is considered an integral part of the scientific endeavor and does not constitute endorsement or implied endorsement on the part of the author, DoD, or any component agency. Additionally, the authors have no conflicts of interest to report.

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Risk Factors for Homelessness among Veterans

Abstract

This study examined the extent to which the popular narrative around homelessness among post-9/11 era veterans is supported by panel survey data from the Millennium Cohort Study (MCS) that followed 49,323 post-9/11 era U.S. service members upon leaving the military. Among these veterans, 1,071 (2.2%) reported becoming homeless after separating from the military. Results from multivariate models led to three related conclusions. First, there was limited empirical support for direct links between aspects of military service and homelessness that are widely used to explain why veterans become homeless. Second, many risk factors for homelessness found here mirror risk factors among the general population. Finally, we found an association between sexual orientation and increased risk for homelessness, and decreased risk for homelessness among female veterans. Taken together, these findings are illustrative of several risk factors for veteran homeless.

Keywords: homelessness, veteran, sexual orientation, combat, service member

Stephen Metraux, PhD

University of Delaware

Corresponding author: metraux@udel.edu

Claire A. Kolaja, MPH

Leidos, Inc; Naval Health Research Center, San Diego, CA

Baylee Crone, MA

Uniformed Services University of the Health Sciences

Thomas H. Byrne, PhD

U.S. Department of Veterans' Affairs

Rudolph P. Rull, PhD

Naval Health Research Center, San Diego, CA

Ben Porter, PhD

Mississippi State University, Starkville, MS

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Institutional Review Board in compliance with all applicable Federal regulations governing the protection of human subjects. Research data were derived from an approved Naval Health Research Center Institutional Review Board protocol, number NHRC.2000.0007.

Veteran Homelessness Risk Factors

Despite lower levels of poverty and unemployment and higher levels of educational attainment than non-veterans, veterans are overrepresented among the U.S. homeless population (Fargo et al., 2012; Tsai & Rosenheck, 2015; Rosenheck et al., 1996). Through the U.S. Department of Veterans Affairs (VA), veterans have access to a comprehensive healthcare system (Longman, 2012) and sources of financial benefits and housing assistance that are unavailable to non-veterans. Veteran homelessness nonetheless persists, as does the public dismay at the injustice of homelessness occurring among those who have served in the military (Metraux & Moore, forthcoming).

The dynamics and correlates of veteran homelessness remain poorly understood and extend further to recently transitioned veterans who mainly deployed in support of military operations in Afghanistan and Iraq. Media accounts have described a “tsunami of homelessness” occurring among these new veterans (Eckholm, 2007), while systematic research shows rates of homelessness among this cohort staying roughly consistent with rates observed among older groups. Several features, including posttraumatic stress disorder (PTSD), sexual trauma (particularly among women) during service, and other than honorable (OTH) discharges from military service, have been linked to higher risk for homelessness. Other economic, sociodemographic, and behavioral health factors - such as adverse childhood experiences,

poverty, trauma, absence of social support systems, and behavioral health diagnoses - also increase veterans' vulnerability for homelessness (Metraux & Smith, 2019).

This present study investigated individual risk factors for homelessness among the post-9/11-era veteran cohort. We analyzed longitudinal survey data from the Millennium Cohort Study to follow 49,323 post-9/11 era U.S. veterans from the point in time they left military service. The resulting assessment of links between demographic, military, and experiential measures and homelessness among the most recent population of veterans provide a means to empirically evaluate commonly held perceptions of how veterans become homeless.

A Brief History of Veteran Homelessness

In the aftermath of the Vietnam War, veterans have been a conspicuous presence among homeless populations (Tsai, 2019). With the rise of contemporary homelessness in the 1980s, Robertson's (1987) monograph first identified veterans as an overrepresented subgroup and documented the high proportion of these veterans who had served in the Vietnam War. While putative links with sequelae of combat - including diagnoses of PTSD - gained resonance during this time, findings from subsequent research were inconsistent (Rosenheck & Fontana, 1994).

Subsequent research further questions the role of combat as a mediating factor between military service and homelessness, as Rosenheck et al. (1994) ascertained that veterans at greatest risk of homelessness were not those who served in Vietnam, but those who served in the early years of the post-Vietnam peacetime era of the mid-1970s through the mid-1980s. This period featured the transition to an all-volunteer military in a time when military service was unpopular and the military adopted reduced recruiting standards.

While veterans have been a group set apart from the rest of the homeless population in the U.S. (Metraux & Moore, forthcoming), much research has shown that personal homelessness

risk profiles among veterans are very similar to non-veterans (Balshem et al., 2011; Rosenheck et al., 1996). Factors that increase the risk of homelessness among both veterans and non-veterans alike include Black/African American race and ethnicity, having mental health or substance use diagnoses, and previously exposure to trauma. However, research also points to a “veteran paradox” where veterans experience homelessness at higher rates than non-veterans and are overrepresented among the homeless population (Fargo et al., 2012), despite having lower overall rates of poverty and higher average levels of education and employment than non-veterans (Rosenheck et al., 1996).

Military Factors: Deployment, Combat, Discharge Status, and Sequelae

Efforts to explain this paradox have led to closer scrutiny of military experiences and their impact on subsequent homelessness. As the post-9/11 conflicts were two of the longest wars in U.S. history, wartime exposure has again become a common narrative for explaining homelessness. The simplest proxy for wartime exposure is deployment, a largely binary measure of whether a veteran deployed to a war zone during the Afghanistan or Iraq conflicts. By 2015, just under two million veterans deployed to one or both of these theaters of operations (VA Office of Public Health, 2017). Several studies that assessed the relationship between deployment and homelessness reported inconsistent results. In two papers based upon an analysis by the VA’s Office of Inspector General assessing use of VA homeless services among 310,000 post-9/11 era veterans, there was a substantially higher (albeit unadjusted) frequency of homelessness among deployed veterans compared to their non-deployed contemporaries (2.1 percent to 1.4 percent) (Metraux et al. 2013; VA Office of the Inspector General, 2012). Edens et al. (2011), in contrast, found deployment to Iraq or Afghanistan to be associated with substantially lower risk of VA homeless services use among a large but singular group of

veterans who used VA specialty mental health services. Finally, Tsai et al. (2016) used data from the National Health and Resilience in Veterans Study (Pietrzak & Cook, 2013) to look at homelessness risk among the overall veteran population, but the small number of post-9/11 veterans (34 total, four of whom reported homelessness) in the survey precluded drawing any definitive conclusions about homelessness among this group.

Deployment is an imprecise measure, as service personnel will spend different lengths of time in various theaters and will have differing experiences. Only a minority will have direct exposure to combat. Two studies examined the association between direct combat exposures and homelessness. Ackerman et al. (2020) observed a modest but significant association between witnessing death during deployments and increased risk for subsequent homelessness among veterans enrolled in the Millennium Cohort Study. Elbogen et al. (2013), using data from the VA's National Post-Deployment Adjustment Survey, found a significant, positive bivariate association between combat experience and homelessness that became non-significant upon introducing other covariates into a multivariate regression model. Other studies that examined homelessness specifically among deployed veterans did not contain any measures that differentiated aspects of veteran deployment experiences (Blackstock et al., 2012; Brignone et al., 2016; Fargo et al., 2017; Gundlapalli et al., 2015; Metraux et al., 2013; VA Office of the Inspector General, 2012).

Another service-related feature of the post-9/11 era that may have impacted veteran homelessness was the high level of “bad paper” discharges. The advocacy group Swords to Plowshares found that 125,000 veterans (6.5 percent of all post-9/11 veterans) were ineligible for VA services due to other than honorable (OTH), bad conduct, or dishonorable discharges (Veterans Legal Clinic, 2016). The vast majority of such discharges were OTH that are

administrative discharges due to misconduct. The U.S. Government Accountability Office (2017) found that 62 percent of service members who separated due to misconduct had PTSD or TBI diagnoses (Brignone et al., 2017; Brooks-Holliday & Pedersen, 2017). Subsequent study by Phillips (2013) supported the contention that the increase in OTH discharges was due in part to the military's systematic discharge of personnel with medical or psychiatric conditions for punitive reasons. These discharges may also increase the risk for homelessness. Media headlines such as "‘Bad Paper’ Discharge Can Lead to Homelessness, Hopelessness" (Ismay, 2016) have been borne out by empirical research. A 2016 survey found 11 percent of veterans who were homeless reported negative discharges (Wilder Research, 2016). Further, a study found over 20 percent of those who became homeless over a five-year period had a negative discharge, even though they only comprised 5.6 percent of the study group (Gundlapalli et al., 2015).

