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Article

Women at war: The crucible of Vietnam

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ABSTRACT

Relatively little has been written about the military women who served in Vietnam, and there is virtually no literature on deployed civilian women (non-military). We examined the experiences of 1285 American women, military and civilian, who served in Vietnam during the war and responded to a mail survey conducted approximately 25 years later in which they were asked to report and reflect upon their experiences and social and health histories.

We compare civilian women, primarily American Red Cross workers, to military women stratified by length of service, describe their demographic characteristics and warzone experiences (including working conditions, exposure to casualties and sexual harassment), and their homecoming following Vietnam. We assess current health and well-being and also compare the sample to age- and temporally-comparable women in the General Social Survey (GSS), with which our survey shared some measures.

Short-term (< 10 years) military service women (28%) were more likely to report their Vietnam experience as "highly stressful" than were career (> 20 years; 12%) and civilian women (13%). Additional differences regarding warzone experiences, homecoming support, and health outcomes were found among groups. All military and civilian women who served in Vietnam were less likely to have married or have had children than women from the general population, χ^2 (8) = 643.72, p < .001. Career military women were happier than women in the general population (48% were "very happy", as compared to 38%). Civilian women who served in Vietnam reported better health than women in the other groups. Regression analyses indicated that long-term physical health was mainly influenced by demographic characteristics, and that mental health and PTSD symptoms were influenced by warzone and homecoming experiences. Overall, this paper provides insight into the experiences of the understudied women who served in Vietnam, and sheds light on subgroup differences within the sample.

Introduction

On Veterans Day, 1993, more than 25,000 women gathered on the Mall in Washington, DC, to witness the official dedication of a bronze statue honoring women's service in the Vietnam War. The statue was the culmination of an intense campaign for acknowledgement of the vital role played by women, both military and civilian, in that conflict. The Vietnam Women's Memorial Project (VWMP) was the driving force behind the effort. This paper reports on a survey, carried out in collaboration with the VWMP, of 1285 women deployed to Vietnam for either military or civilian service, groups for whom information is sparse and largely consists of small-sample interviews and anecdotal

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evidence. The analyses presented here are based on the respondents' retrospective reports of their Vietnam wartime experiences and their subsequent health and well-being. The survey was conducted some twenty-five years after the respondents' return from Vietnam. These data flesh out the minimal information available on the deployed women of the Vietnam War. We also help contextualize some of the findings by comparing our sample on demographics of marriage and childbearing and on measures of happiness and well-being to a contemporaneous nationally representative age-matched cohort (the General Social Survey, GSS).

About 265,000 women served in the U.S. military during the Vietnam era, with as many as 11,000 deployed to the Vietnam theater of operations (precise figures are not available) (Thomas, Kang, and Dalager, 1991; http://www.vietnamwomensmemorial.org/vwmf.php). During the Vietnam era, military women were not formally assigned combat roles. Nonetheless, they were deployed to combat zones where they experienced warzone stressors and hostile fire. Most military women in Vietnam served as nurses in the Army, Navy or Air Force Nurse Corps (Neel, 1973). About 60% arrived with less than six months active military duty service, often without any civilian or military job experience, and generally with little formal training for combat nursing. They handled many casualties, and some were themselves wounded or injured. The nurses functioned in life-and-death situations, were assigned profound medical responsibilities generally exceeding the authority they would have been afforded in civilian settings, and often performed duties that were beyond the scope of their professional training. Tours of duty for women in the Army Nurse Corps were generally one year, with assignments at surgical or field hospitals and convalescent centers. Navy Nurse Corps Vietnam duty was generally for 90 days on one of the two hospital ships in Vietnam waters. Some Air Force nurses were stationed in Vietnam at the 12th USAF Hospital in Cam Ranh Bay, generally for a one-year tour of duty. Other Air Force nurses were not stationed in Vietnam, but could land in Vietnam multiple times in a single day to pick up wounded soldiers and accompany them to hospitals in Japan or elsewhere.

The Departments of Defense and State also deployed civilian women to Vietnam, as did service organizations such as the American Red Cross (ARC), which deployed women to run its Supplemental Recreational Activities (SRAO) program in the warzone. Often called "donut dollies," a sobriquet they acquired during World War II, women in the Red Cross worked in small teams traveling around the country in "clubmobile" units to boost the morale of the troops (Stur, 1965, citing "Department of Defense Request for SRAO in Vietnam," June 4, 1965. NARA RG 200 [Records of the American National Red Cross, Box 75]). ARC women make up the largest population of the civilians in this study.

It is useful for the modern reader to recall some social context of the women deployed to Vietnam. Women deployed to Vietnam were expected to reflect the female gender as it was then conceptualized. Feminine appearance was essential. Nurses arriving in Vietnam deplaned into the brutal heat and dirt of Vietnam wearing dress uniforms with nylon hose and dress shoes. The Red Cross "donut dollies" were expected to symbolize purity and innocence and to think of the male troops as brothers. They wore blue seersucker shirtwaist dresses or culottes throughout the War, even while flying in helicopters to set up recreational activities at fire support bases deep in the jungle, often under extremely dangerous circumstances (Steinman, 2000; p. 213). (See Fig. 1).

