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Military Service, Post-Trauma Symptoms and Health in Older Adulthood: An Analysis of Northern Vietnamese Survivors of the Vietnam War

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Introduction

That war-induced stress influences morbidity, mortality, psychological conditions and quality of life in the long term is understood almost exclusively as a result of analyses of the lives and health of American veterans of twentieth century wars. A relatively small but significant body of work has demonstrated war's enduring health consequences among nonwestern veteran populations (e.g., Lebanon war) and among civilians who survived years in arm's length of armed conflict, bombings, and heavy casualty tolls that touched families and loved ones (de Jong…) Boscarino and colleagues' many studies (2006a, 2006b, 2008) reveal that, over thirty years after hostilities ended, post-traumatic stress disorder (PTSD) remains a significant predictor of all cause, cardiovascular, cancer and external cause mortality among US military veterans of the Vietnam War. In contrast to a voluminous literature exploring PTSD, chronic illness and other dimensions of physical and mental health in US veterans who served in the Vietnam War, and increasingly nuanced understandings of military service in the life course and health trajectories of older Americans (Wilmoth, London & Parker 2010), little to nothing is known about these Americans' counterparts – the Vietnamese who fought the same battles, but on the side of North Vietnam, as soldiers, militia members and affected civilians. In this paper we make an initial attempt to fill this empirical gap in a population of aging survivors whose post-conflict experiences diverge widely from those of returned US soldiers.

Arguably, no country's 20th century history has been as defined by war as Vietnam's (Lamb 2003). The toll of war among the Vietnamese from 1965-75, estimated at approximately 1 million military and civilian casualties, represents, proportionately, 100 times that of the Americans (Hirschman, Preston and Vu 1995). What, then, might we expect to be the level of war's lingering effects upon survivors' health? To date, studies of war's long-term health effects

among the Vietnamese have been largely confined to investigations of exposure to Agent Orange (dioxin) (e.g., Palmer 2005), and on this dimension, too, the Vietnamese have been 'almost forgotten' compared to US veterans (Schechter et al. 2002:1995). Among Vietnamese now entering older adulthood, practically everyone lost at least one family member due to war, and "the war makes up a huge part of the consciousness" (Gustaffson 2009: xiii). Yet, compared to the oft cited consequences of Vietnam for US veterans and society, "the ramifications of this war for *Vietnamese* society are absent from public discourse… [and] social science literature," reflecting an absence of empirical data, and a longstanding dehumanization of the enemy in official and unofficial accounts of the American experience at war (Merli 2000:12). Adopting a shift in perspective and with novel data in hand, we aim to correct these longstanding oversights.

In this paper we analyze a sample of older adults in northern Vietnam's Red River Delta, their exposure to traumatic events as soldiers, militia members and civilians around the time of the Vietnam War (1965-75), and associations of war-time trauma exposure with current measures of self-reported health, chronic illness and somatic symptoms. Illuminating the linkage between military service, traumatic exposure, and health in a population once devastated by war, but whose post-war experiences have been largely absent from the scholarly record is instructive on several levels. First, military service and war often remain hidden in life course perspectives on aging (Spiro et al. 1997), despite the proportionately large segments of older adults (men in particular) who are veterans, and the documented adverse physical, psychological and socioeconomic consequences of war service (Ikin et al 2009). Second, exploring northern Vietnamese older adults' health outcomes will increase understanding of the ways that context and culture mediate the relationship between wartime trauma, the experience of post-traumatic symptoms and health. Third, explicitly measuring associations between war-time trauma

exposure in the life course and health outcomes in older adulthood moves us closer to understanding war's role in the global burden of disease, not just as an immediate cause of death and injury, but as a significant precursor of subsequent ill health and chronic illness (Murray et al. 1997).

Military Service, Experience of War & Health in Northern Vietnamese Older Adults

For northern Vietnamese residents of the Red River Delta, the toll of the Vietnam War was felt across all social strata; by soldiers, militia members and civilians. Military service was a nearly universal rite of passage for young men in North Vietnam who came of age from the 1960s through the 1980s (Teerawichitchainan, 2009). Passage of North Vietnam's draft law in 1960 meant all men ages 18-27 were subject to an annual draft of two to four years service in the Vietnam People's Army (VPA). As war escalated, the draft was expanded to encompass men ages 16-45, with indefinite periods of service. For many, these years of service involved extensive combat stressors, limited leave-taking, and tours of lengthy duration. Nearly half of northern Vietnamese veterans surviving to the 1990s spent seven or more years serving in the VPA (Teerawichitchainan, 2009).

