



## Understanding women veterans' preferences for peer support interventions to promote heart healthy behaviors: A qualitative study

Karen M. Goldstein<sup>a,b,\*</sup>, Leah L. Zullig<sup>a,c</sup>, Eugene Z. Oddone<sup>a,b</sup>, Sara M. Andrews<sup>a</sup>, Mary E. Grewe<sup>d</sup>, Susanne Danus<sup>a</sup>, Michele Heisler<sup>e,f</sup>, Lori A. Bastian<sup>g,h</sup>, Corrine I. Voils<sup>i,j</sup>

<sup>a</sup> Center for Health Services Research in Primary Care, Durham Veterans Affairs Healthcare System, 508 Fulton Street, Durham, NC 27705, USA

<sup>b</sup> Department of Medicine, Division of General Internal Medicine, Duke University Medical Center, 411 West Chapel Hill Street, Suite 500, Durham, NC 27701, USA

<sup>c</sup> Department of Population Health Sciences, Duke University, 2200 West Main Street, Suite 720A, Durham, NC 27707, USA

<sup>d</sup> Cooperative Studies Program Epidemiology Center - Durham, Durham Veterans Affairs Healthcare System, 508 Fulton Street, Durham, NC 27705, USA

<sup>e</sup> Ann Arbor VA Medical Center, 2215 Fuller Road, Mailstop 152, Ann Arbor, MI 48015, USA

<sup>f</sup> University of Michigan, Institute for Healthcare Policy & Innovation, 2800 Plymouth Road, Ann Arbor, MI 48019, USA

<sup>g</sup> VA Connecticut Healthcare System, 950 Campbell Ave, West Haven, CT 06516, USA

<sup>h</sup> Department of Medicine, Yale University, 330 Cedar Street, New Haven, CT 06520, USA

<sup>i</sup> William S. Middleton Memorial Veterans Hospital, 2500 Overlook Terrace (151), Madison, WI 53705, USA

<sup>j</sup> Department of Surgery, University of Wisconsin School of Medicine & Public Health, 600 Highland Avenue, K6/100 CSC, Madison, WI 53792-1690, USA

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### ABSTRACT

Peer support may be an effective strategy to improve heart healthy behaviors among populations who have a strong communal identity, such as women veterans. Women veterans are a particularly important group to target as they are the fastest growing sub-population within the Veterans Affairs healthcare system. Our goal was to identify aspects of peer support and modalities for providing peer support that are preferred by women veterans at risk for cardiovascular disease (CVD). In 2016, we conducted 25 semi-structured individual interviews with women veterans from the Durham VA Healthcare System aged 35–64 who were at risk of CVD, defined as presence of at least one of the following: hypertension, hyperlipidemia, obesity (BMI  $\geq 30$ ), non-insulin dependent diabetes or prediabetes, or current smoking. Interview guide design and data analysis involved conventional content analysis. Important themes for effective peer partnerships included sharing a common behavior change goal, the need for trust between peers, compatibility around level of engagement, maintaining a positive attitude, and the need for accountability. Peer support interventions may prove beneficial to address the burden of common and preventable conditions such as CVD. Among women veterans, peer support interventions should account for individual preferences in peer matching and provide opportunities for peers to engage in relationship building in-person initially through trust-building activities.

### 1. Introduction

Women veterans engage in unhealthy behaviors like physical inactivity and smoking at higher rates than civilian women (Lehavot et al., 2012). They are also more likely to be obese or overweight and 79% of women veterans over the age of 65 years have at least one major cardiovascular disease (CVD) risk factor (Maher et al., 2017). While 50% of CVD is due to modifiable health behaviors (Patel et al., 2015), most Americans do not achieve diet and exercise goals. Successful engagement in heart healthy behaviors, such as exercise and diet, can be promoted by peer support. Peer support is an evidence-based approach to increasing engagement in health-related self-management through

the provision of social support by someone of similar background and life experience (Dennis, 2003). Such support can increase self-efficacy for and reinforce the practice of healthy behaviors (Dennis, 2003; Heisler, 2006), leading to improved clinical and patient-centered outcomes (e.g., lower hemoglobin A1c, improved patient satisfaction) (Rhee et al., 2012; Mosack et al., 2012; Parry and Watt-Watson, 2010).

Peer support is particularly well-suited for populations sharing a common identity and sense of commitment to communal well-being, such as military service veterans. Soldiers provide support and guidance to each other and have a common identity during active duty (Matthias et al., 2016). After separation from service, support from military friends is associated with better health (Lehavot et al., 2013). Among

\* Corresponding author at: Division of General Internal Medicine, Duke University, Durham, NC, USA.