Most of the sparse literature on women in Vietnam focuses on military nurses. Virtually no research exists on the health and well-being of civilian women deployed to Vietnam. Stanton and colleagues (1996) interviewed 22 female nurses from various war eras and identified common themes, including the physical and professional hardships of living (e.g., extreme temperatures) and working (e.g., long hours, lack of necessary medical supplies) conditions. Warzone nursing was described by all as different from stateside nursing. It included managing unfamiliar tropical diseases and dangers from the threat of

Fig. 1. a: Nurses arrive in Vietnam. (Photo courtesy of General Ray Davis Gallery). b: Donut Dollies en route to a stint at a fire support base in South Vietnam. Mecca, Pete. "'Donut Dollies' brought touch of home to the front lines". *Newton Citizen*, Jan 30, 2016. [http://www.newtoncitizen.com/community/scrapbook/a-veteran-s-story-a-touch-of-home/article_d89e28c0-ee2a-53b1-a4c0-13256195b124.html] (last accessed April 10, 2016).

chemical warfare to being wounded by enemy fire (Stanton, Dittmar, Jezewski and Dickerson, 1996). Martin (1967) characterized the working environment as dirty and dangerous. Kirk's (1965) interviews with Army and Navy nurses stationed in Saigon, which was not a direct combat area, revealed other hardships like long duty hours, few opportunities for relaxation, intense heat, and poor facilities. Norman (1990) interviewed 50 military and veteran nurses who served in Vietnam. They described difficult living and working conditions, long hours, a seemingly endless stream of casualties, and feelings of loss and grief. However, the interviewees also described their Vietnam service as both professionally and personally rewarding.

Our research team has already reported on associations between poorer physical and mental health outcomes in later life and higher reported warzone stress exhibited by the deployed nurses in this cohort. We found that their PTSD symptoms mediated the effect of warzone stressors on their mental, but not physical, health functioning (Pless Kaiser, Spiro, Lee and Stellman 2012). In another study, we found cumulative trauma exposure (childhood and adulthood trauma, and combat) to be related to poorer mental and physical health functioning, with each type of trauma uniquely contributing to outcomes. Lower levels of social support increased the negative impact of combat on well-being (Park, Wachen, Pless Kaiser and Stellman, 2015).

We have also carried out qualitative analyses of responses to questions about stressful and positive Vietnam experiences among the military women. We found, as did Norman (1990), that nearly all respondents (96%) described a positive experience; in addition 68% also described a negative experience. The emergent themes for positive

experiences were the importance of interpersonal relationships, of helping others, personal and professional growth, travel/new experiences, and patriotism. Themes for negative stressful experiences included poor living and working conditions, exposure to the consequences of war, physical threat, ethical/moral problems, negative interpersonal experiences (including rape and sexual harassment), and drug and alcohol problems. Those who described negative stressful experience had lower mental health functioning scores and higher scores for overall stress and difficulties in Vietnam compared to those who did not provide open-ended negative responses (Pless Kaiser, Wang, Davison, Park, & Stellman, 2017).

The analyses in the present paper expand the cohort to include the deployed civilian women and provide further additional analyses on the deployed military women. We have also taken advantage of the fact that our survey shared several items with the contemporaneous 1998 and 2000 waves of the General Social Survey (GSS) to situate our findings within the wider social context provided by that representative national sample of women (http://www3.norc.org/gss+website/). We compare patterns of marriage and childbearing and examine several long-term indicators of happiness and well-being in these distinctive groups.

Within our sample of deployed military women, there were major differences in length of military service, which ranged from two to three years to greater than twenty years (See Fig. 2). We have previously found length of service to be an important factor related to outcomes (Pless Kaiser et al., 2012). Therefore, throughout these analyses we have stratified the military women by length of service (short-term, middle and long-term career military).

Key factors considered in the analyses are warzone experiences and working conditions (e.g., sexual harassment, exposure to casualties, volunteer activities with the people of Vietnam), and the social environment to which these women returned in the United States. A wide variety of responses have been associated with stressful or traumatic experiences (http://www.ptsd.va.gov/public/problems/common-reactions-after-trauma.asp). In this paper we specifically explore happiness, well-being, and mental health symptoms reported by these women some twenty-five years after their return from Vietnam. We examine their self-rated health, physical and mental health functioning and self-reported severity of PTSD symptoms.

Specific research questions were: 1) Are there differences among women who served in Vietnam as civilians and those who served in the military with varying career lengths? What factors are associated with staying in the military for twenty or more years for a career? 2) What factors are associated with psychological well-being and physical health among these groups of women? 3) How do women who served in Vietnam compare to an age-matched sample of civilian women (GSS) who had not served in Vietnam on marriage and family factors? How do they compare on aspects of happiness, general health, and mental health?

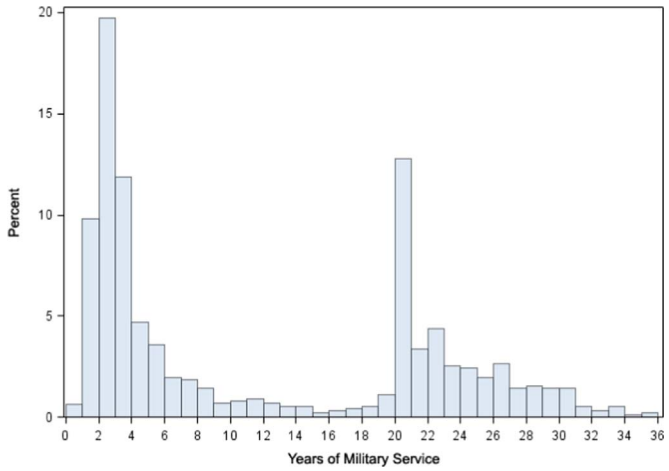

Fig. 2. Distribution of military service (years).