In addition to the regular armed forces, sizable numbers of northern Vietnamese youth (men and women) participated in the Youth Shock Brigades, a wartime volunteer force whose duties at times entailed active participation in combat, while other members of the general population were mobilized to serve in paramilitary forces (Guillemot, 2009; Pike, 1986). It was not uncommon for these paramilitaries to undertake serious and at times dangerous support and defense roles, and even assume combat duties. Given this high level of mobilization and the vast expanse of bombings, most northern Vietnamese, if they were not directly engaged in combat,

lived their lives within an arm's length of armed conflict and provided direct support to the war effort, often for over a decade's time.

Especially among American veterans of the Vietnam War, PTSD is frequently identified as a primary mechanism through which exposure to combat influences later life physical health, operating via physiological, psychological and health behavioral pathways (Friedman and Schnurr 1995; Schnurr and Spiro 1999). The very creation of this adjustment/anxiety disorder diagnosis arose in response to Vietnam veterans' experiences (Shalev et al. 2000), and resurged to address the mental health of soldiers returning from service in the Iraqi Freedom and Afghanistan conflicts. However, given the severe negative stigmatization of mental illness in Southeast Asian cultures, somatization of psychiatric disorders is considered widespread in Asia. Cultural patterns of psychologic and somatic expression of extreme stress (Waitzkin and Magana 1997) in Asia are such that psychic symptoms, unlike somatic symptoms, are construed as socially disadvantageous. Thus, we expect that our northern Vietnamese subjects will be inclined to express somatoform symptoms, but disinclined to either experience or express psychic symptoms, such as those used to diagnose PTSD, anxiety disorder, or depression. Expressing physical discomforts of the body (e.g., dizziness, joint pain), including those that are somatoform (i.e., not explained by a medical condition), will serve as a socially acceptable means of expressing that one is unwell, including suffering borne out of extreme stress.

Taking life course experiences and the cultural context around war and illness into mind, we hypothesize that war-time service, mediated by exposure to traumatic events, will be a significant determinant of health status in current cohorts of northern Vietnamese older adults. Specifically, we hypothesize that the intensity of exposure to war traumas will be positively associated with current experience of poor self-reported health (H1), chronic illness (H2), and

somatic symptoms (H3) in older Vietnamese. However, given stigmatization of mental illness in the Vietnamese context, we do not expect to observe such a significant, positive association between trauma exposure and mental health (H4). Following earlier studies which identify killing in war as uniquely scarring over the life course (Maguen et al. 2009), we hypothesize that older veterans who report greater numbers of total traumatic exposures, and those who report mortally wounding another, will be particularly likely to manifest poor health, troubling somatic symptoms and chronic illnesses in older adulthood (H5), but again, to not manifest ill mental health (H6). Finally, we expect that older adults who report having knowingly been exposed to harmful or toxic substances in the course of war will be more likely to exhibit poor self-reported health, chronic illness and somatic symptoms (H7) at the present time.

Methods

In this study we analyze data from the VLS Health and Aging Pilot Study, a 2010 follow-up to the Vietnam Longitudinal Surveys (VLS). Conducted in 1995 with annual follow-ups through 1998, the original VLS involved a large probability survey of 1,855 households and nearly 4,500 adults in northern Vietnam's Red River Delta. Carried out in 10 communes across three provinces located approximately 60-100 kilometers south of Vietnam's capital city, Hanoi, the study area is within one of Vietnam's most populous regions and was widely affected by US bombing campaigns during the Vietnam War.

In June-July 2010, we conducted a survey in one of the 10 original VLS communes in order to study the current health and wellbeing of Vietnamese men and women who entered early adulthood during the Vietnam War (i.e., those born in 1955 or earlier, and who were at least 20 years old by 1975) and are now entering late adulthood (i.e., ages 55 and older in 2010).

The pilot survey provides unique information for constructing life-course measures of war and military experiences, trauma exposure, and current measures of health, kinship, social networks, demographic and socioeconomic characteristics.