Research on PTSD and homelessness have yielded inconsistent results. PTSD is often considered a medicalized proxy for adverse wartime experience (Smith & True, 2014), however most service members who experienced combat did not report elevated PTSD symptoms meeting diagnostic threshold (Donoho et al., 2017). Four studies have examined homelessness among post-9/11 veterans and reported findings related to PTSD. Two of these studies found modest associations between PTSD and homelessness risk (Blackstock et al., 2012; Metraux et al., 2013) while two others (Edens et al., 2011; Elbogen et al., 2013) reported no significant associations after adjustment for other factors.

Post-9/11 veterans experiencing homelessness report a high prevalence of PTSD. One study of post-9/11 veterans in VA supportive housing called attention to the contrast between the high rates of PTSD diagnoses (67 percent) found in this group and lower rates found among older cohorts of homeless veterans (Tsai, Pietrzak, & Rosenheck, 2013). Another study involving

interviews of post-9/11 veterans who experienced homelessness identified PTSD as a key theme in the veterans' accounts and documented how PTSD symptoms led to adverse circumstances, such as difficulties maintaining employment and family relations, which directly contributed to homelessness. Furthermore, these accounts showed how PTSD and homelessness interact to exacerbate one another (Metraux et al., 2017).

Demographic Factors: Gender, Sexual Orientation, and Race and Ethnicity

Another distinguishing feature of the post-9/11 service era is the unprecedented number of women who have served, particularly in an increased range of occupations and with greater exposure to combat. This has led to a growth in the proportion of women among post-9/11 veterans (National Center for Veterans Analysis and Statistics, 2016) and in numbers of female veterans in the homeless population (Metraux & Smith, 2019). However, studies have not found female veterans in the post-9/11 cohort to be more likely than their male counterparts to use VA homeless services (Blackstock et al., 2012). Female veterans were more likely than male veterans to turn to non-VA, community-based homeless services for shelter and other assistance, especially when they are homeless with children or when their housing issues are linked to intimate partner violence (Byrne et al., 2013). Existing research using VA data sources is therefore limited in its ability to define homelessness risk among women veterans in the post-9/11 era.

Homelessness risk among female veterans is often discussed in tandem with military sexual trauma (MST), which disproportionately affects female service members. The prevalence rate of MST among female veterans is estimated at 38 percent, compared to four percent among male veterans (Wilson, 2016), with several studies finding even higher MST prevalence rates among female veterans who experience homelessness (Benda, 2006; Brignone et al., 2016;

Hamilton et al., 2011). MST was also associated with other homelessness risk factors like mental health conditions and occupational problems (e.g., disabled/unemployed post-service) that could exacerbate risk for homelessness (Pavao et al., 2013; Millegan et al., 2015; Millegan et al., 2016). Washington et al. (2010) linked MST to significantly higher risk of homelessness among both female and male post-9/11 veterans. But because women experience MST in much higher proportions than men, MST and its sequelae are much more pervasive among women in homeless populations.

In 2011, the Department of Defense (DoD) repealed the “Don’t Ask, Don’t Tell and Don’t Pursue” policy, ushering in new policies whereby service members could openly identify as lesbian, gay, or bisexual. The disparate health and behavioral health outcomes, stigma, and attenuated support systems associated with sexual minorities in the military (Grant & Muse, 2018; Goldbach & Castro, 2016) may adversely impact the post-service transition into the community and increase the risk for homelessness (Ecker et al., 2019; Flentje et al., 2016; Fraser et al., 2019).

Finally, non-Hispanic Black and Hispanic individuals were observed to have elevated risk of becoming and remaining homeless in a study that examined lifetime risk among a nationally representative sample (Fusaro et al., 2018). These inequities have been tied more generally to discrimination in housing and systemic limitations in economic mobility, structural racism, and to unequal treatment in and access to homeless services (Olivet et al., 2020); these observations also extend to veteran populations (Fargo et al., 2012; Montgomery et al., 2020).

To summarize, for post-9/11 era veterans, risk for homelessness involves a range of factors that are shared with non-veterans, as well as additional potential factors that are specific to military service. While the role of service-related factors and dynamics (particularly those

related to combat) take on an outsized presence in popular understanding of veteran homelessness, the empirical evidence on this is less clear. In addition, most studies looking at veteran homelessness were based on VA data sources and thus circumscribe the majority of veterans who are either ineligible for or do not use VA services. Data from the Millennium Cohort Study provide an opportunity to assess the impact of an array of both service-related and more general factors upon risk for homelessness across a broad range of post-9/11 era veterans. With a focus on the most recent generation of veterans, the present analysis examines multiple putative factors for homelessness above and beyond more general risk factors common with non-veterans.

METHODS

Study Population

The Millennium Cohort Study was designed to prospectively measure the health of service members during and after their military careers (Gray et al., 2002; Ryan et al., 2007). Enrollment of the first panel began in 2001 with additional panels enrolled in 2004, 2007, and 2011 resulting in over 200,000 participants. Informed consent was obtained at enrollment and participants complete surveys assessing mental, physical, and social well-being approximately every three to five years. In 2014, two questions assessing homelessness were added to the survey.

As this current study examined risk factors for homelessness among veteran respondents, all enrolled participants who completed the homelessness questions on the 2014 survey were eligible (n=97,368). Of these, 39,883 had not yet separated from service at the 2014 survey and were excluded. Additionally, participants who separated prior to completing their baseline survey were excluded (n=8,162). This yielded a final study population of 49,323.

Measures and Statistical Analysis

Homelessness was assessed on the 2014 survey with the following question: “Have you found it necessary to sleep in a shelter, on the streets, or in another non-residential setting because of having no other place to stay? (Please refer to instances during or after military service time).” Those that endorsed the item were asked to indicate the dates of their most recent homelessness situation.

Unless otherwise noted, risk factors for homelessness were assessed at the last survey completed prior to separation from the military. *Sex, race/ethnicity, service branch, military occupation, and pay grade* (junior enlisted, senior enlisted, and officer to include warrant officers) were obtained from military records maintained by the Defense Manpower Data Center (DMDC). DMDC information on race and ethnicity was self-reported by service members and categorized for analyses as Other (which includes Hispanic, Asian/Pacific Islander, American/Alaskan Indian and other), non-Hispanic Black, and non-Hispanic White individuals. *Marital status* and *educational attainment* were self-reported. *Sexual orientation* was assessed on the 2014 survey and was categorized as heterosexual, gay/lesbian/bisexual, or prefer not to answer. *Eligible time* was calculated as the number of years between the date of separation from the military and the 2014 survey completion (i.e., length of follow-up time).

Separation variables include *discharge status/component* and *age at separation*. Discharge status/component was determined using separation records from DMDC and categorized into National Guard/Reserves, active duty-honorable, active duty-general, or active duty-other than honorable. Discharge status and component were combined because Reserve and National Guard separation records were not detailed enough to be used to distinguish quality of separation. Age at separation was categorized as less than 30, 30-39, or 40 or more years old.

Mental health factors (including *major depression/PTSD*, *manic-depression*, and *schizophrenia*) were based on self-report diagnosis or screening criteria. Major depression was assessed with the eight-item depression module of the Patient Health Questionnaire (PHQ) (Spitzer et al., 1999; Spitzer et al., 1994) and post-traumatic stress disorder (PTSD) was assessed with the PTSD Checklist-Civilian (Blanchard et al., 1996). Responses from the screeners for depression and PTSD symptoms were categorized as neither condition, depression only, PTSD only, and both PTSD and depression. Participants self-reported whether they had received diagnoses by a health care provider of manic-depression, schizophrenia, and hepatitis. Self-reported general health was based on an item from the Veterans Rand 36-Item Health Survey: “In general, would you say your health is:”. Problem drinking was assessed using the PHQ alcohol misuse subscale, where endorsement of any of the items indicated problem drinking. Body mass index (BMI; kg/m²) was calculated based on self-reported height and weight and categorized as under/normal weight (BMI <25), overweight (BMI 25-29.9) and obese (BMI ≥30). Social support was determined with the question “In the last 4 weeks, how much have your family or friends supported you?”

Self-reported combat exposures were combined with administrative deployment date records to categorize participants as ‘not deployed,’ ‘deployed without combat,’ and ‘deployed with combat’ (Porter et al., 2018). Childhood traumatic exposures (neglect, physical abuse, sexual abuse, and verbal abuse) were assessed on the 2014 survey using 4 modified items from the Juvenile Victimization Questionnaire Adverse Childhood Experience Questionnaire and were summed (range: 0 to 4) (Hamby et al., 2005). Disabling injury, financial problems, moved more than once, unplanned pregnancy, physical assault, sexual assault, and sexual harassment were

assessed with a modified version from the Holmes and Rahe Stress Scale (Holmes & Rahe, 1967).