Methods

Participants and procedure

Women were drawn from the VWMP mailing list and included both military and civilian personnel (military personnel may or may not have been deployed to Vietnam). Respondents completed a mailed survey in 1998-99 that achieved a 66% response rate (N=2,443) after three mailings. The sample considered here comprises 1285 women who were deployed to Vietnam, and among the military women provided enough information so length of service could be calculated: 977 military and 308 civilian personnel.

Measures

The "Women in the Vietnam era" questionnaire **(**see Supplementary Appendix for full measures**)** was adapted from surveys of male American Legion Vietnam veterans conducted in 1984 and 1998 (see Stellman, Stellman and Sommer, 1988a, 1988b, 1988c, 1988d). Where applicable, items were taken directly from these surveys to maximize comparability, in that the original aim of the research was to test reliability of measures in a female population. A focus group was also conducted to identify additional relevant topics for women who served in Vietnam. As a result of the focus group a number of questions about volunteer activities and experiences of sexual harassment were added to the survey.

The full survey assessed demographics, military history (including specific military assignments in Vietnam), wartime exposure to herbicides, other occupational and warzone exposures, reproductive history, social support, and lifestyle factors such as smoking, alcohol use, and drug use. Questions about nursing experiences were included because the majority of women who served in Vietnam were nurses. Items on reproductive health and women's health were adapted from the Nurses' Health Study (Martinez et al., 1997; Hankinson, Colditz, Manson and Speizer, 2001). We queried whether the father of participants' children was a veteran. To assess career trajectory, participants were asked whether or not they stayed in a nursing-related profession following their service, and about their current occupations. Respondents were queried about their use of and satisfaction with Veterans Health Administration services. Participants also indicated if they were wounded or hospitalized in Vietnam, or if they engaged in volunteer activities while in country.

The specific measures used in this paper are presented in Table 1. We also used demographic questions (marital status, childbearing), and these questions from the 1998 and 2000 waves of the GSS that matched our instrumentation to compare our survey respondents with aged-matched members of the general U.S. female population: "If you were to consider your life in general these days, how happy or unhappy would you say you are, on the whole…", with responses ranging from 1 = *very happy* to 4 = *not at all happy*; "Would you say that in general your health is ….", with responses ranging from 1 = *excellent* to 5 = *poor*; and "How much of the time during the past 4 weeks have you felt downhearted and blue?", with responses ranging from 1 = *all of the time* to 6 = *none of the time*. In the discussion section we included selected responses, drawn from another analysis (Pless Kaiser et al., 2017) to two open-ended questions about the Vietnam experience to help elucidate our findings.

Analysis plan

All analyses were performed using SAS 9.3 statistical software. Descriptive statistics were examined for all study variables. Significance of comparisons among categorical variables was assessed

Table 1
Current study measures.

Measure	# of items	*M*	*SD*	Range	Alpha	Scale Source
Warzone stressors						
Stress exposure						
Military stress	1	3.20	1.28	1 – 5	–	Modified from Wolfe, Brown, Furey & Levin, 1993
Work stress	7	12.38	4.12	7 – 30	0.75	Modified from Wolfe et al., 1993 and Kulka et al., 1990
Sexual harassment	4	6.38	2.86	4 - 19	0.82	Developed based on focus group data
Exposure to casualties	18	46.65	13.33	18 – 86	0.90	Modified from Wolfe et al., 1993
Social support						
Community support	1	2.95	1.25	1 – 5	–	American Legion Study (ALS; Stellman et al., 1998a)
Community support (1998)	1	2.13	0.89	1 – 5	–	ALS
Family support	1	2.46	1.25	1 – 5	–	ALS
Health and well-being outcomes						
PTSD symptomatology	18	36.07	13.88	18 – 90	0.94	Figley, 1977 Foy, Sipprelle, Rueger & Carroll, 1984; Lund, Foy, Sipprelle & Strachan, 1984;
Physical and mental health	36	46.42 (PCS)	11.11 (PCS)	11.84 – 69.20 (PCS)	–	SF-36 (Ware, Kosinski & Keller, 1994)
		49.49 (MCS)	11.19 (MCS)	6.15 – 74.66 (MCS)		
General health	1	1.95	0.72	1 - 4	–	Psychiatric Epidemiology Research Interview (PERI; Dohrenwend et al., 1980)
Happiness	1	3.25	0.73	1 – 4	–	Karasek, 1979
Well-being	1	4.93	1.10	1 – 6	–	SF-36 (Ware et al., 1994)

Note. Scales and items are included in the Supplementary Appendix. PTSD = posttraumatic stress disorder; PCS = physical component summary; MCS = mental component summary.

with chi-square tests and comparisons with continuous variables were assessed with one-way ANOVAs. Significance was set at $\alpha = 0.05$ for overall comparisons. Post-hoc pairwise comparisons utilizing Student *t*-tests examined specific group mean differences, with Bonferroni correction used to adjust for multiple comparisons. Linear regressions were used to model self-reported health, the mental component summary (MCS), the physical component summary (PCS) of the SF-36 (normed to 50 in the general population), and current PTSD symptom scores as a function of exposure to sexual harassment, work stress, exposure to casualties, community support, family support, perception of stress in Vietnam, marital and child-bearing status, and length of military service, controlling for age at deployment.

