

Sexual orientation and sexual functioning in midlife women veterans

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Abstract

Objective: Midlife women experience menopause- and aging-related health changes that may impact sexual functioning. Research has historically relied on heteronormative constructs of sexuality, and little is known about the experiences of sexual minority women (SMW) during menopause. We therefore examined whether indices of sexual function differed between SMW and heterosexual midlife women Veterans.

Methods: Data were drawn from a cross-sectional survey designed to examine midlife women Veterans' experiences of menopause and aging. Participants self-reported sexual orientation, sociodemographic characteristics, vaginal symptoms, past-month engagement in sexual activity, and pain with sexual activity with structured-item responses. Sexual function was assessed with validated questionnaires. Logistic and linear regression models examined group differences adjusted for age, education, race, menopause status, and body mass index.

Results: In this sample (n = 232, mean age = 56.0, SD = 5.14), 25% self-identified as SMW. Relative to heterosexual women, SMW were more likely to endorse recent sexual activity (odds ratio [OR], 2.20; 95% confidence interval [CI], 1.13-4.30), less likely to report pain during sex (OR, 0.07; 95% CI, 0.16-0.32), less likely to report past-month vaginal symptoms (OR, 0.33; 95% CI, 0.17-0.66), and endorsed lower impact of vaginal symptoms on sexual function ($\beta = -0.24$; 95% CI, -0.97 to -0.26). Both groups reported high levels of distress related to sexual dysfunction (sample mean = 19.9, SD = 8.0).

Conclusions: Midlife SMW Veterans reported better sexual functioning and less impact of vaginal symptoms compared with heterosexual peers. Despite this, both groups reported high levels of distress related to sexual function.

Key Words: Genitourinary, Lesbian, Same-sex relationships, Sexual function, Sexual orientation, Vaginal symptoms.

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Women Veterans comprise a diverse population with a wide range of identities. The number of women enrolled in health care through the Veterans Health Administration (VHA) has more than doubled over the last two decades, with

22% of US women Veterans using VHA services in 2015 in comparison to 10% in 2000.¹ Previous reports have shown that gay, lesbian, and bisexual women are overrepresented in the US military compared with civilian populations, and estimates suggest that VHA may serve more than 250,000 Veterans with minoritized gender and/or sexual identities.² “Sexual minority women” (SMW) is a term encompassing a range of sexual orientations for women with same-sexual attractions and/or partners, including, but not limited to, bisexual, queer, and lesbian women. Prior research has identified SMW, who may experience disproportionate stress related to their minoritized sexual identity, as an at-risk population for experiencing mental and physical health disparities.³⁻⁹ In comparison to heterosexual women and/or non-Veteran women, SMW Veterans may be at significantly higher risk of developing negative health outcomes across the lifespan, such as poor physical health, smoking, excessive drinking, mental distress, and increased risk of mortality.^{5,10-12}

Over half of the women served by the VHA are in midlife, a term that typically encompasses ages ranging in the 40s to 60s, and a critical window for health changes related to the menopause transition.¹ The menopause transition can be a disruptive period, often characterized by both physical (eg, vaginal dryness, hot flashes) and psychological (eg, body dissatisfaction, sexual dissatisfaction) symptoms related to the physiological and sociocultural changes of menopause and aging. Unaddressed menopause symptoms may have serious negative implications for health care costs, impact on mental and physical health, and daily function.^{13,14} Among the most common menopause symptoms are genitourinary symptoms, including vaginal dryness, irritation, and/or itching. These symptoms often emerge in the menopause transition and can be chronic and progressive, with lasting implications for quality of life and sexual well-being.^{13,15} An estimated 25%-85% of post-menopausal women report challenges with sexual function, such as pain with sex, difficulty with desire or libido, and distress concerning their sexual response.¹⁶ Additional biological, medical, psychosocial, and interpersonal

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factors that affect sexual function may be more prevalent in midlife and the menopause transition, making sexual well-being a core aspect of health in aging.¹⁷