E-mail addresses: [Karen.goldstein@duke.edu](mailto:Karen.goldstein@duke.edu) (K.M. Goldstein), [Leah.zullig@duke.edu](mailto:Leah.zullig@duke.edu) (L.L. Zullig), [Gene.oddone@duke.edu](mailto:Gene.oddone@duke.edu) (E.Z. Oddone), [Susanne.danus@va.gov](mailto:Susanne.danus@va.gov) (S. Danus), [mheisler@med.umich.edu](mailto:mheisler@med.umich.edu) (M. Heisler), [lori.bastian@va.gov](mailto:lori.bastian@va.gov) (L.A. Bastian), [voils@surgery.wisc.edu](mailto:voils@surgery.wisc.edu) (C.I. Voils).

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veterans with diabetes, peer support has led to greater hemoglobin A1c reductions than traditional nurse management or financial incentives (Heisler et al., 2010; Long et al., 2012). Women veterans often have lower levels of social support than male veterans (Frayne et al., 2006), thus may be particularly primed to benefit from peer support.

Prior peer support research for complex health behaviors has mostly focused on disease management rather than prevention (Fisher et al., 2017). In the context of disease management, sharing a common health behavior or being at a similar disease stage are important for promoting effective peer support (Heisler et al., 2010; Leahey and Wing, 2013). Many features of peer support, including ongoing assistance and emotional support, are well-suited to improving heart healthy behaviors. However, it is unclear how best to customize a peer support intervention around CVD risk reduction for female veterans.

Our objective for this study was to explore: 1) women veterans' previous experiences with social support and peer support; 2) perceived barriers and facilitators to participation in peer support interventions; and, 3) women veterans' preferred features for peer support interventions designed to support heart healthy behaviors. To frame this work, we drew upon the Social Cognitive (SCT) (Bandura, 1977) and Self Determination Theories (SDT) (Ryan and Deci, 2008), as well as the key social support constructs (House, 1981). Specifically, we considered the SCT construct of self-efficacy and SDT's construct of personal need fulfillment through relatedness, competence, and autonomy. We considered types of social support (i.e., emotional, instrumental, informational, and appraisal) as well as the additional benefit of reciprocal peer support, mutual reciprocity (Israel, 1982) (Fig. 1).

## 2. Methods

### 2.1. Study design

We conducted semi-structured, telephone-based interviews with women veterans who were at risk for CVD. Data were analyzed using conventional content analysis, which is ideal when little is known about a phenomenon and the goal is description (Hsieh, 2005). This approach was appropriate because women veterans' experiences with peer support interventions have not been described previously. We interviewed women until thematic saturation was reached (Namey et al., 2016).

### 2.2. Setting and participants

Our target population were female patients at risk for CVD in the women's health clinic at the Durham Veterans Affairs Medical Center (VAMC). Flyers were posted in the clinic, and recruitment letters were mailed to eligible veterans who were identified randomly after an initial administrative data pull. Eligibility criteria included: age 35–64 years; enrolled in the Durham VAMC; and presence of at least one CVD risk factor (hypertension, hyperlipidemia, obesity [BMI ≥ 30], non-insulin dependent diabetes or prediabetes, or current smoking). Patients were excluded if they were unable to provide informed consent during telephone screening, or if through electronic medical record

review were noted to be hospitalized; had active psychosis or dementia; or were assigned to the first author's primary care panel. Patients who did not call to opt out were called to screen for eligibility and interest in participation. Those patients with confirmed eligibility and interested in participation were scheduled for a telephone interview. Interview participants were provided a modest financial incentive. This study was approved by the Durham VA Healthcare System's Institutional Review Board.

### 2.3. Data collection and analysis

Between May and July of 2016, semi-structured telephone interviews lasting an average of 40 min were conducted by two female study team members (KMG and MEG) trained in qualitative interviewing. Interviewers did not have a prior relationship with the participants; although KMG is a physician, we excluded her patients to avoid coercion. Participants provided verbal informed consent at the beginning of the interview. The interview guide was developed initially based on the theoretical frameworks discussed above. We then revised the guide through an iterative process with listed co-authors based on their expertise and prior work conducting peer support and dyadic interventions in the VA (Heisler et al., 2010; Heisler et al., 2017; Heisler et al., 2013; Voils et al., 2013) and knowledge of CVD among women Veterans (Biswas et al., 2002) (see Table 2). Participants were asked about: experiences changing health behavior and related social support; experiences with peer support; ways in which another women veteran could support them in making lifestyle changes; and desired characteristics in a peer support partner (Table 2). Prior work has found that sharing personal experiences and characteristics help establish another person as a peer (Brownson and Heisler, 2009) and that having social contacts engaged in health behavior change influences one's own behavior change engagement (Leahey et al., 2011); thus, we explored which characteristics were most important to women veterans in a peer support partner. All interviews were digitally recorded and transcribed by a VA transcription service. A random 10% subset of transcriptions were verified for accuracy. The interviewers took brief, structured notes after each interview to identify questions participants had difficulty responding to, guide subsequent interviews, and allow for interim analyses to determine thematic saturation. We planned a priori to conduct 25 interviews to reach thematic saturation based on current guidance (Hagaman, 2016) and expected heterogeneity of the population, and reviewed the transcripts and interview notes to verify that additional interviews were not warranted.