In all analyses, marital and child status were combined into a single dichotomous variable (0 = *not married/never had children*, 1 = *married and/or had children*) due to the strong association between these two factors. For most analyses, length of service was categorized as short-term, < 10 years, middle-term, > =10 and < 20, and career, > =20 years. We used the following reasoning for constructing the three strata. As can be seen in Fig. 2, length-of-service is clearly bimodal, with obvious "short term" and "long-term" (career) groups. We have chosen to divide the upper and lower tails of these two groups into a middle length-of-service group comprised of women who re-enlisted after their first enlistment but did not remain in service for the full twenty years required to vest lifetime benefits. A variety of reasons undoubtedly contributed to the enlistment paths chosen by the middle group. Our model treats these groups as representing conceptually different (and interesting) populations. For some analyses we dichotomized length of military service (< 20 and > =20 years) and used logistic regression for examining marital status, childbearing, age at deployment and perception of military stress as predictors for remaining in the military for a career.

The study was approved by the Institutional Review Boards of all participating institutions.

Table 2
Demographic characteristics of women deployed to Vietnam, by military status and length of military service.

	Non-military *n* = 308	Years of military service		
		< 10 *n* = 550	≥10 and < 20 *n* = 59	≥20 *n* = 368
Age at First Arrival in Vietnam***	26.6 (25.8 – 27.5)	24.1 (23.8 – 24.4)	31.0 (29.2 – 32.9)	33.3 (32.5 – 34.1)
Marital Status***				
Never Married	25.3	18.5	51.7	68.6
Married	50.3	60.5	29.3	18.2
Divorced or Widowed	24.0	20.9	18.6	13.0
Children***				
Had Children	48.7	62.6	22.0	8.2
No Children	51.3	37.5	78.0	91.9
Education***				
High School or Less	2.3	1.5	1.7	2.5
Some College or Vocational School	6.2	19.4	20.3	14.2
College	42.5	39.0	42.4	35.5
Graduate School	49.0	40.1	35.6	47.8
Income***				
Under 20,000	4.0	2.1	7.0	1.8
20,000 – 29,999	6.4	3.2	15.8	6.2
30,000 – 39,999	11.5	7.4	17.5	19.7
40,000 – 49,999	8.1	12.0	14.0	19.1
50,000 – 59,999	12.1	17.7	7.0	16.5
60,000 or more	57.9	57.5	38.6	36.8

Note. * $p < 0.05$, ** $p < 0.01$ *** $p < 0.001$ based on ANOVA or omnibus chi-square analyses. Data are mean (confidence interval) or percent.

Results

Research Question 1: Are there differences among women who served in Vietnam as civilians and those who served in the military with varying career lengths? What factors are associated with staying in the military for twenty or more years as a career?

Demographic characteristics of the cohort, stratified by length of service and civilian vs. military status, are shown in Table 2. In the tables overall group comparisons are displayed, not specific group comparisons. Civilian women differed significantly from the three military groups on all demographic factors. Career military women were significantly less likely to marry or to bear children, compared with the short-term military women ($p < 0.001$). While career military and civilian women were more likely to have had professional education than the other groups, there were no significant differences in family income after adjusting for marital status (results not shown). Short-term military veterans were significantly younger when deployed to Vietnam than the middle-term military and career military women (see Table 2 and Fig. 3).

Results of logistic regression (not shown) provide another perspective regarding factors associated with making the military a career. Characteristics positively associated with increased likelihood of remaining in the military for >=20 years include: older age at deployment to Vietnam ($p < 0.01$), more years of service prior to deployment ($p < 0.01$), the interaction between older deployment age and more years of service, and never marrying/bearing children (4.3 times more likely [$p < 0.001$]). By contrast, higher levels of perceived stress in Vietnam were related to a decreased likelihood of completing at least 20 years of military service.

Stressful experiences

Sexual Harassment

Average scores on the sexual harassment scale ranged from 5.5 to 7.5 (corresponding to "never" and "rarely"), with lower scores associated with increased length of military service ($p < 0.001$) and increasing military rank ($p < 0.001$; results not shown). In addition, the civilian women who served in Vietnam reported experiencing sexual harassment more often than the military women (see Table 3).

Exposure to casualties and work stress

Mean scores on the exposure to casualties scale ranged from 30.1 to 49.1 (which corresponded to caring for casualties "rarely" to "sometimes", on average), with the civilian women being less exposed to casualties than all military women, regardless of their length of military service ($p < .001$). Short-term military women reported significantly higher work stress compared with the career-military group ($p < 0.001$). Work stress in civilian women differed significantly from short-term ($p < .001$) and middle-term military women ($p < .01$), but not from career-military women.

Community support

Career military women were more likely to report their community as supportive, both when they first returned from Vietnam and in 1998, than were civilian and short-term military women.

Research Question 2: What factors are associated with psychological well-being and physical health among these groups of women?

The regression results in Table 4 show associations between demographic and military characteristics, warzone experiences, homecoming, and family support and the outcome measures of general health, physical health, mental health, and PTSD symptoms. The overall models accounted for 9% of the variance in general health; 9% of the variance in physical health; 24% of the variance in mental health; and 42% of the variance in PTSD symptoms.