Some health behaviors and risk factors that have been shown to be associated with more severe menopause symptoms (eg, cigarette smoking, trauma exposure, obesity) are more common among SMW than heterosexual women. These exposures may contribute to a higher menopause symptom burden in SMW, though these relationships have not yet been directly tested.¹⁸ In contrast, sexual minority-specific theories suggest that SMW may experience unique forms of resilience that could mitigate symptoms associated with menopause; however, these resilience pathways have not been empirically and systematically explored.^{18,19} In terms of sexual health, there is evidence that SMW report similar rates of genitourinary or vaginal discomfort with sexual activity; however, there are also many studies that report that lesbian women participate in a wide range of sexual activities, including vaginal and anal penetrative sex, but also orogenital sex, masturbation, and vibrator use, which may influence to what degree vaginal symptoms impact sexual functioning between SMW partners.²⁰ It may therefore be particularly important to understand the multiple factors that can decrease sexual satisfaction and sexual functioning during menopause among women of different sexual orientations. Overall, there is a lack of systematic research investigating menopause- and aging-related experiences for SMW, and even more limited information about sexual health during this life stage. Further, no prior research has examined menopause experiences for women with intersectional identities as sexual minorities and Veterans.

To address this knowledge gap, we examined whether indices of sexual functioning and related menopause symptoms differed between SMW and heterosexual women in a sample of midlife adult women Veterans. We hypothesized that SMW Veterans would report more sexual dysfunction and related menopause symptoms compared with heterosexual women Veterans.

METHODS

Participants

Data were drawn from the Midlife Women Veterans' Study, a cross-sectional observational study conducted between March 2019 and May 2020 with midlife (age 45-64) cisgender US women Veterans. Study procedures have been previously described.^{21,22} Briefly, eligible participants (women Veterans with one or more clinical encounter[s] at a VHA facility in Northern California facility within 2 years of data collection, with no current diagnoses of dementia or active psychosis; n = 980) were invited to participate with mailed study information and an "opt-out" postcard. Of those, 591 confirmed receipt of materials and had contact with study staff about potential participation, and 233 provided informed consent and returned completed surveys. Participation rates, while low, are consistent with other VA studies using similar methodology.²³ Telephone follow-up was conducted 2 weeks after material was mailed for individuals who provided no response to outreach, to assess interest in study participation. All study participants provided written informed consent prior to completing survey assessments. The study was approved by the Institutional Review

Board of the University of California, San Francisco and the San Francisco VA Research and Development Committee.

Measures

Participants completed Web- or mail-based survey questionnaires. The survey included items capturing participant demographics (eg, sexual orientation status, age), military history, menopause-related experiences (eg, hysterectomy, oophorectomy, menstruation), symptoms (eg, sexual functioning, vaginal dryness) and onset date, general health problems (eg, diabetes, arthritis), and mental health experiences (eg, depression, military sexual trauma). A subset of assessments pertinent to the hypotheses, described below, was included in the present analyses.

Demographics and key health variables

Participants self-reported age, menopause status, race, ethnicity, sexual orientation, education levels, marital status, military sexual trauma (MST), and military service dates. Menopause status was defined by self-reported menstrual bleeding patterns; women were categorized as postmenopausal if they had no menstrual cycle in the previous 12 months, whether due to natural cessation or hysterectomy and/or oophorectomy. Body mass index (BMI) was derived from participants' self-reported weight and height. MST was assessed with a standard VA screening question that asks whether participants experienced sexual harassment and/or sexual assault during their time in military service. To assess sexual orientation, participants were asked to respond to the following question, "Do you think of yourself as:" with response choices including "lesbian, gay, or homosexual; straight or heterosexual; bisexual; something else; or don't know." Individuals who selected *something else* were asked to describe their sexual identity in an open response. Self-reported sexual orientation was used to categorize women as either heterosexual or SMW.

Sexual functioning

Sexual functioning was measured by self-reported responses to validated measures. The 6-item Sexual Function subscale of the Day-to-Day Impact of Vaginal Aging Questionnaire (DIVA)²⁴ assessed the impact of vaginal symptoms (ie, dryness, soreness, irritation, and/or itching) on participant's sexual health and functioning. The DIVA 6-item was chosen as it can be administered regardless of the participant's current engagement in sexual activity. Participants responded on a 5-point scale (0 = *not at all*, 4 = *extremely*). Average scores were used in analyses, with higher scores indicating greater impact on sexual function. The Female Sexual Distress Scale-Revised edition (FSDS-R) measured subjective distress concerning sexual function. The scale consists of 13 questions concerning thoughts and feelings about sexual health, with a cutoff score of 11 indicating probable female sexual dysfunction.²⁵