Statistical Analysis

Descriptive statistics presented as frequencies or means with standard deviations were calculated for each predictor by homelessness. Bivariate associations between predictors and homelessness were calculated using logistic regression. These covariates were then incorporated into multivariate logistic regression models to generate adjusted effect estimates. Models stratified by sex were also examined for factors that had an adjusted interaction with sex with a *p*-value less than .20. All analyses were conducted using SAS/STAT software, version 9.4 (SAS Institute, Inc., Cary, NC, USA).

Missing Data

Each item had less than 2.5 percent missing when items were assessed. However, not all items were assessed on every questionnaire. These items had substantially greater proportions of missing data, but because these data are missing completely at random due to the survey wave being the mechanism of missingness, observed associations will not be expected to be biased due to missing data (Kolaja, et al., 2021). Multiple imputation was used to address missing data. Results were calculated in 100 imputed datasets and were combined using Rubin's rules. Categorical and ordinal variables were imputed using discriminant functions to ensure that imputed values were valid integers.

RESULTS

The final sample included 49,323 participants of whom 1,071 (2.2 percent) reported experiencing homelessness following separation from the military. Of those reporting homelessness, 674 (63 percent) provided a date for onset of homelessness. Most participants who

provided a date (77 percent), onset of homelessness occurred after military separation. Because of this, those with missing onset information were assumed to have been homeless after military service.

Distributions of demographic and military characteristics of the sample are listed in Table 1. The study population was largely male and non-Hispanic White, and almost half were 40 years or older when they separated from the military. In addition, a plurality of participants served in the Army, were senior enlisted, and were active duty. Almost one third had been deployed during the post 9/11 period.

Demographic and Military Characteristics

Results from bivariate and fully adjusted models are presented in Table 2. In bivariate analyses, most demographic and military characteristics were associated with homelessness with the notable exception of sex. However, female participants were less likely than males to experience homelessness in the fully adjusted model (AOR: 0.79). Several demographic characteristics were more likely to experience homelessness across both models, including non-Hispanic Black race and ethnicity (AOR: 1.74; as compared to non-Hispanic White) and identifying as gay/lesbian/bisexual (AOR: 1.57; prefer not to answer: AOR: 1.64; as compared to heterosexual veterans). Similarly, pay grade (junior enlisted: AOR: 2.24; senior enlisted: AOR: 1.43; as compared to officers), educational attainment (high school or lower: AOR: 1.43 as compared to associate's degree or higher) remained significantly associated with homelessness across both models. Conversely, in the multivariate model, marital status, military occupation and service branch were not significantly associated with homelessness.

Separation Characteristics

In the bivariate analyses (Table 2), active duty service with general/other than honorable discharge increased the odds of experiencing homelessness while older age at separation decreased the odds of experiencing homelessness. In the multivariate model, active duty with general discharge (AOR: 2.78) or other-than-honorable (AOR: 5.18) discharge were more likely to experience homelessness, compared to those who were honorably discharged after active duty service. Additionally, those between 30-39 years old when they separated from the military (AOR: 1.26) were more likely to experience homelessness compared to those younger than 30.

Mental, Physical Health and Social Factors

Screening positive for major depression/PTSD or endorsements of previous diagnoses of manic-depression, and schizophrenia were associated with homelessness in bivariate analyses. Similar bivariate associations were observed for alcohol problems, worse general health, and lack of social support, but not for other measures of physical health such as overweight or obese BMI and hepatitis diagnosis.

In the multivariate model, diagnosis for manic-depressive disorder (AOR: 1.71) and screening positive for PTSD, with or without depression, (PTSD only: AOR: 1.28; and both PTSD and depression: AOR: 1.44) were associated with homelessness. Those who reported lower levels of family or friend support were more likely to be homeless (Not at all: AOR: 2.12; A little bit: AOR: 2.55; Moderately: AOR: 1.35; compared to reference group reporting high levels of support).

Life Stressors

At the bivariate level, those deployed without combat experience were less likely to experience homelessness than non-deployed participants (OR: 0.83). Those who reported childhood traumas, disabling injury, financial problems, having moved residence more than

once, having an unplanned pregnancy, being physically or sexual assaulted, or sexual harassment were more likely to experience homelessness (compared to reporting not having experienced these events). In the multivariate model, having experienced a disabling injury (AOR: 1.24), physical assault (AOR: 1.47), and childhood trauma (AOR for every additional reported trauma: 1.25) were associated with the risk of homelessness.

Stratification by Sex

Effect estimates stratified by sex differed for the following factors: education attainment (interaction p-value = 0.06), military occupation (interaction p-value = 0.02), age at separation (interaction p-value = 0.05), BMI (interaction p-value = 0.09), and number of childhood traumatic exposures (interaction p-value = 0.03). Supplemental Table 1 lists effect estimates for bivariate and multivariate models stratified by sex for the five statistically significant interactions identified.

DISCUSSION

This longitudinal analysis represents the most comprehensive examination to date of military and demographic risk factors for homelessness among post-9/11 era veterans. Furthermore, the study was unique in that it was conducted in a representative sample of all service members - regardless of VA use - and assessed risk factors prior to the onset of homelessness. While several characteristics of interest had significant bivariate associations with self-disclosed homelessness, many of these observed associations were attenuated in multivariate models. Those characteristics with risks that remained elevated in the multivariate models reinforce three related conclusions. First, the direct links between aspects of military service and homelessness that are widely used to explain why veterans become homeless had less empirical support than in previous veteran studies. Second, characteristics that represent risk factors for veterans mirrored

the general population, namely the disproportionate homelessness risk faced by Black and low-income veterans. Finally, newly identified risk factors (i.e., sexual orientation) and contradictions with previous research (i.e., lower risk among female veterans) emerged as novel findings on homelessness risk among the post-9/11 veterans in this study.

Military-Specific Risk Factors

Our findings do not provide evidence that combat experience is a risk factor for homelessness. This study's two combat-related measures - combat deployment and combat specialist military occupation - showed neither bivariate nor multivariate relationships with homelessness. This adds to the body of research that does not corroborate the popular concept that homelessness among veterans often represents an adverse outcome rooted primarily in battlefield experience.

The one separation-related factor that had a strong association with homelessness risk in our findings was military misconduct as indicated by an OTH discharge. While received by only a small number of veterans in the study group (0.3 percent), OTH discharge was associated with a greater than fourfold risk for homelessness in the adjusted model. This finding, consistent with previously cited literature, reinforces that stigma related to such a discharge type and reduced access to VA and other veteran supports contributes toward a greater likelihood of homelessness. Targeted outreach to this small subgroup of veterans that disproportionately experiences homelessness may be an impactful approach for prevention.

While there were substantially higher levels of reported sexual assault and sexual trauma among the veterans reporting homelessness, these experiences were not associated with elevated risk in the multivariate model. These associations continued to lack significance in gender-specific analyses. However, having experienced physical assault and disabling illness or injury

were associated with increased odds of homelessness. Given the high rates of experienced violence within the homeless population overall to include the homeless veteran population, this disparity between types of traumatic events could be more a reflection of the traumatic experience of homelessness itself, rather than an expression of military-specific experiences.

Sex and Sexual Orientation

Compared to veterans who explicitly stated heterosexual orientation, those who indicated lesbian, gay or bisexual orientation and those who declined to indicate their sexual orientation were more likely to experience homelessness in both bivariate and multivariate models. To our knowledge, this is the first study to indicate that self-identification as gay, lesbian, or bisexual was associated with increased homelessness risk among veterans and reveals a post-service vulnerability for a group that has struggled against discrimination and stigma both within both military and civilian society.

Our findings do not support any particular vulnerability of female veterans to homelessness. This finding contradicts some recent research on female veterans experiencing homelessness (Byrne et al., 2013). Descriptive findings on Table 1 showed roughly equal proportions of women (around 31 percent) among the subgroups of veterans that did and did not report homelessness. In the multivariate model, women were less likely to experience homelessness, though we are unaware of any other study in the literature that has a similar finding. This indicates that assertions of how women are the “fastest growing demographic among homeless veterans” (Casura, 2017) would be due more to the increasing proportion of women among the general veteran population than to specific homelessness risk.

Race and Ethnicity, Socio-Economic Status, Mental Health and Other General Risk Factors

The elevated risk for homelessness among Black veterans corroborates the large body of research that documents the stark racial disparity found in the homeless population (Carter, 2011; Crone et al., 2021; Los Angeles Homeless Services Authority 2018; Moses, 2019) even following service in a military has historically preceded civilian society in integration and dismantling of barriers for career advancement among racial and ethnic minorities. Additionally, socio-economic status was consistently associated with increased homelessness risk across models. This factor was operationalized into two variables: pay grade and educational attainment. The observed association between military pay grade and experiencing homelessness suggests a higher vulnerability among those in lower ranks as they reenter a civilian society at an economic disadvantage. This vulnerability may be more acute among minority veterans as they are more disproportionately represented among the lower military ranks than in senior leadership positions (Department of Defense Board on Diversity and Inclusion, 2020). Similarly, lower educational attainment among veterans was associated with higher risk for homelessness.