Factors affecting general, physical, and mental health

Respondent age in Vietnam was positively associated with current general health ($p < .001$) and mental health ($p < .05$) and negatively associated with current physical health ($p < .001$). Having had children and/or being married had a positive impact on both general health ($p < 0.05$) and physical health ($p < .05$). Perceived stress in Vietnam (both stressful and highly stressful, $p < .05$ and $p < .01$) was associated with poorer current general health. Work stress in Vietnam negatively impacted both current mental and physical health ($p < .05$

Table 3
Rank and reported experiences of women in Vietnam, by military status and length of military service.

	Non-military $n = 308$	Years of military service		
		< 10 $n = 550$	≥10 and < 20 $n = 59$	≥20 $n = 368$
Rank***				
Enlisted	N/A	3.3	3.4	2.5
Lt	N/A	44.4	6.8	2.5
Capt, Lt (Navy)	N/A	41.6	13.6	0.3
Major, Lt Col, Lt Comm	N/A	3.5	44.1	14.4
Lt Col (Army), Comm	N/A	5.3	23.7	49.7
Capt (Navy), Col, or Higher	N/A	2.0	8.5	30.7
Volunteered for humanitarian activities***	50.2	64.1	64.4	54.0
Injured/Wounded in Vietnam	8.4	8.9	10.2	7.6
Hospitalized in Vietnam***	20.3	33.7	30.8	19.6
Perceived Stress in Vietnam***				
Not at all	10.0	3.8	3.4	10.8
Somewhat/Not Sure	52.2	37.1	47.5	48.2
Stressful	24.9	31.7	30.5	29.1
Highly stressful	13.0	27.5	18.6	12.0
Sexual Harassment***	7.5 (7.1 – 7.8)	6.4 (6.2 – 6.6)	6.3 (5.8 – 6.9)	5.5 (5.2 – 5.7)
Exposure to Casualties***	33.3 (31.0 – 35.5)	53.7 (52.5 – 54.8)	51.7 (48.0 – 55.3)	51.0 (49.7 – 53.4)
Work Stress***	11.2 (10.8 – 11.6)	13.5 (13.1 – 13.9)	13.2 (12.1 – 14.4)	11.9 (11.5 – 12.3)
PTSD Symptoms***	35.9 (34.4 – 37.3)	38.2 (37.0 – 39.5)	38.6 (34.7 – 42.5)	32.6 (31.3 – 33.9)
Family Support*				
Very helpful	28.9	31.4	28.1	38.0
Moderately helpful	19.9	18.4	10.5	19.9
Slightly helpful	22.3	24.5	21.1	18.7
Not at all helpful	24.9	21.7	33.3	21.9
They made it harder	4.0	4.1	7.0	1.4
Community Support***				
Very supportive	17.5	11.0	20.0	28.1
Moderately supportive	23.7	17.0	14.6	18.0
Slightly supportive	25.4	23.9	29.1	20.8
Not at all supportive	24.7	38.7	23.6	25.9
Hostile	8.6	9.4	12.7	7.3
Community Support in 1998				
Very supportive	22.7	26.7	28.1	32.6
Moderately supportive	41.8	38.6	36.8	35.4
Slightly supportive	27.8	29.8	29.8	26.1
Not at all supportive	7.4	4.6	5.3	5.9
Hostile	0.3	0.4	0.0	0.0

Note. * $p < 0.05$, ** $p < 0.01$ *** $p < 0.001$ based on ANOVA or omnibus chi-square analyses. Abbreviations: Lt: Lieutenant; Col: Colonel; Capt:Captain; Comm:Commander

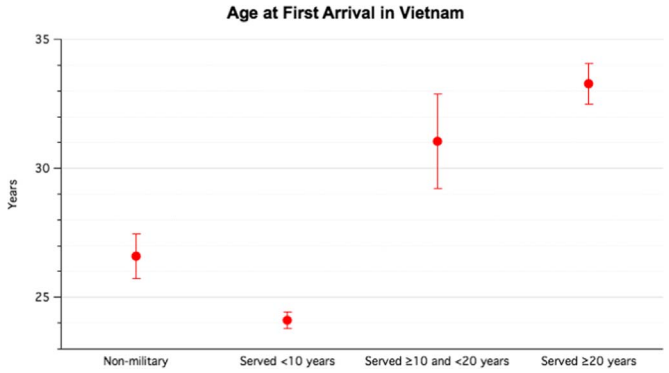

Fig. 3. Age at first arrival in Vietnam.

and $p < .01$). Better community attitudes when participants first returned from Vietnam ($p < 0.05$) and in 1998 ($p < 0.01$), as well as family support ($p < 0.01$), were significantly associated with better mental health scores.

Factors affecting PTSD scores

As shown in Table 3, mean PTSD scores were low and ranged from 32.6 to 38.6 (corresponding to "rarely" experiencing symptoms, on average). Career military women reported significantly lower scores than all other groups ($p < .01$). Table 4 shows that higher PTSD scores (more symptoms) were significantly associated with sexual harassment ($p < 0.001$), work stress ($p < 0.001$), perceived stressful environment (both stressful and highly stressful $p < 0.05$ and $p < 0.001$), greater exposure to casualties ($p < 0.01$), and poorer perception of community support at homecoming ($p < 0.001$), in 1998 ($p < 0.01$), and family support ($p < 0.001$).