Genitourinary symptoms and sexual activity

Structured-item questions assessed genitourinary symptoms (vaginal irritation or itching, vaginal dryness, pain during sexual activity) within the past 4 weeks. If experienced, they were then asked a follow-up question (*If yes, how much did this bother you?*), with response choices ranging from 0 (*not at all*) to 3 (*a lot*). Vaginal dryness and irritation/itching were

collapsed into a single variable for the current analyses. Participants were also asked to indicate whether they had engaged in any type of sexual activity (partnered or solo) over the past 4 weeks.

Statistical analyses

Demographic and clinical characteristics of participants were examined using descriptive statistics. To examine group differences, a series of independent samples *t* tests and chi-square tests were used to assess differences in sexual functioning and genitourinary symptoms between SMW and heterosexual participants. We further investigated these relationships using logistic and linear regression models with sexual functioning indices and symptoms as outcomes, adjusting for age, education, race, menopause status, and BMI in primary models due to known associations of these health factors with sexual function. Participants who had reported their sexual orientation and had completed the study measures used for the primary outcome variables in these analyses (eg, DIVA) were included in the model. All statistical analyses were performed in SPSS

Version 29 (IBM Statistics). For all statistical analyses, $P < 0.05$ was considered statistically significant.

RESULTS

Participant demographics and clinical characteristics

Of the 247 women Veterans enrolled, a total of 232 (94%) women provided complete responses to the survey. Of these women, 230 (93%) had provided complete information on self-identified sexual orientation and were included in the final analytic sample (Table 1). Participants were primarily postmenopausal (73%) and White (73%; Black: 10%, Asian: 4%, other/multiracial: 13%) with mean age 56.0 years ($SD = 5.14$). Most (75%) self-identified as straight/heterosexual, and 25% self-identified as SMW, including lesbian/gay/homosexual (60%), bisexual (26%), and a sexual orientation not otherwise specified (14%).

Most participants reported experiencing at least one vaginal symptom in the previous month (dryness, irritation, and/or pain with sex; 75%), and 48% reported engaging in any past-

TABLE 1. Participant characteristics by sexual orientation (n = 230)

	Total (n = 230)	Heterosexual Women (n = 173, 75%)	Sexual Minority Women (n = 57, 25%)	P value
	n (%)	n (%)	n (%)	
Age (mean, SD)	56.0 (5.1)	56.3 (5.3)	55.1 (4.7)	0.13
Menopause status				0.84
Pre/perimenopause	40 (17.4)	31 (17.9)	9 (15.8)	
Postmenopause (natural)	133 (57.8)	98 (56.6)	35 (61.4)	
Postmenopause (surgical)	57 (24.8)	44 (25.4)	13 (22.8)	
BMI (mean, SD)	29.7 (7.1)	30.0 (7.3)	28.8 (6.1)	0.28
Race				0.78
White	168 (73.0)	126 (72.8)	42 (73.7)	
Black	23 (10.0)	19 (11.0)	4 (7.0)	
Asian	9 (3.9)	6 (3.5)	3 (5.3)	
Other ^a	30 (13.0)	22 (12.7)	8 (14.0)	
Ethnicity				0.08
Non-Hispanic or Latina	205 (89.1)	152 (87.9)	53 (93.0)	
Hispanic or Latina	24 (10.4)	21 (12.1)	3 (5.3)	
Unknown	1 (0.4)	0 (0)	1 (1.8)	
Education				0.08
≤Some college	118 (51.3)	94 (54.3)	24 (42.1)	
College degree	36 (15.7)	22 (12.7)	14 (24.6)	
≥Some graduate school	76 (33.0)	57 (32.9)	19 (33.3)	
Military Service Era (Final)				0.27
Vietnam (pre-1975)	6 (2.7)	4 (2.4)	2 (3.6)	
Peacetime (1976-1989)	92 (41.4)	74 (44.6)	18 (32.1)	
Gulf War (1990-2000)	81 (36.5)	55 (33.1)	26 (46.4)	
OEF/OIF/OND (2001-present)	43 (19.4)	33 (19.9)	10 (17.9)	
Marital status				0.75
Married/living together	97 (42.2)	74 (42.8)	23 (40.4)	
Single/divorced/widowed	133 (57.8)	99 (57.2)	34 (59.6)	
MST	162 (72.6)	125 (72.3)	42 (73.6)	0.72

BMI, Body mass index; MST, military sexual trauma; OEF, Operation Enduring Freedom; OIF, Operation Iraqi Freedom; OND, Operation New Dawn.