Among the array of behavioral and mental health measures assessed in the study population, only diagnosis of manic depression and screening for depression/PTSD were statistically significant predictors in the multivariate model. Focusing on veterans with these risk factors could be beneficial for future prevention strategies. Because the MCS data has limited information on substance use, our findings related to this specific risk factor – one of the most significant and consistent risk factors in studies on risk factors veteran homelessness – are limited.

With respect to childhood traumatic experiences, those who experienced at least one type of childhood trauma were significantly more likely to experience later homelessness. Consistent with other research, the findings here show a significant, positive, and cumulative impact of

adverse childhood experiences and homelessness for veterans, a finding that builds upon prior research on adverse childhood experience among service members (Montgomery et al., 2013) and among people experiencing homelessness (Roos et al., 2013).

Finally, we observed that those with the lowest amount of perceived support from friends and family had higher risk for homelessness, consistent with general homelessness literature. These findings underscore the powerful mitigating effects of positive social and familial support systems on homelessness a risk for former service members (O'Connell & Rosenheck, 2016), and presumably for non-veterans as well.

Strengths and Limitations

This analysis had notable limitations. First, our measure of homelessness relied on one survey question with a follow-up question, with no additional means of validating this response. This prevented the authors from further exploring the circumstances of the homelessness episode(s) or assessing other forms of housing instability related to homelessness. Generally, the degree to which the Millennium Cohort Study is vulnerable to losing participants to follow up in situations of housing instability and other instances of extended institutional stays (i.e., hospitalizations, incarceration) is also unknown. This possible attrition bias may result in underrepresentation of homeless participants. Because the survey only inquired about the most recent homeless episode, there was limited ability to assess the duration between military separation and onset of homelessness.

Despite these limitations, among the main strengths was the longitudinal follow-up of participants with the initial ascertainment of exposures and experiences occurring during military service prior to homeless experiences. Additionally, the study was conducted among a large, representative sample of service members and as such has increased generalizability compared to

studies examining specific populations like VA enrollees (Gray et al., 2002) and included an expanded set of variables not previously studied in this population, such as sexual orientation. Notably, this population contains individuals who are not eligible for VA services, such as those with other than honorable discharges. Finally, the large sample size allowed for gender-stratified models to be run in which both the male and female models were sensitive to small effects.

Conclusion

This longitudinal analysis was the first of its kind to examine a wide range of military and non-military factors among post-9/11 veterans, including those that were not examined extensively in other veteran populations, but were found to be particularly vulnerable to homelessness, including sexual minorities and veterans with OTH discharges. As noted above, the available data delineated multiple aspects of military service, including deployment, combat and traumatic experiences. We are beginning to understand how these factors together relate to homelessness risk, but our understanding of their individual influence is still incomplete and an important target of future research.

Table 1: Descriptive statistics of demographic, military and separation factors, mental, physical and social health, and life experiences^a among Millennium Cohort Study participants by homeless status (n=49,323)

	Homeless ^b	
	No (n=48,252)	Yes (n=1,071)
Sex		
Male	33,471 (69.4)	737 (68.8)
Female	14,781 (30.6)	334 (31.2)
Race and Ethnicity		
Non-Hispanic Black	4,806 (10.0)	171 (16.0)
Non-Hispanic White	35,928 (74.5)	723 (67.5)
Other	7,486 (15.5)	177 (16.5)
Education		
High School degree or lower	6,630 (13.7)	245 (22.9)
Some college	17,422 (36.1)	485 (45.3)
Associate's or higher	24,195 (50.1)	341 (31.8)
Marital Status		
Single, never married	11,848 (24.6)	376 (35.1)
Currently Married	29,944 (62.1)	510 (47.6)
Divorced, separated, widowed	6,459 (13.4)	185 (17.3)
Sexual Orientation		
Heterosexual	45,170 (93.6)	933 (87.1)
Gay/Lesbian/Bisexual	1,735 (3.6)	83 (7.8)
Prefer not to answer	1,146 (2.4)	49 (4.6)
Service branch		
Army	22,418 (46.5)	541 (50.5)
Navy/Coast Guard	9,209 (19.1)	195 (18.2)
Marines	3,719 (7.7)	127 (11.9)
Air Force	12,906 (26.8)	208 (19.4)
Occupation		
Other	17,047 (35.3)	390 (36.4)
Combat specialist	7,204 (14.9)	169 (15.8)
Healthcare	5,301 (11.0)	94 (8.8)
Admin and supply	13,773 (28.5)	257 (24.0)
Grade		
E1-E4	14,660 (30.4)	573 (53.5)
E5-E9	22,221 (46.1)	398 (37.2)
Officers	11,371 (23.6)	100 (9.3)
Follow up time (continuous) Mean, SD	6.4 (3.6)	6.2 (3.6)
Discharge status/component		
AD honorable	23,363 (48.4)	531 (49.6)
AD General	375 (0.8)	39 (3.6)
AD Other than honorable	168 (0.3)	31 (2.9)

Reserve/National Guard	21,738 (45.1)	441 (41.2)
Age at separation		
<30	14,949 (31.0)	473 (44.2)
30-39	10,292 (21.3)	288 (26.9)
40 or more	23,011 (47.7)	310 (28.9)
PTSD/Depression screening ^c		
Neither	42,429 (87.9)	758 (70.8)
Depression only	841 (1.7)	37 (3.5)
PTSD only	1,973 (4.1)	99 (9.2)
PTSD and depression	1,826 (3.8)	134 (12.5)
Alcohol problems ^d		
No	32,746 (67.9)	635 (59.3)
Yes	5,619 (11.7)	216 (20.2)
Diagnosis of manic-depression		
No	47,215 (97.9)	1,017 (95.0)
Yes	510 (1.1)	39 (3.6)
Diagnosis of schizophrenia		
No	47,475 (98.4)	1,040 (97.1)
Yes	264 (0.6)	12 (1.1)
General health ^e		
Poor	700 (1.5)	48 (4.5)
Fair	5,630 (11.7)	203 (19.0)
Good	17,481 (36.2)	422 (39.4)
Very good	17,071 (35.4)	281 (26.2)
Excellent	6,611 (13.7)	92 (8.6)
Diagnosis of hepatitis		
No	46,539 (96.5)	1,021 (95.3)
Yes	1,097 (2.3)	28 (2.6)
BMI		
Under/normal weight	15,776 (32.7)	354 (33.1)
Over weight	23,332 (48.4)	499 (46.6)
Obese	8,040 (16.7)	198 (18.5)
Friends and family supportiveness ^f		
Not at all	293 (0.6)	19 (1.8)
A little bit	1,279 (2.7)	77 (7.2)
Moderately	2,257 (4.7)	70 (6.5)
Quite a bit	4,528 (9.4)	76 (7.1)
Extremely	3,584 (7.4)	58 (5.4)
Deployment and combat ^g		
Not deployed	14,472 (30.0)	371 (34.6)
Deployed without combat	3,127 (6.5)	60 (5.6)
Deployed with combat	9,459 (19.6)	209 (19.5)

Number of childhood traumatic experiences ^h (continuous) Mean, SD	0.8 (1.1)	1.4 (1.4)
Experienced disabling illness/injury ⁱ		
No	41,390 (85.8)	845 (78.9)
Yes	6,326 (13.1)	212 (19.8)
Experienced financial problems ⁱ		
No	41,490 (86.0)	855 (79.8)
Yes	6,331 (13.1)	205 (19.1)
Moved more than once ⁱ		
No	8,167 (16.9)	122 (11.4)
Yes	13,810 (28.6)	352 (32.9)
Had an unplanned pregnancy ⁱ		
No	23,485 (48.7)	525 (49.0)
Yes	3,194 (6.6)	102 (9.5)
Experienced physical assault ⁱ		
No	43,553 (90.3)	848 (79.2)
Yes	4,179 (8.7)	205 (19.1)
Experienced sexual assault ⁱ		
No	43,855 (90.9)	907 (84.7)
Yes	3,952 (8.2)	154 (14.4)
Experienced sexual harassment ⁱ		
No	42,194 (87.5)	868 (81.1)
Yes	5,630 (11.7)	191 (17.8)
Percent's may not equal 100 because of missing values.		
^a All were assessed items were assessed at the survey completed before separating from the military except for sexual orientation, childhood trauma, and homelessness which were assessed at the 2014-2016 survey. ^b Self-reported homelessness in response to "Have you found it necessary to sleep in a shelter, on the streets, or in another non-residential setting because of having no other place to stay? (Please refer to instances during or after military service time)". ^c Depression was assessed using the Patient Health Questionnaire-8 and posttraumatic stress disorder (PTSD) was assessed using the PTSD Checklist–Civilian Version. ^d Alcohol problems was assessed using the PHQ alcohol misuse subscale. ^e General health Self-reported on an item from the Veterans Rand 36-Item Health Survey: "In general, would you say your health is:" ^f Friends and family supportiveness determined with the question "In the last 4 weeks, how much have your family or friends supported you?" ^g Deployment, if deployment date was within 3 years of Time 1, was determined using administrative date information; combat was assessed by 5 combat-related items. ^h Childhood traumatic exposures (neglect, physical abuse, sexual abuse, and verbal abuse) were assessed using 4 modified items from the Juvenile Victimization Questionnaire Adverse Childhood Experience Questionnaire and were summed. ⁱ Disabling injury, financial problems, moved more than once, unplanned pregnancy, physical assault, sexual assault, and sexual harassment were assessed with a modified version from the Holmes and Rahe Stress Scale.		