The pilot survey consisted of two phases. First, we attempted to contact and conduct in-person structured interviews with the 310 individuals, age 55 and older, who had been surveyed in the baseline VLS. We successfully interviewed 215 of these original 310 respondents. Of the 95 attrition cases, 81 had died since 1995 and the remainder had migrated outside the commune. Seventy-five percent of the decedents were nonveterans. In the second phase of the pilot survey, in order to reach a target sample size of 400 respondents, we randomly selected from current household registration systems an additional 196 individuals age 55 and older who had not been interviewed in the 1995 VLS (response rate of 97%). In total, we interviewed 405 respondents. A total of 19 proxy interviews with next of kin, conducted when a respondent was too physically or mentally challenged to be interviewed, are included in this total. Questions related to feelings and perceptions were not answered by the proxies.

Variable Measurement

Many existing studies of war's impact compare nonveterans and veterans, the latter category possibly being disaggregated into a number of conflict-related variables (e.g., combatant status). The current study addresses the fact that not only veterans, but broad swaths of civilians, directly experienced traumatic events related to the Vietnam War. A strict veteran-nonveteran dichotomy is not suitable for northern Vietnam in the 1960s and 1970s, given the numerous nonveterans who engaged in militia or other activities that oftentimes resembled, or were in support of, formal military actions. Accordingly, in analyzing the relationship between

military service, trauma exposure and health status, we characterize military service using four categories: combat veterans, noncombat veterans, militia nonveterans and nonmilitia nonveterans.

To measure exposure to war-time distress events we rely upon a modified version of the post-traumatic stress disorder module of the World Health Organization's Composite International Diagnostic Interview (CIDI). Specifically, all surveyed older adults were asked whether they had experienced any of the following past events: 1) Exposure to combat; 2) Killing or seriously injuring another person; 3) Being a civilian in a war zone; 4) Unexpected death of a loved one due to war; 5) Being exposed to toxic chemicals or substances; and/or, 6) Witnessing mass killings or atrocities. We acknowledge that respondents are being asked to recollect events that occurred over 35 years ago, and we realize the subjective nature of personal memories shaped by social context and historical conjunctures (Tai 2001:7). We maintain that focusing in on major, decisive past events, should shield our data from excessive recall biases.

In order to explore the various domains of health in which war and trauma impacts may manifest over the long-term, we examine four distinct health outcomes. Self-reported health (SRH) is the first health outcome we consider. Studies demonstrate that SRH is a well-rounded indicator of health, encompassing many physical, psychological, and social aspects of current health status (Benyamini et al., 2009). In our survey, respondents were asked to assess whether their current health was very good, good, fair, poor, or very poor. In this study, we measure self-rated health dichotomously, indicating whether the respondent assessed his/her health negatively (coded 1) or positively (coded 0). Our second measure of health status is an index indicating whether the respondent currently suffers from any of the following, physician-diagnosed chronic conditions: hypertension, diabetes, heart disease, stroke, lung problems (e.g., emphysema,

bronchitis), cancer or arthritis. The index weighs the presence of the six conditions and their self-reported severity (i.e., whether they causes some or severe disability in daily activities). Our third health measure is an index of somatic symptoms, indicating health complaints the respondent experienced in the previous month. Specifically, the positively scored index indicates the presence and severity (from moderate to severe) of the following complaints: headache, insomnia, chest pain, joint pain, dizziness, backpain, stomach pain, troubles breathing, persistent cough, or loss of bladder control.

Our fourth and final health outcome is a measure of mental health drawn from the SF-36 mental health scale (Ware and Sherbourne, 1992). The SF-36 instrument has been validated in Vietnamese settings (VanLandingham, 2009). To construct an index of depressive symptoms, we aggregated the answers to six questions, including the extent to which, during the 4 weeks prior to the survey, respondents felt full of pep; a lot of energy; happy; tired; downhearted and blue; and "so down in the dumps that nothing can cheer you up." Possible answers ranged from 1(none of the time), 2 (a little of the time), 3 (some of the time), 4 (most of the time), to 5 (all the time). We did reverse coding for the first three positive feelings. Having the range of values from 5 to 30, the index of depressive symptoms is treated as continuous variable with higher scores suggesting greater depressive symptoms.