^aNative Hawaiian or Other Pacific Islander = 2; American Indian or Alaska Native = 1.

TABLE 2. Associations between sexual orientation, sexual function indices, and menopause symptoms related to sexual function (n = 230)

	Total (n = 230)	Heterosexual Women (n = 173, 75%)	Sexual Minority Women (n = 57, 25%)	β	SE	Wald's χ^2	OR (95% CI)
	n (%)	n (%)	n (%)				
Past month sexual activity ^b	111 (48.3)	77 (44.5)	34 (59.6)	0.79	0.34	5.37	2.20 (1.13-4.30)
Vaginal symptoms ^c	122 (57.3)	101 (63.5)	21 (38.9)	-1.10	0.34	10.2	0.33 (0.17-0.66)
Pain with sex ^d	41 (36.9)	37 (48.1)	4 (11.8)	0.97	0.56	3.01	0.07 (0.16-0.32)
FSDS-R (score 11+)	180 (79.6)	131 (77.5)	49 (86.0)	1.70	1.26	1.82	2.64 (0.88-7.90)
DIVA-Sexual function ^{a,d}	1.03 (1.14)	1.1 (1.2)	0.7 (1.0)	-0.62	0.18	2.61 ^e	-0.24 (-0.97-0.26)

All models adjusted for age, education, race, menopause status, BMI. Referent for regression models = heterosexual.

^aDIVA-Sexual function: mean (SD), β (95% CI).

^b $p < 0.05$.

^c $p < 0.01$.

^d $p < 0.001$.

^eF-statistic.

month sexual activity (partnered or solo). Over three fourths (80%) had scores above the established threshold for clinically significant sexual functioning distress on the FSDS-R. The average reported impact of vaginal symptoms on sexual health and functioning was relatively low ($M = 1.03$, $SD = 1.14$), as measured by the DIVA sexual function subscale.

Associations between sexual function and sexual orientation

No significant differences in demographic characteristics were observed, including partnership or menopause status (Table 1). In unadjusted analyses, SMW were more likely to report engagement in any type of sexual activity (solo or partnered) in the past month (65% vs 47%, $P = 0.02$), were less likely to report pain with sexual activity (12% vs 48%, $P < 0.001$), were less likely to report vaginal symptoms (10% vs 49%, $P = 0.001$), and had DIVA scores indicative of less impact of vaginal symptoms on sexual function ($M = 0.7$, $SD = 1.0$ vs $M = 1.1$, $SD = 1.2$, $P = 0.01$), compared with heterosexual women. These associations remained significant in fully adjusted models. There was no significant difference observed in sexually related distress (FSDS-R).

Relative to heterosexual women, SMW were over 2-fold more likely to report past-month sexual activity (odds ratio [OR], 2.20; 95% confidence interval [CI], 1.13-4.30) and were less likely to report pain during sexual activity (OR, 0.07; 95% CI, 0.16-0.32) after adjustment for other demographic and clinical characteristics (Table 2); SMW were also less likely to report past-month vaginal symptoms (OR, 0.33; 95% CI, 0.17-0.66) and had lower mean DIVA scores suggesting less impact of vaginal symptoms on sexual function ($\beta = -0.24$; 95% CI, -0.97 to -0.26). No significant differences in sexually related distress as measured by the FSDS-R were detected by sexual orientation status.

DISCUSSION

In this study, we examined indices of sexual function and related menopause symptoms in a sample of midlife women Veterans. In contrast to our hypotheses, heterosexual women were more likely to experience sexual dysfunction and report

vaginal symptoms relative to SMW. Consistent with this, SMW reported more sexual activity, less pain during sex, and were less likely to report vaginal symptoms; comparison of DIVA sexual function subscale scores also suggests that SMW experience less negative impact of vaginal symptoms on sexual functioning. While heterosexual women Veterans in our sample reported potentially higher physical menopause symptom burden (eg, vaginal symptoms, pain with sex), both heterosexual women and SMW endorsed equivalent and relatively high levels of psychological distress related to their sexual function. Despite this high level of concern about sexual function experienced across all women in the study, SMW Veterans were two times as likely to be sexually active in comparison to their heterosexual peers. There were no notable differences between SMW and heterosexual women Veterans based on demographics, including menopause status and marital status, that may impact sexual function.