Research Question 3: How do women who served in Vietnam compare to an age-matched sample of civilian women (GSS) who had not served in Vietnam on marriage and family factors? How do they compare on aspects of happiness, general health, and mental health?

Table 5 provides comparisons of the four groups in our study with a sample of age-matched women (> 50 years old) surveyed via the GSS. Both the military and civilian women who served in Vietnam were more likely to have never married and not had children than the age-matched sample of women in the general population, regardless of length of service. Career military women were happier than women in the general population (48.3% "very happy" compared to 38.5%). A

Table 5
Comparisons between current sample and age-comparable General Social Survey (GSS) cohorts (1998 and 2000) (percent).

	GSS Cohort	Non-military	Years of military service		
			< 10	≥10 and < 20	≥20
	n = 611	n = 308	n = 550	n = 59	n = 368
Marital Status***					
Never Married	5.2	25.3	18.5	51.7	68.6
Married	41.1	50.3	60.5	29.3	18.2
Divorced/ Separated or Widowed	53.7	24.3	21.0	19.0	13.2
Children***					
Had Children	88.1	48.7	62.5	22.0	8.2
No Children	11.9	51.3	37.5	78.0	91.8
Happiness***					
Very happy	38.5	40.0	35.9	27.1	48.3
Moderately happy	53.2	49.8	48.3	57.6	44.7
Not very happy	5.6	8.5	12.5	11.9	4.8
Not at all happy	2.8	1.6	3.3	3.4	2.2
Overall health***					
Excellent	23.2	33.2	25.7	15.3	24.5
Good	46.1	51.5	55.8	54.2	52.7
Fair	20.2	13.4	16.3	22.0	21.7
Poor	10.5	2.0	2.2	8.5	1.1
Feel down or blue***[a]					
All of the time	3.0	1.6	1.5	3.4	0.5
Most of the time	4.2	3.3	3.5	3.4	1.6
A good bit of the time	6.9	3.9	7.8	5.1	3.0
Some of the time	21.3	19.4	18.9	18.6	13.5
A little of the time	32.4	43.1	39.1	32.2	32.4
None of the time	32.1	28.6	29.1	37.3	48.9

Note. * p < 0.05, ** p < 0.01 *** $p < 0.001$ based on omnibus chi-square analyses.

Table 4
Physical and mental health outcomes regressed on age, marital/child status, military status and length of service, and Vietnam experiences.

	General Health b(se)	SF-36: PCS b(se)	SF-36: MCS b(se)	PTSD Symptoms b(se)
Age at First Arrival in Vietnam	0.02 (0.00)***	-0.30 (0.07)***	0.15 (0.07)*	-0.01 (0.07)
Never Married and no kids vs. Married and/or have kids	-0.14 (0.06)*	2.03 (0.90)*	-0.87 (0.84)	0.14 (0.90)
Military Status & Length of Service[a]				
Non-Military	0.10 (0.10)	-0.35 (1.49)	-1.86 (1.39)	3.91 (1.50)**
Short-term Military	0.03(0.07)	1.21 (1.06)	-1.90 (0.99)	0.41 (1.07)
Middle-term Military	0.29 (0.11)**	-3.30 (1.69)	-0.99 (1.58)	2.75 (1.71)
Perception of Stressful Environment in Vietnam[b]				
Somewhat/not sure	0.16 (0.11)	-2.39 (1.70)	0.74 (1.59)	1.47 (1.72)
Stressful	0.23 (0.11)*	-2.91 (1.78)	-0.20 (1.66)	4.36 (1.80)*
Highly stressful	0.35 (0.12)**	-3.50 (1.93)**	-5.28 (1.80)	10.00 (1.95)***
Sexual Harassment	0.02 (0.01)	-0.15 (0.15)	-0.27 (0.14)	0.84 (0.15)***
Work Stress in Vietnam	0.01 (0.01)	-0.29 (0.11)**	-0.27 (0.11)*	0.48 (0.11)***
Exposure to Casualties	0.00 (0.00)	-0.02 (0.03)	0.04 (0.03)	0.09 (0.03)**
Community Support	0.04 (0.02)	-0.70 (0.37)	-0.78 (0.34)*	1.75 (0.37)***
Community Support in 1998	0.04 (0.03)	0.03 (0.44)	-1.25 (0.41)**	1.22 (0.44)**
Family Support	0.00 (0.02)	0.19 (0.35)	-0.99 (0.32)**	1.20 (0.35)***

Note. * $p < 0.05$, ** $p < 0.01$ *** $p < 0.001$. PCS = physical component summary; MCS = mental component summary; PTSD = posttraumatic stress disorder.
[a] Reference group > 20 years of military service.
[b] Reference group was "Not at all stressful".

greater proportion of the Vietnam cohort reported their health as either "excellent" or "good" although career military women's responses were similar to women of the GSS on this item and civilian women who served in Vietnam were most likely to report their health as "excellent." Career military, and to some extent the civilian women who served in Vietnam, also reported feeling down or blue less frequently than the GSS cohort.

Discussion

Our study, while perhaps not the first to review the deployment experiences and long-term outcomes of women who served in Vietnam nonetheless does break some new ground. To our knowledge, this is the first study (a) to describe the experiences of civilian women deployed to a warzone and to compare them to those of military women; (b) to differentiate the experiences and outcomes among military women by the length of their military career service; (c) to contextualize the general health and happiness, marital characteristics, and childbearing patterns of women deployed to Vietnam and those of their peers by comparing them to a contemporaneous nationally representative age-matched cohort (GSS).