Our multivariate models incorporate additional correlates of health status. Specifically, we include variables for respondents' gender, current age, highest year of schooling completed, adequacy of current income for meeting expenses, current marital status, number of living children, levels of engagement with family members, friends, and community; and health behavior as captured by tobacco use, alcohol consumption and engagement in regular physical activity.

Results

Univariate and Bivariate Statistics

Table 1 describes our sample, as well as bivariate associations between military service, trauma exposure and social demographic characteristics and the four health outcomes assessed in the paper. By way of sample description, our sample is slightly dominated by females, reflecting sex differences in longevity. The modal age category is 60-69 years. Approximately three-quarters of the sample is currently married and they have, on average five living children. In terms of economic status, agricultural work was the lifetime occupations for nearly 80% of the sample, and the vast majority have fewer than 10 years of education, with nearly one-third having less than primary school completion. A full one-third indicates that they experience difficulty meeting daily expenses on a regular basis.

[Insert Table 1 about here]

In terms of military service and trauma exposure, the sample divides along lines of gender. That said, over half of the men are armed services veterans, and nearly one third served in combatant roles. When one incorporates militia participation among men, nearly three-quarters engaged in some sort of military or militia service in their lifetimes. Few women (3.2%) are veterans of the armed services, but nearly a quarter report militia involvement in their lifetimes. In terms of war trauma exposure, 87% indicate having been a civilian in a war zone, over half of men and one-quarter of women report having witnessed wartime atrocities. Sizable majorities of men also report having killed or gravely injuring another person (18%) and/or having been exposed to toxic substances (29%). In all, this population of older adults has very widespread exposure to distress events over the life course, and in particular during wartime in

their early adult years. For many, especially men, the have experienced multiple, severe distressors, often while serving in formal military deployments of ten years or longer.

In Table 1, in the latter four sets of rows, we describe the association between our focal independent variables and socioeconomic and health behavior covariates with the four health outcome variables (self-reported health, somatic symptoms, chronic illness, depressive symptoms). In terms of broad patterns, we observed that poor self-reported health correlates positively with age, and female sex. Those in relatively poor socioeconomic positions (i.e., agricultural laborers, with less than secondary schooling, and income inadequate to daily needs) are more likely to report being in poor health. Those who are currently married are less likely to report poor health in comparison to those currently not married (i.e., vastly a widowed population). The direction of these associations also map very closely onto our other assessments of physical health, in particular somatic symptom severity, and onto the depressive symptomatology index.

In terms of military service, and highlighting patterns observed for men, we see that in the bivariate view, the patterns of association we observe support our perspective on military service and late adult health. Specifically, combat veterans are more likely to report poor self-reported health (40%) than noncombat veterans (33.3%) and nonveterans (34.7%). Furthermore, combat veterans score higher on the index of current somatic symptom severity and they report higher numbers of current chronic diseases. Notably, this ill health-combat veteran pattern of association does not carry over to the index of depressive symptomatology.

Taking a further look at specific wartime trauma exposures, bivariate statistics indicate that war-time trauma exposures correlate positively with poor self-reported health and the count

of current chronic diseases. Patterns of association between trauma exposures and somatic and depressive symptom indices are less straightforward.

In Table Two we focus in on the specific health complaints and chronic illnesses that compose our indices and the prevalence of specific complaints and illnesses across military service and trauma exposure groups. Because diseases and somatoform symptoms diverge widely by gender, and because many of the war-time traumas we highlight in this study concentrate among men and veterans, we limit our focus to men in this table. The overall pattern in Table Two is one in which the incidence of most somatic symptoms is significantly higher in combat veterans than in their noncombat and nonveteran counterparts. Those trauma exposures most closely tied to combatant roles, i.e., killing/injuring another/others, and exposure to toxic substances, also correlate positively with most of the measured health complaints.

[Table Two about here]

Tables Three through Six feature the main regression analyses that follow from our hypotheses on military service, trauma exposure and health status in older adulthood. Table Three shows logistic regression coefficients from our model estimating poor self-reported health. As a comparison across the models conveys, the greater the number of measured war-time stressors older Vietnamese have been exposed to, the greater their likelihood of reporting poor self-reported health in older adulthood. This statistically significant effect of trauma exposure on poor health maintains when we control for age, sex, marital status, and the other demographic, socioeconomic status and health behavior covariates in the model.