To characterize the sample, we obtained sociodemographic information and clinical diagnoses from VA administrative data and through questions administered during the telephone interview.

We employed a number of strategies to promote authenticity and trustworthiness of the data (Shenton, 2004). The investigators had “prolonged engagement” with women veterans through research and clinical roles. Patients identified as meeting inclusion criteria during the administrative data pull were randomized for initial contact. In addition, we reassured participants that their participation was voluntary

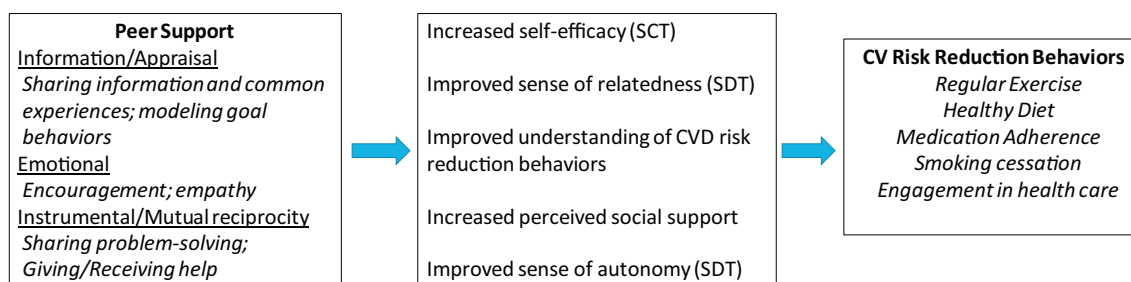


Fig. 1. Conceptual model of peer support for CVD risk reduction among women veterans.

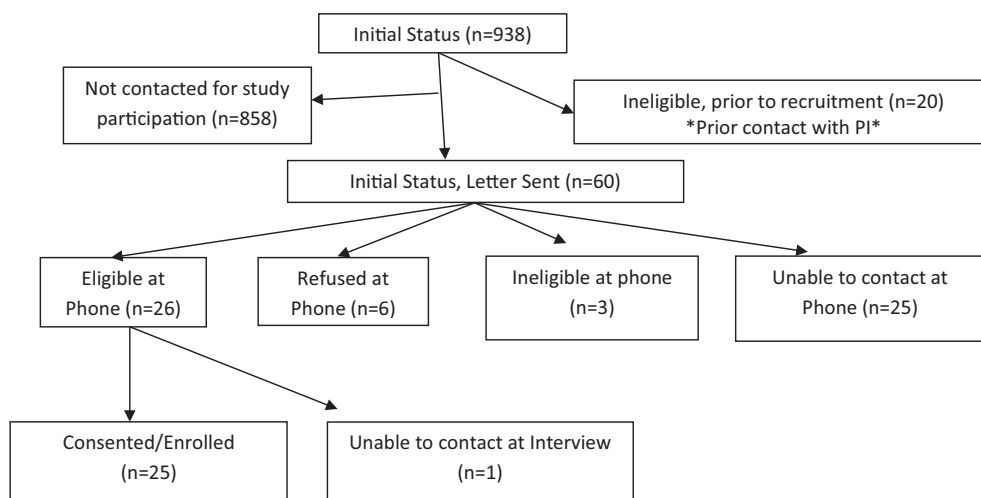


Fig. 2. Patient recruitment flow diagram.

and had no impact on their VA health benefits. We (KMG, LLZ) also conducted frequent debriefing sessions for qualitative methodological guidance (CIV, SMA) during the development, conduct, and analyses phases of this project to discuss important concepts and findings.

Four team members (KMG, CIV, LLZ, SMA) independently coded two initial transcripts and used negotiated consensus to develop a data-derived coding framework (Hill et al., 2005). Then, two team members (KMG and LLZ) double-coded the remaining 23 interviews, meeting regularly to identify emerging themes and discuss discrepancies, which were resolved through negotiated consensus. The other two individuals (CIV and SMA) were consulted intermittently to review coding structure decisions. Codes were grouped into higher-order themes. Participants did not have an opportunity to review the transcripts or provide input on the coding. Atlas.ti (v 6.2) was used for coding management.

### 3. Results

The participant flow is illustrated in Fig. 2. Mean age of the participants was 50.2 years (SD 7.7), and 92% had at least some college education (Table 1). Sixty-eight percent of participants identified as Black or African American and 32% as White. Approximately half

Table 1 Sociodemographic and medical characteristics of women veterans<sup>a</sup>.