Table 2: Unadjusted and adjusted odds ratios between demographic, military and separation factors, mental, physical and social health, and life experiences^a and homelessness^b among Millennium Cohort Study participants (n=49,323)

	Bivariate Model	Multivariate Model
Sex (Ref: Male)	1.03 [0.96, 1.10]	0.79 [0.66, 0.94]
Race/Ethnicity (Ref: Non-Hispanic White)		
Non-Hispanic Black	1.77 [1.49, 2.09]	1.74 [1.45, 2.08]
Other	1.17 [1.00, 1.39]	1.15 [0.97, 1.37]
Education (Ref: Associate's or higher)		
High School degree or lower	2.62 [2.22, 3.10]	1.43 [1.17, 1.76]
Some college	1.97 [1.72, 2.27]	1.18 [1.00, 1.40]
Marital Status (Ref: Single, never married)		
Currently Married	0.54 [0.47, 0.61]	0.87 [0.74, 1.02]
Divorced, separated, widowed	0.90 [0.75, 1.08]	0.98 [0.80, 1.19]
Sexual Orientation (Ref: Heterosexual)		
Gay/Lesbian/Bisexual	2.32 [1.84, 2.91]	1.57 [1.23, 2.01]
Prefer not to answer	2.07 [1.55, 2.78]	1.64 [1.20, 2.23]
Service branch (Ref: Air Force)		
Army	1.50 [1.37, 1.63]	0.94 [0.79, 1.13]
Navy/Coast Guard	1.31 [1.19, 1.45]	0.94 [0.76, 1.15]
Marines	2.12 [1.89, 2.38]	1.19 [0.99, 1.42]
Occupation (Ref: other)		
Combat specialist	1.02 [0.86, 1.21]	1.19 [0.99, 1.42]
Healthcare	0.83 [0.67, 1.01]	1.01 [0.81, 1.26]
Admin and supply	0.85 [0.73, 0.98]	0.88 [0.75, 1.02]
Grade (ref: Officers)		
E1-E4	4.44 [3.99, 4.96]	2.24 [1.69, 2.95]
E5-E9	2.04 [1.82, 2.28]	1.43 [1.11, 1.83]
Follow up time		
1 year increase	0.98 [0.97, 1.01]	0.99 [0.98, 1.01]
Discharge status/component (Ref: AD honorable)		
AD General	4.97 [3.51, 7.03]	2.78 [1.92, 4.02]
AD Other than honorable	10.15 [6.83, 15.09]	5.18 [3.35, 8.01]
Reserve/National Guard	0.95 [0.84, 1.08]	1.00 [0.86, 1.15]
Age at separation (ref: <30)		
30-39	0.88 [0.82, 0.95]	1.26 [1.05, 1.50]
40 or more	0.43 [0.40, 0.45]	0.95 [0.75, 1.20]
PTSD/Depression screening ^c (ref: Neither)		
Depression only	2.57 [1.85, 3.58]	1.26 [0.89, 1.80]
PTSD only	2.77 [2.25, 3.41]	1.28 [1.02, 1.62]
PTSD and depression	4.04 [3.35, 4.86]	1.44 [1.15, 1.82]

Alcohol problems ^d (ref: No)	1.94 [1.66, 2.26]	1.10 [0.93, 1.30]
Diagnosis of manic-depression (ref: No)	3.46 [2.48, 4.81]	1.71 [1.14, 2.54]
Diagnosis of schizophrenia (ref: No)	2.14 [1.22, 3.73]	0.84 [0.43, 1.64]
General Health ^e (ref: excellent)		
Poor	4.98 [3.51, 7.07]	1.41 [0.94, 2.11]
Fair	2.57 [2.00, 3.29]	1.07 [0.81, 1.42]
Good	1.73 [1.38, 2.17]	1.05 [0.82, 1.34]
Very good	1.18 [0.93, 1.50]	0.98 [0.77, 1.25]
Diagnosis of hepatitis (ref: No)	1.20 [0.82, 1.74]	1.23 [0.82, 1.84]
BMI (ref: Under/normal weight)		
Overweight	0.96 [0.83, 1.10]	1.05 [0.91, 1.22]
Obese	1.10 [0.92, 1.31]	1.03 [0.85, 1.25]
Friends and family supportiveness ^f (ref: Extremely)		
Not at all	4.27 [3.10, 5.88]	2.12 [1.48, 3.04]
A little bit	4.06 [3.25, 5.09]	2.55 [1.99, 3.26]
Moderately	1.71 [1.34, 2.19]	1.35 [1.05, 1.73]
Quite a bit	0.99 [0.79, 1.23]	0.94 [0.75, 1.18]
Deployment and combat ^g (ref: Not deployed)		
Deployed without combat	0.83 [0.73, 0.93]	1.09 [0.86, 1.39]
Deployed with combat	0.98 [0.92, 1.06]	0.94 [0.81, 1.08]
Number of childhood traumatic exposures ^h (0-4)	1.48 [1.41, 1.55]	1.25 [1.19, 1.32]
Experienced disabling illness/injury ⁱ (ref: No)	1.66 [1.43, 1.94]	1.24 [1.04, 1.46]
Experienced financial problems ⁱ (ref: No)	1.58 [1.36, 1.85]	1.16 [0.98, 1.38]
Moved more than once ⁱ (ref: No)	1.73 [1.45, 2.06]	1.11 [0.88, 1.40]
Had an unplanned pregnancy ⁱ (ref: No)	1.55 [1.25, 1.92]	0.83 [0.65, 1.06]
Experienced physical assault ⁱ (ref: No)	2.56 [2.19, 2.99]	1.47 [1.23, 1.75]
Experienced sexual assault ⁱ (ref: No)	1.88 [1.58, 2.23]	1.01 [0.80, 1.26]
Experienced sexual harassment ⁱ (ref: No)	1.66 [1.42, 1.94]	1.10 [0.89, 1.34]
^a All were assessed items were assessed at the survey completed before separating from the military except for sexual orientation, childhood trauma, and homelessness which were assessed at the 2014-2016 survey.		
^b Self-reported homelessness in response to “Have you found it necessary to sleep in a shelter, on the streets, or in another non-residential setting because of having no other place to stay? (Please refer to instances during or after military service time)”.		
^c Depression was assessed using the Patient Health Questionnaire-8 and posttraumatic stress disorder (PTSD) was assessed using the PTSD Checklist–Civilian Version.		
^d Alcohol problems was assessed using the PHQ alcohol misuse subscale.		
^e General health Self-reported on an item from the Veterans Rand 36-Item Health Survey: “In general, would you say your health is:”		
^f Friends and family supportiveness determined with the question “In the last 4 weeks, how much have your family or friends supported you?”		
^g Deployment, if deployment date was within 3 years of Time 1, was determined using administrative date information; combat was assessed by 5 combat-related items.		

^hChildhood traumatic exposures (neglect, physical abuse, sexual abuse, and verbal abuse) were assessed using 4 modified items from the Juvenile Victimization Questionnaire Adverse Childhood Experience Questionnaire and were summed.

ⁱDisabling injury, financial problems, moved more than once, unplanned pregnancy, physical assault, sexual assault, and sexual harassment were assessed with a modified version from the Holmes and Rahe Stress Scale.