The findings are consistent with other studies. For example, others have reported higher levels of PTSD symptoms and poorer physical and mental health outcomes to be significantly associated with adverse factors like sexual harassment, work stress, perceived stressful environment, greater exposure to casualties, and perception of less community and family support (e.g., Kaylor, King, & King, 1987; King, King, Gudanowski and Vreven, 1995; Koenen, Stellman, Stellman and Sommer, 2003). In the current sample, both exposure to stressors and their effects were modified by length of service. Exposures (e.g., exposure to casualties, work stress, sexual harassment) and length of military service (in years) are separate and important factors. Career military women reported the least severe PTSD symptoms, less overall stress and work-related stress while serving in Vietnam, and the lowest exposure to sexual harassment of any group. They reported the highest levels of family and community support upon returning from Vietnam, and continued to report the highest levels of perceived community support in 1998, at the time of the survey. Unlike many short-term military nurses, such as the one who noted: *"Feeling like the enemy returning to the U.S."* career military women reported feeling more supported.

Career military women, understandably, also achieved the highest military ranks, on average, with nearly 80% of them having attained Lieutenant Colonel or higher, compared with just over 30% of middle-term women and 7% of short-term women. Career women were also much less likely to have married and/or to have borne children, compared to those who served fewer than 20 years. This is not surprising, given then existent policies with regard to childbearing and pregnancy in the service. Prior to 1975, policy dictated that pregnant women be immediately discharged, meaning that women seeking a career in the military could not simultaneously start a family.

It is difficult to assess the directionality of the long-term health effects of warzone stressors and career military service. Were the wartime experiences for the higher ranking, older career women significantly different from those of the much more junior veterans, or did the personal and social factors that predisposed women to a long-term military career also lead to having lower perceptions of stress derived from similar dangerous military environments? One younger nurse-recruit noted: "*I was a 21 Y.O. head nurse of a surgical intensive care unit. My patients….all suffered horrible wounds. Daily work was stressful due to the nature of their mutilated bodies and alertness to the horrors of war*." Younger women may have been more affected by exposure to casualties: "*Constant stress and overwork. A continuous stream of severely wounded young men – the feeling that there was never enough time to really provide adequate nursing care*." Were older, more seasoned women who had served more years before arriving in Vietnam better able to cope and hence perceive warzone experiences as less stressful and dangerous than the younger, less experienced women? It is important to remember that although older, higher-ranking women did have statistically significantly less exposure to casualties, they still had quite meaningful exposures. Perhaps women with more years of military service prior to the Vietnam War, who would have had needed fewer years of service to reach full retirement benefits, were motivated to continue to pursue their military careers for reasons essentially unrelated to their experiences in Vietnam?

Deployment to Vietnam for both military and civilian women also had many positive aspects. Responses to the open-ended questions in our other analyses showed that many women reported satisfaction from their work with the wounded in Vietnam. Many of the women studied, and especially those who served as nurses, commented that they were given much more responsibility in their positions while in Vietnam than they would have had in a similar civilian job in the United States; as one nurse in our survey commented, "*The level of experience I gained can never be duplicated. I learned things most nurses can't imagine doing*." Another stated: "*Working with casualties was the best in my life. I have never felt more useful or needed or appreciated*."

Being able to engage in volunteer activities in the local community was also a widely shared and commented upon positive activity, as described by one long-term Navy nurse: "*Getting to know local Vietnamese civilian medical/nursing personnel. Being able to contribute to enhanced nursing practice in a provincial Vietnamese hospital!*" and "*Having the opportunity to assist in salvaging the abandoned/orphaned/ill infants…*".

In many ways the women who served in Vietnam appear to have been distinctive. Even those who served in civilian capacities for relatively short periods of time were markedly different from their GSS peers. Both military and civilian women who served in Vietnam were less likely to marry or have children than the women surveyed in the GSS. We can speculate that women who volunteered and went to Vietnam in the 1960s may have done so as a way of breaking away from the traditional roles assigned to women in the United States during that time, and they seem to have continued on a different trajectory in post-war years.

The deployed civilian women, a unique group and unstudied population captured by this study, were similar demographically (e.g., age, marital status) to the short-term military women, but reported experiencing some stressors and outcomes (e.g., overall stressfulness of Vietnam, work stress, PTSD symptoms) at a level that was similar to the experiences of career military women. These women were less likely than civilians in the general population to get married or have children, were most likely to report their health as "excellent" and reported feeling somewhat less "down or blue" than civilians who did not serve in Vietnam. Some experiences were also dissimilar from their military counterparts: civilian women in Vietnam reported less exposure to casualties and more sexual harassment. These similarities and differences are probably due to the roles played by civilian women, such as the "donut dollies," who provided entertainment and programs to boost the morale of troops, rather than to care for them as sick, wounded, and perhaps dying men. It appears that civilian women who volunteered to serve in Vietnam not only pursued a unique undertaking as young women, but continued to lead different lives, with regards to marriage and family, while still reporting positive health and well-being.