Characteristics	N = 25
Age, mean years (SD)	50.2 (7.7)
Race, n (%)	
African-American	14 (56)
White	5 (20)
Multiracial	5 (20)
Other	1 (4)
Married/partnered, n (%)	9 (36)
At least some college, n (%)	23 (92)
Lives alone, n (%)	9 (36)
Number of individuals in household (range) <sup>b</sup>	1–5
Employed, n (%)	11 (44)
Source of healthcare	
VA only	48%
VA and non-VA	52%
Current tobacco use, n (%)	8 (32)
Hypertension diagnosis, n (%)	11 (44)
Hyperlipidemia diagnosis, n (%)	4 (16)
Obesity, n (%)	17 (68)
Diabetes, n (%)	6 (24)

<sup>a</sup> Study conducted in 2016 at the Durham VA Healthcare System.

<sup>b</sup> Including participant.

Table 2

Interview questions for women veterans about peer support and CVD risk reduction<sup>a</sup>.

Participants were asked to “think about a time when [they] tried to change [their] behavior to improve [their] heart health or overall health in the last 12 months”:

Why did you feel that you needed to make this change?

Who, if anyone, gave you support or helped you?

If no one provided support:

If someone did give them support:

- If there were someone available to help you, what are some things that person could do to help you be healthier?

- In what way, or ways, did this person help you? If what way, or ways, was this person not helpful?
- What forms of communication did you use with this person?

Participants were provided the following peer support description and then asked the questions that follow: One way that people can work together to improve their health is called reciprocal peer support. Reciprocal peer support is when you are paired with another person with similar health concerns as you, and the two of you help each other to meet both individual's goals. For example, two women Veterans want to start exercising regularly. So, they pair up and talk on a regular basis about how they can meet their goals of exercising more. Neither woman is the ‘expert.’ Each woman gets a chance to help the other

Tell me about any previous experience you have had with a peer support program, such as reciprocal peer support, a peer support group, or a peer coach or mentor.

How could another female veteran best support you in changing a health-related behavior?

What kinds of support would you want or expect from a [peer partner]?

What characteristics do you think would be most important to have in common with your [peer] partner?

How would you prefer to communicate? (For example, would you prefer by phone, email, text or in person?)

What concerns would you have about working with a fellow female veteran to improve your heart health?

How would you feel about meeting with other women veterans as a group in addition to being paired up with an individual to work on improving your heart health?

<sup>a</sup> Study conducted in 2016 at the Durham VA Healthcare System.

(52%) of participants reported receiving healthcare at both VA and non-VA settings, whereas 48% received care from the VA only. Nine women were either married or partnered. Participants' total household size (including participant) ranged from 1 to 5, with 9 living alone.

The four main themes from interview responses are: behavior change challenges from existing social support, mixed experiences with past peer support particularly group support, peer support to provide accountability, and desiring similar engagement from a peer support partner; themes are presented in Table 3 and are explained in detail below:

**Table 3**  
Possible translation of findings for peer support intervention<sup>a</sup>.

Participant suggestions	Possible translation to peer support intervention
	Trust
<ul style="list-style-type: none"> <li>● Women emphasized the need to build familiarity and comfort with peer support partner.</li> </ul>	<ul style="list-style-type: none"> <li>● Facilitate early relationship building activities between peer partners</li> <li>● Conduct initial meetings in-person and transition to non-face-to-face communication after trust is built</li> <li>● Incorporate trauma-informed care concepts (e.g., provide choices when possible, provide clear explanation of what to expect in new situations)</li> </ul>
	Behavior change engagement compatibility
<ul style="list-style-type: none"> <li>● Women felt it was important to share common health goals and a similar level of commitment to behavior change with a peer partner.</li> </ul>	<ul style="list-style-type: none"> <li>● Use peer matching criteria and study design that incorporates similar behavior change goals</li> <li>● Assess engagement/commitment to behavior change at outset of interventions</li> </ul>
	Need for accountability and motivation
<ul style="list-style-type: none"> <li>● Women placed significant value on using peer support to provide accountability for achieving behavior change goals.</li> </ul>	<ul style="list-style-type: none"> <li>● Provide feedback about progress towards goals</li> <li>● Encourage pro-active, regular contact in peer support relationship</li> </ul>
	Other
<ul style="list-style-type: none"> <li>● Women noted that different people have different levels of readiness to engage with behavior change and comfort with particular interpersonal settings; therefore, some women may have different preferences for a peer support intervention.</li> <li>● Many women identified as someone who helps others and found peer support appealing because it resonates with their sense of altruism.</li> </ul>	<ul style="list-style-type: none"> <li>● Offer flexibility in intervention design and level of peer support provided to meet patients where they are at</li> <li>● Consider gender-specific groups</li> <li>● Highlight opportunity to help others in recruitment materials</li> <li>● Emphasize helping others to reinforce participation in peer support activities</li> <li>Use mutual peer support model</li> </ul>

<sup>a</sup> Study conducted in 2016 at the Durham VA Healthcare System.