Supplemental Table 1: Unadjusted and adjusted odds ratios between demographic, military and separation factors, mental health, and life experiences^a and homelessness^b among Millennium Cohort Study participants, stratified by gender (men=34,208 and women=15,115)				
	Bivariate		Multivariate Model	
	Men	Women	Men	Women
Education (ref: Associate's or higher)				
High school degree or lower	2.47 [2.03, 3.01]	3.10 [2.27, 4.23]	1.26 [0.99, 1.60]	2.05 [1.39, 3.01]
Some college	1.87 [1.57, 2.21]	2.23 [1.74, 2.85]	1.05 [0.86, 1.28]	1.59 [1.18, 2.15]
Occupation (ref: other)				
Combat specialist	0.98 [0.82, 1.19]	1.38 [0.90, 2.12]	1.10 [0.90, 1.35]	1.54 [0.99, 2.42]
Healthcare	1.06 [0.80, 1.39]	0.65 [0.47, 0.91]	1.20 [0.90, 1.60]	0.87 [0.62, 1.22]
Admin and supply	0.75 [0.63, 0.91]	0.98 [0.76, 1.26]	0.77 [0.64, 0.94]	1.07 [0.82, 1.39]
Age at separation (ref: <30)				
30-39	0.89 [0.81, 0.98]	0.82 [0.71, 0.94]	1.26 [1.01, 1.56]	1.23 [0.89, 1.69]
40 or more	0.36 [0.33, 0.39]	0.63 [0.55, 0.72]	0.83 [0.62, 1.10]	1.30 [0.87, 1.94]
BMI (ref: Under/Normal)				
Overweight	0.83 [0.70, 0.99]	1.21 [0.95, 1.54]	1.02 [0.85, 1.22]	1.12 [0.87, 1.44]
Obese	0.89 [0.72, 1.11]	1.72 [1.26, 2.34]	0.90 [0.71, 1.14]	1.44 [1.03, 2.02]
Number of childhood traumatic exposures ^c (0-4; by 1 unit)	1.56 [1.47, 1.65]	1.41 [1.30, 1.52]	1.30 [1.22, 1.38]	1.16 [1.06, 1.26]
^a All were assessed items were assessed at the survey completed before separating from the military except for sexual orientation, childhood trauma, and homelessness which were assessed at the 2014-2016 survey.				
^b Self-reported homelessness in response to "Have you found it necessary to sleep in a shelter, on the streets, or in another non-residential setting because of having no other place to stay? (Please refer to instances during or after military service time)".				
^c Childhood traumatic exposures (neglect, physical abuse, sexual abuse, and verbal abuse) were assessed using 4 modified items from the Juvenile Victimization Questionnaire Adverse Childhood Experience Questionnaire and were summed.				

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Conclusion

For most veterans living on the streets, the causal lines connecting health and homelessness are overlapping and complicated. In some cases, health issues can magnify factors that later lead to homelessness. In other cases, homelessness exacerbates the risk of developing health issues and leads to worsened health outcomes when underlying issues go untreated. Irrespective of the pathway, homelessness and poor health are fundamentally linked.

Safe and stable housing serves as a crucial social determinant of health. Applying a historical lens, we see how the VA's network of health services is ideally situated to address both health and homelessness. This institutional connection between health and housing scaffolds programs serving homeless veterans, especially those most at risk of developing serious health issues. However, tensions within VA systems result in conflicting priorities for services. This conflict can lead to continued homelessness and untreated or undertreated health issues among those who are homeless or most at risk of homelessness. This current structure has real implications for veterans' well-being and longevity.

Research on health and homelessness shows that efforts to effectively end and prevent homelessness among veterans require interventions that target both health and homelessness. Wherever feasible, these interventions should be coordinated to minimize access barriers and maximize stability over the long term. Programs addressing housing and health simultaneously do exist – such as directly through the Health Care for Homeless Veterans (HCHV) program or indirectly through the Grant and Per Diem (GPD) or Supportive Services for Veteran Families (SSVF) programs. However, the existing system lacks a systematic, patient-centered structure to adequately account for social determinants of health. It also favors piecemeal research on

individual programs or niche topics over integrated research on systems of care. These factors limit the application of learning across other programs and the country.

These papers aimed to inform researchers and program developers on how best to assess homelessness and its impact on health among service members. Our goal was to clarify the picture of homelessness across the timeline, with a particular focus on future risk factors in the active duty stage and on contemporary risk factors in the veteran stage. We built upon the existing foundation of veteran homelessness research, using the lens of social determinants of health.

This effort included a closer look at homeless veteran mental health, with a particular focus on PTSD and trauma treatment. It also included reviewing barriers to health access, especially for veterans who are members of minority groups overrepresented in the homeless veteran population and historically undertreated in the mainstream and veteran health systems. Finally, it identified the role of select pre-service factors in later homelessness risk, as well as confirmed and identified new military and general active duty factors that are associated with later homelessness risk.

Some of what we learned was studied for the first time: our studies found that sexual orientation is significantly associated with homelessness among veterans. We also documented the paucity of research on health care access barriers faced by African American homeless veterans. This restricted access includes within specialty mental health services treating trauma.

Our studies added confirmation to foundational knowledge about homelessness risk. For example, our studies identified homelessness risk associated with early childhood experiences, “other than honorable” discharge, and identifying as African American. These risk factors were established by foundational studies in the field and have held largely consistent over time. The

nuance we added is often in interpretation and focus, in particular as it applies to the disproportionate prevalence and risk of homelessness experienced by African American veterans. We challenged this perpetuation as a function of systems with institutionalized and systemic racism that have failed as generations of veterans have moved through them. We also challenged the foundational research itself, which often failed to draw appropriate attention to the racial disparities elucidated by referenced studies.

In other cases, we challenged established dogma in the field and in the popular media. This challenge applied to findings on sex/gender and combat/deployment experiences. Being female as a risk factor for homelessness is commonly cited across news articles and speeches regarding veteran homelessness, but our studies failed to find substantive support for these claims. Similarly, combat exposure, deployment history, and PTSD diagnosis are often conflated in homelessness research, muddying the picture of how military-specific experiences are related to later homelessness. We stop short of refuting prior claims, but put forward the request for larger, more representative studies - such as those conducted using the Millennium Cohort Study data - to find concrete ways to better operationalize combat experiences and focus in a more targeted way on the experiences of female veterans.

We wrap up this discussion with relevant areas of future study offering high impact for systems of care and the veterans they serve. Suggestions include adjustments to existing datasets to ask and answer more comprehensive questions about homeless prevalence among youth who later serve in the military and among active duty personnel, risk factors for homelessness across the timeline, and health access for veterans experiencing homelessness. Throughout, we also offer suggestions for improving the research base to better account for and understand the health care experiences of minority veterans experiencing and at risk of homelessness.

Adding to the Picture: What We Learned

We found that sexual orientation is significantly associated with a higher risk of homelessness in a wide-reaching study representative of veterans in America. Our Millennium Cohort Study (MCS) study found that, compared to veterans who explicitly stated their heterosexual orientation, those who indicated lesbian, gay or bisexual sexual orientation and those who declined to indicate their sexual orientation were more likely to experience homelessness across all models. This is the first study to indicate that self-identification as gay, lesbian, or bisexual was associated with increased homelessness risk among veterans. It also uncovered a significant vulnerability after transition out of the military for members of a marginalized group who have already struggled against discrimination and stigma within military and civilian society.

The relationship between sexual orientation and homelessness has never been studied within a veteran population. Our findings mirror what we see in the general literature but leave unanswered several other important questions: for those who seek out military service as a pathway out of a difficult home life and into a new future, does active duty service actually help, or just provide a pause on homelessness? What impact does sexuality-based discrimination and harassment during military service have on post-service homelessness risk? Is there a connection between adverse early life experiences for this population and later homelessness, and does military service serve as an aggravating factor, a short term pause, or a protective factor? Currently, we can only guess about the why and how.

We also found that homeless veterans face significant health care access barriers similar to other individuals experiencing homelessness. These barriers to access disproportionately impact African American veterans experiencing homelessness, but existing research does a poor

job of adequately capturing and explaining these discrepancies. In our second manuscript, we aimed to identify the barriers to health service access faced by homeless veterans, and how those barriers differ from barriers to health care faced by the general population.

Penchansky and Thomas' Access Model was applied to review the extant literature on homeless veterans and the health service systems that serve them, with a particular focus on African American veterans experiencing homelessness. As noted in the manuscript, the Access Model they proposed focused on the fit between consumer and health service and included five domains of access – accessibility, availability, affordability, accommodation, and acceptability. In the general population, affordability and availability barriers tend to be the most robust due to insurance gaps, expensive consequences for those with health crises who do not have insurance, limited prevention focus due to lack of universal health care services, and limited health services in rural areas of America, among other factors. The other three categories of access can also build insurmountable walls between consumer and service. Accessibility and accommodation in particular hold the most potential to negatively impact vulnerable populations, including those experiencing homelessness and minority populations with a historic distrust of and abuse by health care systems.

In our study, the main finding was the distressing paucity of research on African American veterans facing homelessness. This applied specifically to our review of health access barriers, but is a pervasive challenge in homelessness research and, as we learned, most biomedical research. Solid arguments can and have been made for the limited function race as a variable of study should play in research given its limitations. However, simply not including any race-related variables allows researchers to gloss over the reality that African American homeless veterans not only experience homelessness at strikingly high rates, but have more

barriers to accessing needed health and housing services. Better biological and sociologically constructed variables - including the input of community members throughout the process - is a worthwhile and needed goal, and in the meantime more should be done to demand that researchers using government data sets of veterans experiencing or at risk of homelessness understand how African American veterans fare compared to other veterans.