Proceeding to Model Seven in Table Three, we see that, when considered individually, the only trauma event exposure that exhibits a significant correlation with poor self-reported

health is being reporting killing or seriously injuring another person. As previous research has shown, engaging in mortally wounding another may be a prime driver of post-traumatic stress and other post-conflict health afflictions (Maguen et al. 2009). We discuss this association and possible mechanisms further in our conclusion and discussion section.

[Insert Table Three about here]

Consistent across all eight models in Table Three we observe a consistent set of predictors of older adult poor self-reported health. Aside from gender, the only significant predictors in our model are those which indicate socioeconomic conditions. Specifically, those with high levels of education and incomes adequate to meet daily needs are somehow protected from poor health. Whether the health protective effects of economic security and educational attainment in elderly northern Vietnamese result from superior information, social connections, health resources or buffering from chronic and environmental stressors is a pattern that warrants further exploration.

In Tables Four and Five similar but distinct patterns emerge in our modeling the predictors of current chronic conditions in the past year and somatic symptom symptom severity in the past month. Specifically, combat veterans exhibit the highest scores on indices of chronic conditions and somatic symptoms. Models Two, Six and Seven in Table Four are indicative that combat veterans' greater susceptibility to chronic disease appears to stem from their encounters with trauma events on the battlefield, in particular their engagement in killing and gravely injuring others and in their exposures to toxic chemicals widespread in counter-insurgency actions by the US military.

[Insert Tables Four and Five about here]

Table Six presents the unstandardized regression coefficients from our model predicting depressive symptomatology. As all seven models convey, consistent with our final hypothesis, no statistically significant association is observed between our military service and trauma exposure covariates and our measure of older adult depression. We reason that this set of results, in conjuction with those observed for self-reported health, chronic conditions and health complaints, is initial evidence of a somatization process whereby trauma induced stress lingers not in measured PTSD symptoms or ill mental health, but manifests in physical symptoms and disease. It is also noteworthy that many of the chronic diseases we assess, shown to correlate significantly with exposure to war, are significant, positive predictors of depression.

[Insert Table Six about here]

Discussion and Conclusion

The experiences of war, ranging from loss and trauma to victory and homecoming, defined a generation coming of age in 1960s and 1970s Vietnam. Many of those now elderly endured years in combatant roles, witnessing at close hand the sorts of traumatic events, displacement, and life course disruptions that our pilot survey instrument only begins to capture. In this paper we initiate a perspective on early life war exposure and military service as it relates to older adult health. Such a perspective is greatly needed to get a firm grasp on the ways that wars indirectly, and over the long term, weigh upon older adult wellbeing and the burden of disease in post-conflict societies.

We find that the toll of war's traumas among aging northern Vietnamese men and women is perceptible in the association between military service status and various measures of ill physical health. In particular, exposure to trauma resulting to combatant roles appears to be imprinted

upon men's health in older adulthood. A statistically significant association of war-time traumas with negative self-reported health among men is telling, given the robust results and the salience of self-reported health for tapping into various objective measures of health.

The lasting effects of war on health, as expressed in self-reported ill health, health complaints, and chronic illness decades post-war, are particularly perceptible among men who witnessed combat exposure, and who were engaged in mortally wounding others on the battlefield and themselves being exposed to life threatening toxic substances. We also find (in analyses not shown here) that surviving men who fought in Laos and Cambodia (i.e., settings that for Vietnamese troops may have presented heightened uncertainties, with some of the longest duration deployments and with very poor ability to communicate with family and home communities) are among those with the worst health profiles at present. The findings from our study are consistent with previous research that has identified involvement in violent acts resulting in death or serious injury to others as being particularly consequential for subsequent health status (Maguen et al. 2009).

It is worth mentioning here that, in exploratory analyses not featured in this paper, we observed only very weak associations between forms of service, current post-trauma symptoms, and reported ill mental health. The associations were nonsignificant for both men and women. We did not expect this to be the case, given the contrary findings in many studies of American veterans of the Vietnam War. We posit that perhaps there is a timing effect, such that many years later, plus the layering of subsequent periods of difficulty, trauma-symptom dose-effect relationships may be washed out. This is supported by other studies that observe progressive reduction in mental illness in Southeast Asian refugees with the passage of time (Steel et al. 2002). Additionally, the war had particularly disruptive impacts on certain groups that are not

well represented in a population-based sample, such as those sickened by agent orange, orphaned at an early age, or with seriously debilitating injuries sustained in combat or bombing campaigns.