### 3.1. Existing social support causes challenges to behavior change

Participants reported receiving social support for past behavior change from a variety of sources, including family members, partner/spouses, faith-based social connections and friends. Generally, these experiences were positive, though conflict, or challenges to personal health behavior change goals raised by a social support network, occurred on occasion. One example of such conflict was when people in a women's support network had different eating habits: *"I have a couple of friends, and we go out to a restaurant every Friday. We all get together, we all go eat, but it's always...a hamburger place...I have to ask for a grilled chicken salad with half of a lemon because I'm trying to be careful about what I'm putting into my body, and seeing them eat triple decker cheese burgers when you really want one is difficult."*(P1, 35 years old) This conflict around food choice also occurred at home. For example, some women described cooking two separate meals because family members did want to eat the healthier food choices of the participant. Conflict also occurred around physical activity and other aspects of self-care. For example, some women reported caregiving responsibilities preventing their engagement in regular physical activity. Of note, some women reported lacking a social support network upon which they could rely on to bolster health behavior change: *"I live pretty much in isolation, so I have no support system other than my doctors at the VA"*. (P2, 50 years old).

### 3.2. Mixed experiences with peer support and wariness of group settings

Experiences with formal peer support for behavior change included both individual and group situations. Formal individual support was primarily from personal trainers who provided valued accountability and motivation. Group support experiences varied and included exercise classes, commercial weight loss programs, substance abuse support groups, and mental health treatment groups. While many participants reported positive experiences with church-based exercise groups and weight loss groups, some women had negative experiences with mental health treatment groups. For groups of any type, women emphasized the importance of building familiarity and comfort to sustain participation, supporting the concept of improved sense of relatedness to the peer group dynamic as important for sustained engagement. *"When I get to know the group, I know I'm gonna stay in that group."* (P3 60 years old).

### 3.3. Peer support appealing to provide accountability but requires building trust

Interview participants noted common barriers to engaging in heart healthy behaviors, such as competing demands, busy schedules, and health conditions. Concerns about participating in peer support included both hesitancy about group settings and the need build with a new peer support partner, which was essential to facilitate open communication and receptiveness to emotional support. Building trust was described as a process that should start early in the relationship, preferably in person: *"Once I make that face-to-face and establish that trust, I could call someone on the phone, I could text some, email—it doesn't matter because we've established that trust."* (P4 50 years old). This further emphasizes the importance of enhancing women's sense of relatedness to the peer supporter. Some women expressed a general distaste for group settings: *"If it's got to do with group, I'm not interested. [Laughs] ...I mean, don't get me wrong— some other women veterans, they love the groups. It's just not for me."* (P2 50 years old). Moreover, multiple women discussed their tendencies to leave their homes rarely or avoid socializing as a possible barrier to participating in peer support.

Women's interest in peer support participation was facilitated by two primary factors: altruism and the need for accountability in behavior change. Some participants pointed to their sense of altruism as a reason to participate in peer support. One woman stated, *"I think naturally I am a helper and a person that takes care of people."* (P5 48 years old.) Women noted the particular benefit of supporting someone with similar life experiences: *"That felt good, 'cause you know you were helping somebody else out that was in the same boat you were... and she understood where you're coming from."* (P6 53 years old) Women also appreciated the potential for a peer support partner to provide accountability and motivation, or instrumental support: *"I got a problem with the weight, and if they can motivate me and I can motivate them, if I fall short or I'm lagging, they can motivate me and be like, 'You know, we're going to do this together, we're going to go through the finish line together.'"* (P7 38 years old).

### 3.4. Women veterans desire shared goals, investment in behavior change, and a positive attitude in a peer support partner

Key features participants desired in a peer support partner were sharing behavior goals, engaging in behavior change at similar levels, and maintaining a positive attitude. Having the same health or behavior

goal was considered important: “If you're both working on the same thing, it would be easier ... if I wanted to lose weight, I wouldn't want to be partnered with anybody that wants to quit smoking because... I don't [smoke].” (P7 38 years old) Women were also concerned about working with someone who was less engaged in behavior change, such as having a peer support partner give advice not followed personally or being held back by someone less engaged in the change process: “Walk the walk, you know what I'm saying? You can't tell somebody, ‘Oh you should go work out or go running,’ but you're not working out.” (P8 40 years old) Women also wanted a peer partner able to provide emotional support with a positive attitude: “We'd need positive attitudes first and foremost. You need to want to really do it and there shouldn't be anyone condemning the next person. It's a struggle already.” (P9 51 years old.).

Women veterans noted that having served in the armed forces would help establish a common historical experience, but did not feel that branch was particularly important: “I don't care if you [were] Marines, Army, Navy, Air Force, the Coast Guard. We [are] all veterans.” (P10 50 years old) Women reported that being the same age would be important so that behavior change challenges specific to stages in life would be aligned (e.g. juggling work and childcare). While many women said that gender-specific peer support systems (e.g. all-women support groups) were not a personal requirement, it was recognized that gender-specific options are essential for some women veterans: “... It probably would be nice to have a separate program because there are some women...who can't be around men, can't handle it...”. (P11 43 years old) However, a few women noted that they would prefer to work with a male veteran: “I'd rather work out with a dude than a female...Women are whiny...I am not going to coddle you. And a lot of females can't handle that bluntness.” (P12 35 years old).