Another major finding was that across all five domains of access, homelessness meant larger, more numerous, and more complicated barriers to health care. For example, although veterans are assumed to have access to the largest health care system in the country, available health insurance did not necessarily translate into available health services for veterans experiencing homelessness. This gap in access is particularly notable among this population because they may not use the VA system out of ineligibility more frequently than housed veterans.

Similarly, access to VA homeless services also does not mean access to VHA: for some veterans, accessing VHA means understanding the mysterious black box of health services. Some veterans experiencing homelessness may face a “wrong door” for services that either diverts their care, limits their care, or leaves them in health service limbo. For example, veterans accessing care from Health Care for the Homeless (HCH) who self-identify as veterans may be referred away from community-based homeless health care and toward VA or veteran-specific community programs that may not have medical services included. Referred veterans may not be eligible for the VA health services to which they are referred, leaving them without timely medical care from either system.

Finally, we applied this health access focus to homeless veterans receiving trauma treatment through the VA. Among a subset of homeless veterans who were able to access this

specialized mental health treatment for trauma, treatment completion was strikingly low. The goal of this manuscript was to identify how well homeless veterans accessed and completed a variety of trauma-focused treatments, compared to their housed peers. We found that although homeless and housed veterans engaged in services comparably, homeless veterans were significantly less likely to complete treatment. However, this significance fell away once we limited the sample to just those veterans who had already engaged in treatment. Although this is a positive sign for homeless veterans who are significantly engaged in treatment and are treatment seeking, it still means that in this particular VA less than half of homeless veterans who were seeking trauma treatment completed it. Given that the original sample includes only veterans eligible for VHA services, and who are already treatment seeking, and who have navigated the system to find their way to specialty mental health care - the actual percentage of homeless veterans who complete treatment as compared to the total number of homeless veterans served by the catchment area is likely very, very low.

Confirming Foundational Knowledge (with Nuance)

Regarding future risk factors of the pre-service period, our studies supported foundational knowledge about the future homelessness risk resulting from adverse childhood experiences. This finding is consistent with other research on individuals in the general populations and on veterans who later experience homelessness. Given the limitations of the data set, we are unfortunately unable to quantify the quality or character of these adverse childhood experiences. In particular, the research could benefit from quantifying when children who later go on to serve in the military experience homelessness during childhood.

Regarding future risk of the during-service period, our studies found that having an Other Than Honorable (OTH) discharge status conferred an alarmingly high risk of homelessness.

Although only a small percentage of the same (0.3%) received an adverse discharge, for those in this group the risk of homelessness was four times greater than for those without an OTH discharge. We can assume that this discharge type compounds homelessness risk by limiting access to VA health care services, even if access to VA and HUD homelessness services are retained.

Finally, as referenced above, we continued to find an elevated risk for homelessness among African American veterans from the Post 9/11 era. These findings matched a large body of research on homelessness documenting stark racial disparities over the last forty years. While VA studies generally capture a treatment seeking, low income population, the Millennium Cohort Study data is not specifically tied to medical treatment and is generally more representative of veterans overall. As a result, we now have broader support for the assertion that African American Post 9/11 veterans are more likely to experience homelessness than non-African American veterans in this era. Again, we know the what, but we have a limited knowledge about the why or the how.

Challenging Findings

The narrative of homelessness risk for female veterans is a pervasive and powerful one, but it may not be a closed case across all veteran populations. In our study of Post 9/11 veterans, we found that female veterans were actually *less* likely to experience homelessness than male veterans. Our study included a more representative sample of veterans, given the non-reliance on VA data sources; therefore this divergent finding could be partially explained by female veterans' reticence to engage in VA systems of care. The overall number of homeless female veterans may be increasing, but this is likely due to increased numbers in the military overall. Given that our study represents one finding, additional study of this population using wider data

sets is needed to clarify the homelessness risk picture for female veterans. We know that female veterans experience homelessness differently - historically, we have seen that they may engage more with community systems where their veteran status may not be captured, or they may couch surf or rely on unsafe or unstable housing situations. However, evolving community systems aim to capture demographic details of all individuals experiencing homelessness, local programs are becoming more flexible to meet the needs of female veterans, and expanded definitions of homelessness can encompass those experiencing homelessness who may not ever sleep on the streets. Going forward, research should look at differences in risk between male and female veterans in both veteran and non-veteran systems.

Our Millenium Cohort Study manuscript found that, among Post 9/11 veterans, combat experience was not a risk factor for homelessness. Our two combat-related measures (combat deployment and combat specialist military occupation) had no significant relationship with homelessness across all of our models. This adds some refutation to the popular narrative of combat as a main pathway to homelessness. Instead, most of the factors impacting homelessness risk for this Post 9/11 group mirrored what we see in the general population showed neither bivariate nor multivariate relationships with homelessness.

Filling in the Puzzle: Where we go from here

Prevention advocates describe how a functional end to homelessness means promoting outflow (i.e., moving veterans into housing) while also stopping inflow (i.e., stopping the fall into homelessness). This requires knowing which specific individuals are experiencing homelessness, which factors involve the greatest risk for homelessness, and what individual and systemic access barriers exist. While some homelessness risk factors emerge in childhood (i.e., before service), others emerge or occur during military service (i.e., during service) and others

may emerge after the individual transitions out of the military (i.e., after service). To complicate the picture further, certain experiences can be associated with contemporary and/or future risk. Being armed with that knowledge allows program developers to design better systems to truly meet veterans where they are.

Unfortunately, although some knowledge exists of homelessness prevalence among the veteran population, existing data is limited to either VA-only data sources or self-report measures with limited rigor. At the most basic level, knowledge of homelessness prevalence among service members across their lifespan is severely limited. Although the majority of homelessness research has focused on veteran homelessness prevalence, homelessness can also occur before and during service. Unfortunately, we have no data on homelessness prevalence in these segments. Because homelessness prevalence among active duty service members has not been measured to date, researchers and program developers cannot begin to explore contemporary risk factors or consider interventions.

Similarly, nearly no data exists on how earlier episodes of homelessness - to include homelessness before or during military service - is related to later homelessness. This could be addressed by adding a question to the Millennium Cohort Study, or dismantling the adverse childhood events components. The next level would be to draw the connection across time points – do those who experience homelessness in childhood/early adulthood experience during active duty? Similarly, do first episodes occur during active duty status? If so, when, for how long, and where?

It is possible that factors beyond what are currently measured impact risk. Existing research sheds minimal light on homelessness risk during these three time periods. Additionally, no study effectively parses apart the distinct impacts of combat exposure, deployment

experience, and PTSD on homelessness risk. Research over the last 25 years has unfortunately missed a crucial part of the big picture: what in-service experiences impact homelessness risk for the newest generation of veterans?

Given the close relationship between health service access and homelessness, and the disproportionate experience of homelessness among African-American veterans, health access must be more thoroughly explored among this group. Moving forward, research and program development would likely benefit from including the opinions and perspectives of the veteran community, in particular minority veterans experiencing homelessness. This effort should include both qualitative and quantitative study, as well as African American veteran-only and comparison research.

Much has been done to improve health care access for the homeless veteran population, but gaps in fit between the consumer and health service providers continue. The best designed systems and services may not be sufficient to address the needs of this underserved population. Within and beyond VA, those charged with planning future health care services for these veterans need more detailed information about current and future health service access. Increasing access is both possible and within reach, and in some cases within current funding and institutional systems. The challenge, therefore, is for policy makers and advocates to identify discrete points of intervention informed by research that address specific dimensions or that improve access across dimensions.

Taken together, we have more clarity on risk factors during the veteran stage such as sexual orientation, race, sex, and rank. We also have more clarity on early developmental factors as they impact veterans such as childhood traumas. We have some additional information on treatment outcomes, including engagement with the healthcare system. We also have more

clarity on the state of the research, especially as it applies to African-American veterans experiencing homelessness. However, research gaps continue regarding homelessness prevalence and risk across other sections of veterans' lifespans.