In addition to our main findings, several others warrant further investigation as they indicate possible mediators between war, stress and subsequent health. In particular, the finding that combat veteran status is significantly associated with engagement in community organizations, an association that we believe may indicate participation in veterans' organizations. We wonder whether such organizational participation may have salutary impacts upon health. Other scholars have pointed to the role of veterans' organizations and the social support they encourage among 'brothers in arms' so as to aid one another during difficult post-war times (Friedman 2005). Pike (1986) has noted that, at least during the 1980s, the main veterans organization within Vietnam was one of the most powerful grassroots institutions in the country. In addition, previous analyses of the Vietnam Longitudinal Survey show that veterans are more likely than nonveterans to be members of the Vietnam Communist Party. Furthermore, the Vietnam Peoples Army continues to be well regarded in Vietnamese society. In the aggregate, maintaining ties to other veterans and a sense of belonging to the VPA institution may bring social relational resources that are beneficial to health and wellbeing. These suppositions are worth investigating further.

A more complete enumeration of distress events and episodes, one that incorporates postwar disruptions and threats to livelihood, and with a broader sample, would assist in clarifying these questions. Although we chose an instrument for assessing mental health that had been validated with Vietnamese populations prior, the absence of an observed effect may derive from limited cross-cultural applicability of the instrument. The PTSD label and diagnosis is not readily transported culturally and linguistically, and the cultural lens through which dreams,

sadness and other psychological phenomena are interpreted, as well as identities – gender, soldier, etc. – will influence distress experiences themselves, as well as tendencies to recall and disclose them. Several accounts, such as Gustaffson's work (2009) on illness among Vietnamese brought on by the 'haunting' of family members and others who died violently in war and without proper burial, suggests that the lasting psychological and physical pains of war may have culturally distinct roots. We recognize the importance of viewing psychological and physical aspects associated with war from a Vietnamese cultural perspective and spiritual lens.

While we face several limitations related to data collection and challenges with interpretation, we maintain that the current study has implications that are broad and that extend beyond the Vietnamese context. Extending our appreciation of military service as it impacts the life course, stress, and health in settings beyond the US is apropos, given the widespread waging of war, and the disproportionate concentration of recent armed conflict within developing and subsistence societies that lack resources for post-war recovery and services to victims (Summerfield 2000).

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Table One. Univariate and Bivariate Statistics: Sample Demographics, Military Service, Trauma & Current Health Outcomes, Northern Vietnamese Age 55 and Older