Women's preferences for an ideal program varied. For example, some appreciated receiving support one-on-one from someone with formal training: “I liked that you had a coach... somebody that always calls you at certain times and was reliable...[and] actually told you the thing to do...” (P13 63 years old) Other participants liked the idea of having access to more than one individual from whom to receive support: “Because you have more support than just relying on one person. And then if one person can't make it, another one will probably make it.” (P14 40 years old) Regardless of the particular peer support approach, participants desired opportunities to get to know individuals who would be providing support. Specifically, participants suggested in-person activities and opportunities to exercise together and/or socialize to build comfort in a new peer relationship. Participants had different preferences related to communication modality for giving and/or receiving peer support partner (e.g. in-person, telephone, text messaging or email).

#### 4. Discussion

Most women veterans interviewed endorsed peer support as an intervention to support heart healthy behaviors. Key themes for necessary elements in a peer support relationship included trust, accountability, and compatibility around level of engagement with behavior change. Women wanted peer partners to share common attributes such as having similar health goals (e.g. increasing physical activity) and the same level of commitment to the partnership and their health. Peer support was particularly appealing to those who identified as someone who helps others, emphasizing the appeal of mutual reciprocity in this population. Women noted the importance of establishing and promoting trust to pave the way for a successful peer support relationship, and indicated that some women veterans might not be willing to participate in mixed-gender settings or groups generally. We present implications of these findings for future peer support interventions in this population (Table 3). For example, peer support interventions in this population should consider incorporating trauma-informed care principles designed to support individuals with a history of trauma during health-related interactions (Ravi and Little, 2017; Hopper and Olivet, 2010) and early relationship building activities to foster trust with peers; in

addition, opportunities to help others should be considered as a way to promote peer support intervention participation.

Our work adds new findings to the literature on peer support by emphasizing: 1) the importance of building trust in a peer support relationship, 2) the need for flexibility in approach for this population, and 3) the need for behavior change accountability. First, participants consistently identified trust as a key factor affecting their willingness to engage in a peer partnership and lack of trust and comfort in some peer support situations as a rationale for not participating. Concerns about trust are an important issue among individuals with post-traumatic stress disorder (PTSD), which is common among women veterans (Frayne et al., 2014). While we did not restrict participation to women with PTSD, a few women volunteered having this diagnosis. Aversion to group settings was strongly communicated by some participants; discomfort in large groups could be a manifestation of PTSD. Peer support interventions for women veterans should offer early opportunities to foster relationship building and promote comfort with a peer partner and may also benefit peer support interventions in other populations.

Second, we found varied preferences for peer support interventions in this population. Recognizing that women may have differing levels of ability or desire to engage proactively, peer support interventions may need to be flexible enough to accommodate those requiring more support or different levels of expertise (e.g. a peer coach versus reciprocal peer support). In fact, reaching hard-to-engage patients is a strength of peer support; it can be successful among ‘hardly reached’ or vulnerable populations for whom trust in the healthcare system is often low (Sokol and Fisher, 2016). Prior trials suggest that for patient populations with low activation (e.g. very ill, depressed), models in which trained peers proactively reach out to participants would be more effective than mutual peer support models requiring participant initiative to contact their peer partner (Tang et al., 2014; Tang et al., 2011a; Tang et al., 2011b; Tang et al., 2015). Thus, peer support interventions designed for women veterans may benefit from flexibility in design.

Finally, we found that the need for behavior change accountability was a priority for this population. Prior work with women veterans has identified the desire for accountability to promote engagement in heart healthy behaviors (Bean-Mayberry et al., 2014). To promote accountability, peer support interventions for this population could include regular, pro-active contact between peers and consistent encouragement on behavioral goals.

Our findings confirm and are consistent with existing literature on peer support in the following ways. Prior work emphasizes aligning peer support based on shared health behavior targets (e.g., weight loss) (Leahey and Wing, 2013) and/or similar disease stage in the context of self-management (e.g., diet-controlled vs insulin-dependent diabetes) (Heisler et al., 2010). The women veterans we interviewed were similarly interested in working with a peer who had a comparable level of motivation and engagement with behavior change. Furthermore, extant literature acknowledges the benefits of peer support to both the provider and the receiver of support (Long et al., 2012; Barg et al., 2012). In our study, women who identified as someone who helps others were particularly interested in a peer support intervention.

Our findings should be considered in the context of our study's limitations. Women not willing to engage in a qualitative research study might have different perspectives and preferences for peer support interventions. It is also possible that the background and training of the investigators on our team introduced bias into the analysis and identification of themes (e.g. clinicians with prior experience caring for this population or those with particular training in social psychology or epidemiology). Finally, the suggestions noted in Table 3 could require significant resources from both the patient and healthcare system leadership (e.g., participant time and transportation costs, and effort to match and train peer supporters).