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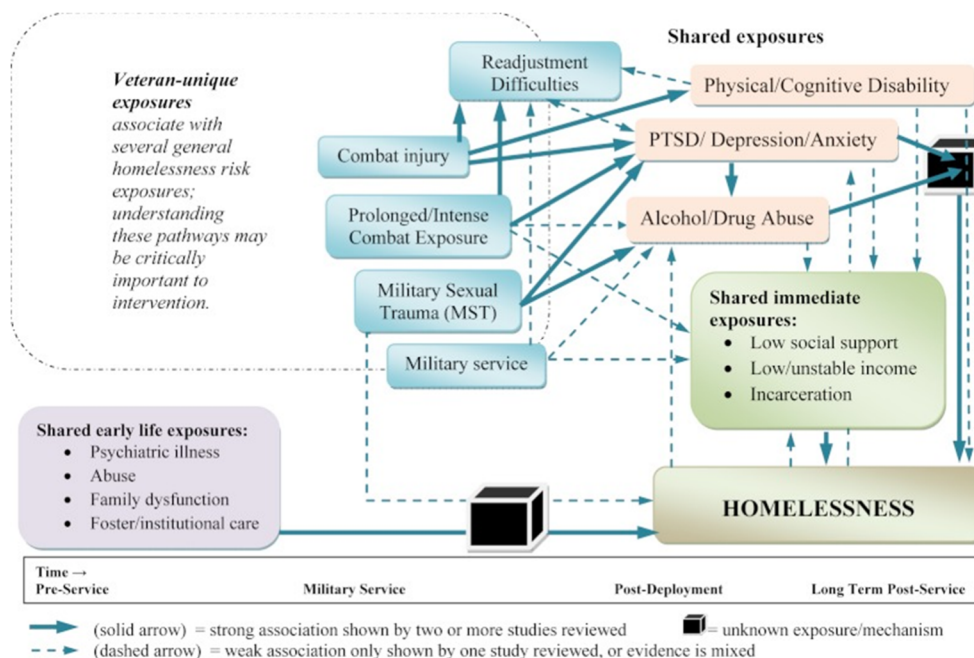
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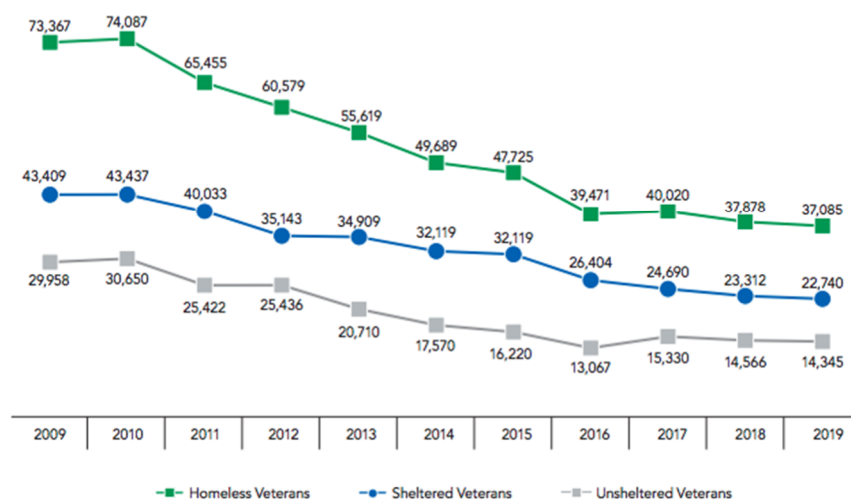
Appendix A



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Appendix B

EXHIBIT 5.1: PIT Estimates of Homeless Veterans
By Sheltered Status, 2009–2019



Reference: Henry, M., Watt, R., Mahathey, A., Ouellette, J., & Sitler, A. (2020). *The 2019 Annual Homeless Assessment Report (AHAR) to Congress: Part one*. The U.S. Department of Housing and Urban Development's Office of Community Development and Planning.

Appendix C

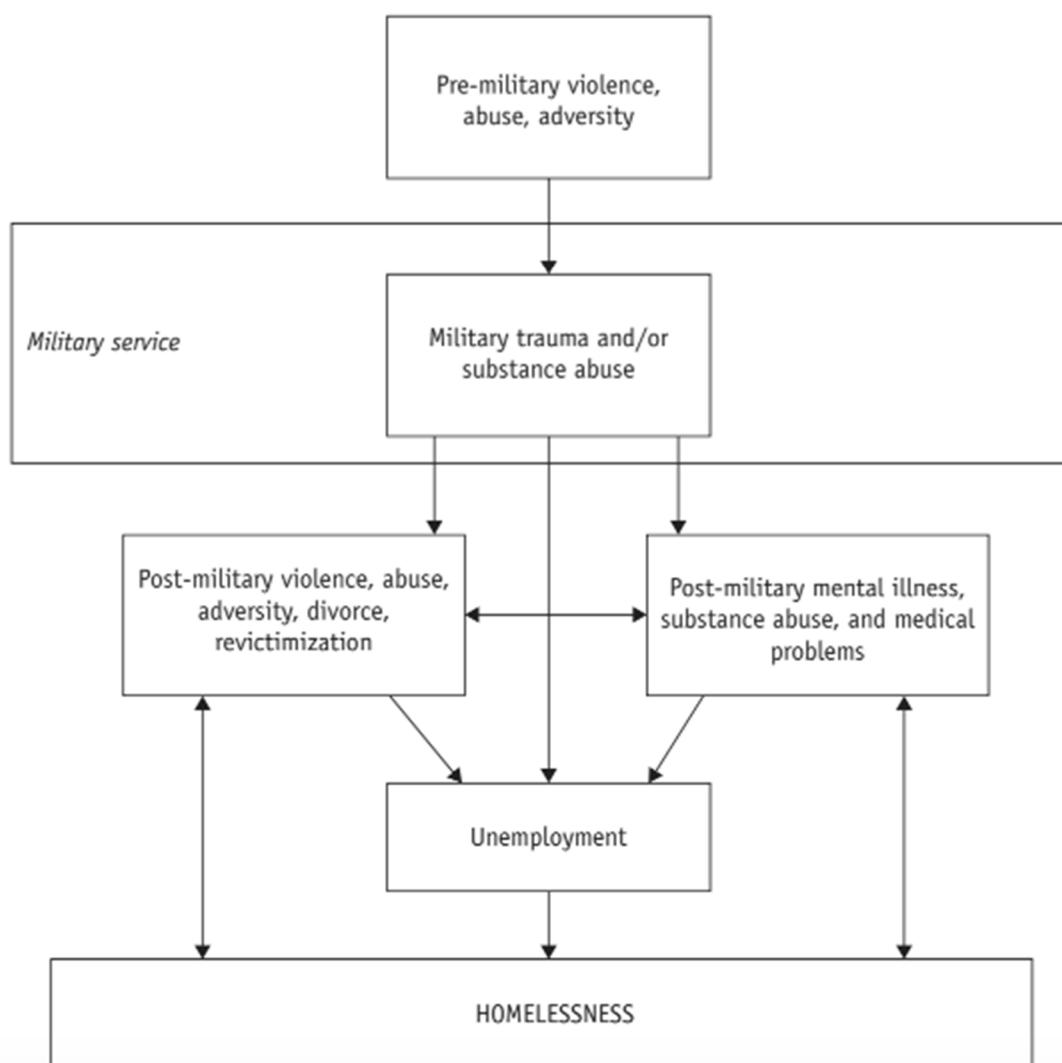


Figure 3.2 Web of vulnerability into homelessness for women Veterans. Adapted from Hamilton AB, Poza I, Washington DL. “Homelessness and trauma go hand-in-hand”: Pathways to homelessness among women Veterans. *Women’s Health Issues*. 2011;21(suppl):S203–S209.

From: Armed Forces and Society <onbehalf@manuscriptcentral.com>
Sent: Monday, February 14, 2022 12:51 PM
To: Metraux, Stephen <metraux@udel.edu>
Cc: afsjournal@txstate.edu
Subject: AF&S - Decision on Manuscript ID AFS-21-243

14-Feb-2022

Dear Dr. Metraux:

Manuscript ID AFS-21-243 entitled "Risk Factors for Homelessness among Post-9/11 Era Veterans" which you submitted to the Armed Forces and Society, has been reviewed. The comments of the reviewer(s) are included at the bottom of this e-mail.

Three reviewers examined your paper. Two recommended a major revision a third recommended a minor revision. I believe the recommendations are doable. One of the reviewer's who recommended a major revision asked to dig further into a question he/she had. See our response in the letter below in all caps.

Based on this evaluation, I cannot accept the manuscript for publication in Armed Forces & Society at this time, but I offer you the opportunity to revise and resubmit the manuscript for further consideration. I ask that a revision be resubmitted within 12 months; after this period, your manuscript will be automatically archived.

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I recommend that you critically read and reflect upon the Reviewers' comments below and in the Decision Letter. You should respond to each and every comment in the space provided in ScholarOne OR upload a MS Word document addressing the reviewers' comments separate from your manuscript. Do not include authors' names in your response.

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Once again, thank you for submitting your manuscript to Armed Forces and Society. I look forward to receiving your revision.

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Regents' Professor
Texas State University