Given that career military women experienced a life quite different from that of women who served for shorter periods of time before returning to civilian life (or, as in the case of the GSS cohort we used as a civilian comparison, never served), it is worth examining the impact that this choice had on their quality of their later lives. After adjusting for covariates, career military women reported better average physical and mental health in 1998 compared to short-term, middle-term, and

civilian women. Though the difference in physical health may be largely explained by the "healthy worker effect" seen in veteran populations (Fox and Collier, 1976), the difference in psychological health indicates that there was something about the experience of the career women - independent of their combat/stress exposure, exposure to sexual harassment, and perception of community and family support - that resulted in better psychological outlook later in life. This is confirmed by our finding that career military women identified themselves as happier on several dimensions than both the other cohorts in our survey and the ≥50 year old women from the GSS cohort. These results suggest that a military career, despite being a non-traditional career path for women at the time and one that precluded a more normative family and personal life, afforded women with a meaningful experience that continued to positively impact their emotional well-being even decades after the war.

Women today have different and greater opportunities to participate in the U.S. military and to advance their professional careers compared to women of the Vietnam War era, and yet many of the issues we examined in our studied population may still be of concern for women serving in the modern combat environment and today's military. Even taking into account the negative aspects of military service, our study underscores the benefits of a military career for those women who chose it, and the importance of learning from the lessons of the Vietnam War to improve the experiences and well-being of current and future generations of female military personnel. When queried about their experiences during deployment, 96 percent of the respondents provided a positive answer. The fulfilling and challenging aspects of deployment and service should not be lost when considering approaches to reducing risks and enhancing health and well-being of women who serve in the U.S. military.

Our finding that a perceived lack of community support negatively impacts PTSD symptomology (as has been previously observed in male American Legionnaires who served in Vietnam in Stellman et al., 1988a), underscores the importance of public information programs and community support activities for today's returning veterans. Our finding that sexual harassment and other measures of stress in Vietnam were predictors both of worse mental health overall and worse PTSD symptomology specifically, is consistent with the literature linking stressful warzone experiences and negative mental health outcomes over time for both women and men (Magruder et al., 2015; Marmar et al., 2015; respectively) and points to the continued need to reduce exposures to such stressors. As previously noted, even high-ranking women were subjected to sexual harassment during their military service, and sexual harassment was an ever-present stressor that all women were at risk for experiencing. Sexual harassment and military sexual trauma remain problems for our service members and veterans today, but have received greater attention from both the Departments of Defense and Veterans Affairs (Street, Kimberling, Bell & Pavao, 2011).

Limitations

The cross-sectional nature of our data limits our ability to draw causal inferences. It is worth noting that the survey was completed in 1998, which has advantages and disadvantages. An obvious disadvantage is that it is possible that some of the reported adverse outcomes may have been ameliorated in the intervening years. This isn't likely for physical health outcomes, but may have occurred for some PTSD and other mental health symptoms. For our effects to disappear, such diminution would have had to occur in a dose-related fashion. In addition, there is the potential for recall bias to have influenced report of wartime experiences, given the negative societal views about Vietnam in the U.S. following the war. However, this likelihood is minimized for several reasons: the majority of variables examined (e.g., age, length of service, rank) are factual rather than subjective; data were collected a number of years after the negative views of Vietnam were most prominent; it is unlikely that the overall impact of time on recall was systematic in its influence on the recall of individuals in the study. Our studies of consistency of combat recall in male American Legionnaires did not find meaningful error in recollection and reporting (Koenen, Stellman, Dohrenwend, Sommer and Stellman, 2007).

Regarding possible advantages, the data were collected at a time much closer to the events than would a current study asking participants to retrospectively report on experiences in Vietnam, and thereby possibly decreasing accuracy. In any case, since the survey was completed approximately 25 years after their service in Vietnam, the data provide a valuable view of their experiences with aging, and open a window into their appraisals – or reappraisals – of their Vietnam experience from the vantage of mid-life and beyond. Additionally, we have not yet analyzed data on the military women in our cohort who were not deployed to Vietnam; examination of this cohort could lead to insight into further similarities and differences between veteran and civilian women, although research on males has not found differences between civilian and Vietnam era veterans (Norquist, Hough, Golding & Escobar, 1990).

It should be noted that the 1998 and 2000 GSS women were not queried as to military status, so that the GSS cohort may have included some women who served in Vietnam. Gallup (http://www.gallup.com/poll/158729/men-women-veterans.aspx) reported that in 2012 approximately 2% of women in the general population were veterans. Additionally, of the 250,000 women who served during the Vietnam era, fewer than 5% would have been in Vietnam. Thus, it is extremely unlikely, that more than a small handful of women surveyed in the GSS would have shared the Vietnam deployment experience, or even have served in the military.

Although the findings described here are largely descriptive, they provide new insights into the lives of women who served in Vietnam. Despite its inherent uncertainties, it is clear that a significant subset of the women veterans examined chose an unorthodox (at least by the standards of the times) career that focused on service (military and civilian) rather than the normative, expected career of an American wife and mother. In contrast to the societally-accepted roles for young women in the late 1960s and early 1970s, military service and volunteering for civilian activities in a warzone offered an opportunity for talented women to establish careers, shoulder significant professional responsibilities, rise to high ranks and achieve positions that would be impossible in the civilian world. In addition, career women in general, lived in a supportive community that was knowledgeable and sympathetic to their work as military women. This could be a factor supporting their general well-being and happiness, and perhaps related to their decision to stay in the military.

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Appendix A. Supplementary material

Supplementary data associated with this article can be found in the online version at http://dx.doi.org/10.1016/j.ssmph.2017.01.003.

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