## 5. Conclusion

Women veterans endorsed peer support as an intervention to support heart healthy behaviors, and expressed a preference for working with peers who have similar health goals and levels of behavior change engagement. Women consistently felt that development of trust is particularly important to facilitate emotional support and sharing of personal experiences. Peer support interventions for women veterans should account for individual preferences in peer matching and provide opportunities for peers to engage in initial relationship building through in-person trust-building activities.

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The views expressed in this manuscript are those of the authors and do not necessarily represent the views of the Department of Veterans Affairs or the United States Government.

I confirm all patient/personal identifiers have been removed or disguised so the patient/person(s) described are not identifiable and cannot be identified through the details of the story.

## References

- Bandura, A., 1977. Self-efficacy: toward a unifying theory of behavioral change. *Psychol. Rev.* 84, 191–215.
- Barg, F.K., Weiner, M.G., Joseph, S., Pandit, K., Turner, B.J., 2012. Qualitative analysis of peer coaches' experiences with counseling African Americans about reducing heart disease risk. *J. Gen. Intern. Med.* 27 (2), 167–172.
- Bean-Mayberry, B.F.M., Zuchowski, J., Yosef, J., Wight, C., Batuman, F., Hamilton, A., 2014. Identifying Cardiovascular Barriers to Risk Identification and Reduction in Women Veterans. Academy Health – Gender & Health Interest Group Meeting, San Diego.
- Biswas, M.S., Calhoun, P.S., Bosworth, H.B., Bastian, L.A., 2002. Are women worrying about heart disease? *Women's Health Issues Off. Publ. Jacobs Institute Women's Health* 12 (4), 204–211.
- Brownson, C.A., Heisler, M., 2009. The role of peer support in diabetes care and self-management. *The Patient* 2 (1), 5–17.
- Dennis, C.L., 2003. Peer support within a health care context: a concept analysis. *Int. J. Nurs. Stud.* 40 (3), 321–332.
- Fisher, E.B., Boothroyd, R.I., Elstad, E.A., et al., 2017. Peer support of complex health behaviors in prevention and disease management with special reference to diabetes: systematic reviews. *Clin. Diabetes Endocrinol.* 3, 4.
- Frayne, S.M., Parker, V.A., Christiansen, C.L., et al., 2006. Health status among 28,000 women veterans. The VA Women's health program evaluation project. *J. Gen. Intern. Med.* 21 (Suppl. 3), S40–6.
- Frayne, S.M.P.C., Saecho, F., Maisel, N.C., et al., 2014. Sourcebook: women veterans in the veterans health administration. In: *AffairsDoV (Ed.), Sociodemographics, Utilization, Costs of Care, and Health Profile. Women's Health Evaluation Initiative. Vol. 3 (Washington, DC).*
- Hagaman, A.K.W.A., 2016. How many interviews are enough to identify metathemes in multisited and cross-cultural research? Another perspective on guest, bounce, and Johnson's (2006) landmark study. *Field Methods* 1–19.
- Heisler, M., 2006. Building Peer Support Programs to Manage Chronic Disease: Seven Models for Success. (10/15/2013).
- Heisler, M., Vijan, S., Makki, F., Piette, J.D., 2010. Diabetes control with reciprocal peer support versus nurse care management: a randomized trial. *Ann. Intern. Med.* 153 (8), 507–515.
- Heisler, M., Halasyamani, L., Cowen, M.E., et al., 2013. Randomized controlled effectiveness trial of reciprocal peer support in heart failure. *Circ. Heart Fail.* 6 (2), 246–253.
- Heisler, M., Mase, R., Brown, B., Wilson, S., Reeves, P.J., 2017. Study protocol: the technology-enhanced coaching (TEC) program to improve diabetes outcomes - a randomized controlled trial. *Contemp. Clin. Trials* 55, 24–33.
- Hill, C.E.K.S., Thompson, B.J., Williams, E.N., Hess, S.A., Ladany, N., 2005. Consensual qualitative research: an update. *J. Couns. Psychol.* 52 (2), 196–205.
- Hopper, E.K.B.E., Olivet, J., 2010. Shelter from the storm: trauma-informed Care in Homelessness Services Settings. *Open Health Serv. Policy J.* 3, 80–100.
- House, J., 1981. *Work Stress and Social Support*. Reading, Mass: Addison-Wesley.
- Hsieh, H.S.S., 2005. Three approaches to qualitative content analysis. *Qual. Health Res.* 15 (9), 1277–1288.
- Israel, B.A., 1982. Social networks and health status: linking theory, research, and practice. *Patient Couns. Health Educ.* 4 (2), 65–79.