There are several possible explanations for these observed group differences. First, our results are in line with a small but growing body of literature suggesting that SMW demonstrate important psychosocial strengths in the context of aging.²⁶⁻³⁰ Past work has highlighted that menopause-related bodily changes, which signify aging and end of child-bearing years, are often viewed as undesirable in a heterosexual context. However, SMW have been observed to hold looser gender attitudes and expectations, or even explicitly reject cultural gender norms, and are more accepting of body diversity, and therefore may hold different views towards menopause.^{19,26,31} In line with this, one previous study found that SMW report less concern about femininity, attractiveness, and fertility, and felt less regret about menstrual cessation than heterosexual peers.^{26,32} The authors of this study propose that their findings may represent a pathway of resilience for SMW as they experience age-related changes and the menopause transition.

Second, other SMW-specific resilience pathways may account for the observed differences in menopause experiences. The Minority Stress Model^{9,33} posits that SMW (and sexual and gender minority persons in general) experience unique forms of coping and resilience, such as receiving social support from the community and/or partners, that help mitigate the negative impacts of inter/intrapersonal stress on their physical

and mental health experiences. For example, among women newly diagnosed with breast cancer, lesbian women are more likely to acquire positive social support from partners (ie, partners are willing to listen, help with daily tasks, and make their partner feel loved and cared for) in comparison to heterosexual women who are more likely to report negative social support from their partner (ie, making demands).³⁴ It may be the case that similar differences in partner support are at play during women's transitions into menopause. Future research is needed to empirically evaluate the role of SMW-specific forms of coping and social support on midlife SMW's experiences with menopause-related sexual functioning.

Next, prior literature on this topic has focused primarily on community samples of women, while the present study was a Veteran-only sample of midlife women. Thus, it is feasible that unknown Veteran-specific factors, not considered in this study, are driving present results. For one, mental health diagnoses and trauma exposures known to influence sexual function are prevalent among women Veterans.³⁵ Prior research among general samples of midlife women has consistently linked stress and trauma exposure with worse menopause symptoms, and women Veterans have more exposure to trauma and tend to report higher levels of life stress than civilian women.³⁵⁻³⁸ These experiences may be a contributing factor in our finding of high sexual distress among all women Veterans found in our sample as measured by the FSDS-R. Furthermore, Veterans are typically more racially diverse than community samples, which may represent another pathway of risk for this population of women.³⁹⁻⁴²

Lastly, although untested, past work has posited that SMW with same-sex partners may have more favorable sexual function outcomes during the menopause transition due to greater variation in sexual behaviors, compared with heterosexual women who are more likely to engage in penetrative vaginal intercourse with cisgender men.⁴³ Several studies have also highlighted strengths within SMW relationships such as appreciation of individual differences, emotional expressiveness, and effective communication skills, which may help mitigate menopause- and aging-related challenges.⁴⁴ If backed by evidence, this finding would present a clear target for intervention to support the sexual health of individuals entering the menopause transition. In the present study, we were only able to investigate engagement in sexual activity more generally (with self or partner), and we did not measure the gender identities and sexual orientations of the participants' partners. Future research would also benefit from examining the intrapersonal and interpersonal mechanisms of sexual health during menopause within dyads of varying sexual orientation compositions.

Limitations and future directions

Several limitations of our study may impact interpretation of findings. First, this study employed a cross-sectional research design; therefore, study results cannot determine causality. Second, the small sample size within our SMW Veteran group limits statistical power. Relatedly, due to sample size, we were not able to meaningfully examine group differences among women with differing SMW identities. This is important, as there are many ways to consider sexual orientation beyond the binary sexuality