- Leahey, T.M., Wing, R.R., 2013. A randomized controlled pilot study testing three types of health coaches for obesity treatment: professional, peer, and mentor. *Obesity (Silver Spring, Md.)* 21 (5), 928–934.
- Leahey, T.M., Gokee Larose, J., Fava, J.L., Wing, R.R., 2011. Social influences are associated with BMI and weight loss intentions in young adults. *Obesity (Silver Spring, Md.)* 19 (6), 1157–1162.
- Lehavot, K., Hoerster, K.D., Nelson, K.M., Jakupcak, M., Simpson, T.L., 2012. Health indicators for military, veteran, and civilian women. *Am. J. Prev. Med.* 42 (5), 473–480.
- Lehavot, K., Der-Martirosian, C., Simpson, T.L., Shipher, J.C., Washington, D.L., 2013. The role of military social support in understanding the relationship between PTSD, physical health, and healthcare utilization in women veterans. *J. Trauma. Stress.* 26 (6), 772–775.
- Long, J.A., Jahnle, E.C., Richardson, D.M., Loewenstein, G., Volpp, K.G., 2012. Peer mentoring and financial incentives to improve glucose control in African American veterans: a randomized trial. *Ann. Intern. Med.* 156 (6), 416–424.
- Maher, N.H.W.A., Duvernoy, C., Davis, M., et al., 2017. The state of cardiovascular health in women veterans. In: *DAffairs DoV (Ed.), Risk Factors, Diagnoses, and Procedures in Fiscal Year (FY) 2014. Vol. 2.*
- Matthias, M.S., Kukla, M., McGuire, A.B., Damush, T.M., Gill, N., Bair, M.J., 2016. Facilitators and barriers to participation in a peer support intervention for veterans with chronic pain. *Clin. J. Pain* 32 (6), 534–540.
- Mosack, K.E., Wendorf, A.R., Brouwer, A.M., et al., 2012. Veterans service organization engagement in 'POWER,' a peer-led hypertension intervention. *Chronic Illn.* 8 (4), 252–264.
- Namey, E.G.G., McKenna, K., Chen, M., 2016. Evaluating bang for the buck: a cost-effectiveness comparison between individual interviews and focus groups based on thematic saturation levels. *Am. J. Eval.* 37 (3), 425–440.
- Parry, M., Watt-Watson, J., 2010. Peer support intervention trials for individuals with heart disease: a systematic review. *Eur. J. Cardiovasc. Nurs. J. Working Group Cardiovasc. Nurs. Eur. Soc. Cardiol.* 9 (1), 57–67.
- Patel, S.A., Winkel, M., Ali, M.K., Narayan, K.M., Mehta, N.K., 2015. Cardiovascular mortality associated with 5 leading risk factors: national and state preventable fractions estimated from survey data. *Ann. Intern. Med.* 163 (4), 245–253.
- Ravi, A., Little, V., 2017. Providing trauma-informed care. *Am. Fam. Physician* 95 (10), 655–657.
- Rhee, H., McQuillan, B.E., Belyea, M.J., 2012. Evaluation of a peer-led asthma self-management program and benefits of the program for adolescent peer leaders. *Respir. Care* 57 (12), 2082–2089.
- Ryan, R., Deci, E.L., 2008. Self-determination theory and the role of basic psychological needs in personality and the organization of behavior. In: *John, O.P.R.R., Pervin, L.A. (Eds.), Handbook of Personality: Theory and Research. The Guilford Press, New York*, pp. 654–678.
- Shenton, A.K., 2004. Strategies for ensuring trustworthiness in qualitative research projects. *Educ. Inf.* 22, 63–75.
- Sokol, R., Fisher, E., 2016. Peer support for the hardly reached: a systematic review. *Am. J. Public Health* 106 (7), 1308.
- Tang, T.S., Funnell, M.M., Gillard, M., Nwankwo, R., Heisler, M., 2011a. Training peers to provide ongoing diabetes self-management support (DSMS): results from a pilot study. *Patient Educ. Couns.* 85 (2), 160–168.
- Tang, T.S., Funnell, M.M., Gillard, M., Nwankwo, R., Heisler, M., 2011b. The development of a pilot training program for peer leaders in diabetes: process and content. *Diabetes Educ.* 37 (1), 67–77.
- Tang, T.S., Funnell, M., Sinco, B., et al., 2014. Comparative effectiveness of peer leaders and community health workers in diabetes self-management support: results of a randomized controlled trial. *Diabetes Care* 37 (6), 1525–1534.
- Tang, T.S., Funnell, M.M., Sinco, B., Spencer, M.S., Heisler, M., 2015. Peer-led, empowerment-based approach to self-management efforts in diabetes (PLEASSED): a randomized controlled trial in an African American Community. *Ann. Fam. Med.* 13 (Suppl. 1), S27–35.
- Voils, C.I., Coffman, C.J., Yancy Jr., W.S., et al., 2013. A randomized controlled trial to evaluate the effectiveness of CouPLES: a spouse-assisted lifestyle change intervention to improve low-density lipoprotein cholesterol. *Prev. Med.* 56 (1), 46–52.