categories we included in this study. Although our participants were able to supply an open-ended description of their sexual orientation, due to the sample size, we included any nonheterosexual participant into the SMW category, which impacts the generalizability of these results. Future research should consider the unique experiences of women with different sexual preferences, for example, lesbian versus bisexual versus heteroflexible, women in a larger sample. Furthermore, sexual orientation was determined by self-report, and it is possible that there is reporting bias due to social acceptability leading to underestimate of prevalence of SMW Veterans in our sample. We do not know to what extent cohort effects (eg, "don't ask, don't tell" era) may influence this group of women's sexual identification and how these results might generalize to future generations of Veterans. This study also only included self-identified cisgender women who are actively engaged in care with VA women's health. However, cisgender women do not exclusively experience menopause, and an informative future direction would be to also examine menopause symptoms and outcomes among transgender and gender diverse individuals who menstruate. In addition, approximately one in four women Veterans who were sent study information participated in data collection. Unknown differences between responders and nonresponders may influence study results. This study focuses on better understanding the sexual experiences of women Veterans and does not consider potential differences between Veteran and civilian women of differing sexual orientations. Future research should consider differences among these intersectional identities.

Finally, there are several important factors that may also influence sexual functioning for women of all sexual orientations, and that we were not able to measure in the present study, including frequency or type of sexual activity (eg, solo or partnered, penetrative or nonpenetrative, use of toys or lubricants, satisfaction with sexual activity), details about partnership status (eg, quality, length of relationship), use of hormone replacement therapy, and impact of other related menopause symptoms. Future research focused on these important aspects of sexuality and health in midlife could help elaborate on the observed differences in self-reported sexual activity between heterosexual and SMW in this study, but also help to understand the drivers of distress related to sexual function that was endorsed by most women in this sample. Several other potentially influential factors that were not addressed by this study include sexual abuse history, psychiatric comorbidities such as anxiety, depression, and posttraumatic stress disorder, and treatment for psychological comorbidities (eg, psychotropic medications, psychotherapy).

Clinical implications

This work offers new insight into SMW Veterans' menopause symptom burden and impact on sexual function. SMW represent an underserved and understudied population with significant known health disparities. A recent report from National Academies of Science (2020) put forth a call for research on sexual minority populations to address the wide gaps in knowledge and high level of need for this population.⁴⁵ The observations in this study also strongly support the need to prioritize further research to understand the unique aspects of

menopausal and sexual health among SMW. Further empirical evaluation of proposed resilience pathways for SMW may shed light on unique strengths that may be useful for anyone who is approaching or actively experiencing menopause.

Findings highlight SMW health as an important emphasis area for the VA care setting as efforts continue to improve gender-sensitive care for all Veterans. Significant barriers remain to assessment or improvement of quality care for all sexual minority Veterans, as the VA has only recently begun to collect data on sexual orientation and gender identity (VHA Directive 1,340 on July 6, 2017). Furthermore, it is estimated that only approximately 30% of women Veterans receive primary healthcare at the VA, and that the majority of SMW Veterans receive healthcare outside of the VA,⁴⁶ demonstrating that SMW care continues to represent an important area for improvement for VA healthcare. A recent survey of barriers to care highlighted that most women Veterans strongly prefer a women's only clinic setting and that improving gender sensitivity in the environment and within patient-provider interactions continues to be an important focus area across the VA healthcare system.⁴⁷ Important factors to consider in provision of gender and sexual orientation sensitive care include the historically high rates of systemic barriers such as stigma, discrimination, and trauma experienced by SMW Veterans, as well as perceived stigma for all women when discussing mental health, aging, menopause, and sexual symptoms. Continuation and expansion of policies supporting provision of care to sexual minority Veterans, such as LGBT treatment coordinators, non-discrimination policies, and efforts to maintain inclusivity in the VA environment (eg, via welcoming signs and symbols, and provision of healthcare literature specific to sexual minority Veterans), may help VA clinicians communicate in a way that demonstrates sensitivity to the unique concerns and needs of the SMW Veteran population.

CONCLUSIONS

In this study of midlife women Veterans, heterosexual women reported more sexual dysfunction and vaginal symptoms relative to SMW, and were less likely to be sexually active. Despite this, there were high levels of concern about sexual functioning reported among all women Veterans. Findings highlight that menopause and aging widely impact women Veterans' sexual health and functioning, but experiences may vary significantly based on sexual identity. Our study contributes to an emerging body of work that aims to understand the unique concerns of menopause aged SMW and promotes the value of providing affirming healthcare to SMW Veterans.

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