	Total Sample - Descriptives		Self-reported Health		Current Somatic Symptom Severity (0-18)		Mean No. Current or Past Chronic Illness (0-7)		SF-36 Mental Health Score	
	(%)	(N)	Very good-fair	Poor, Very Poor	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev
Total Population	100	405	51.2	48.8	6.3	4.2	1.1	1	20.4	5.4
Sex										
Male	46.4	188	61.0	39.0	5.4	4.2	1.1	1.1	18.9	5
Female	53.6	2178	42.9	57.1	7.1	4	1.2	1	21.8	5.4
Military Service by Gender										
Combat veteran (Men)	31.9	60	60.0	40.0	6.9	4.4	1.3	1.2	18.7	4.2
Noncombat veteran (Men)	22.3	42	66.7	33.3	5.1	4.2	1	1	18.3	5.6
Participated in Militia, Not in Military (Men)	19.7	37	50.0	50.0	5.8	4.1	1.2	1.1	20.6	5.7
No Military, no Militia Involvement (Men)	26.1	49	65.3	34.7	3.5	3	0.8	0.8	18.4	4.6
Veteran (Women)	3.2	7	42.9	57.1	9.4	3	1.9	1.1	22	7.1
Participated in Militia, Not in Military (Women)	24.4	53	45.3	54.7	6.9	3.7	1.3	1	23.2	6
No Military, no Militia Involvement (Women)	72.4	157	42.0	58.0	7	4.1	1.2	1	21.9	4.8
War Time Trauma Exposure										
Experienced Unexpected Death of a Loved One in War	15.6	15.6	50.8	49.2	6.1	4.2	1.3	1.1	21.1	5.8
Was a Civilian in a War Zone	87.4	354	51.0	49.9	5.5	4.3	1.2	0.9	20.4	5.4
Witnessed Atrocities or Mass Violence (Men)	51.6	97	55.2	44.8	4.6	3.8	1.2	1.2	18.8	4.8
Witnessed Atrocities or Mass Violence (Women)	25.4	55	41.4	58.6	7.2	4.1	1.3	1.1	21.6	5.4
Seriously injured or killed another (Men only)	18.1	34	44.1	55.9	4.6	3.6	1.6	1.1	18.5	4.2
Exposed to Toxic Substances (Men Only)	28.7	54	53.7	46.3	4.5	3.7	1.6	1.2	18.4	4.2
Age										
50-59	28.9	117	59.0	41.0	5.4	4	0.85	0.98	18.6	4.7
60-69	35.6	144	50.7	49.3	6.5	4.1	1.3	1.1	19.9	5.5
70-79	24.2	98	48.5	51.6	6.7	4.4	1.2	1.1	22.3	5.4
80+	11.4	46	39.1	60.9	6.9	3.9	1.2	1	22.6	5
Marital Status										
Currently Married	300	74.1	55.2	44.8	5.9	4.2	1.1	1	19.5	5.2
Not Currently Married	105	25.9	40.0	60.0	7.3	4	1.2	1.1	23.3	5.1
Education										
0-4 years	31.9	129	45.0	55.0	7	4.3	1.2	1	22.7	5.5
5-8 years	22.5	91	44.0	56.0	6.1	4.1	1.4	1.2	21.6	5.1
9 years	32.1	130	52.8	47.3	5.8	3.9	0.9	0.9	18.9	4.8
10+ years	13.6	55	74.6	25.5	6	4.6	1.2	1.2	17	4
Income Adequacy										
Income Is Not Adequate to Meet Needs	33.3	135	37.0	63.0	7	4.4	1.2	1.1	22.9	5.4
Income is Adequate to Meet Needs	66.6	270	58.4	41.6	5.9	4.1	1.1	1	19.2	5
Main occupation in lifetime										
Agricultural Job	79	320	48.0	52.0	6.3	4.2	1.1	1	21	5.4
Nonagricultural Job	21	85	63.5	36.5	6.1	4	1.3	1.2	18.4	5
Number of Living Children										
0-3	22.2	90	58.8	41.2	6.6	4.1	1.2	1.1	20.2	6
4-6	49.9	202	51.7	48.3	5.9	4	1.1	1.1	19.8	4.9
7+	27.9	113	44.3	55.8	6.6	4.4	1.2	1	21.8	5.5
Current Exercise										
Exercises Less than Weekly	54.3	220	49.8	50.2	6.3	4.1	1.2	1	21.3	5.4
Exercises Weekly	45.7	185	53.3	46.8	6.2	4.2	1.2	1.1	19.2	5.1
Smoking (Assess for Men Only)										
Never Smoked	27.7	52	55.8	44.2	6.7	4.1	1.1	1	18.9	5.3
Currently Smokes	30.9	58	64.9	35.1	5.1	4.6	0.9	1	18.8	4.4
Smoked in Past, but not Present	41.5	78	61.5	38.5	5.8	3.9	1.1	1.1	19	5.1
Alcohol Use (Men)										
Never Drank Alcohol	26.6	50	56.0	44.0	6.6	4.1	0.9	1	19	5.5
Currently Drinks Alcohol	58	109	72.2	27.8	5.2	4.1	1.1	1.1	18	4.3
Drank in the Past, but not Present	15.4	29	27.6	72.4	7.3	3.8	1.3	1	22.1	5

Source: VLS Health and Aging Pilot Survey, 2010

Table Two. Details of Military Service, Trauma Exposure and Bivariate Association with Specific Somatic Symptoms and Chronic Illness in Late Adulthood, Northern Vietnamese Men Age 55 and Older

	Percent reporting the following somatic symptom was severe in past month:							
	Headache	Insomnia	Pain in Joints	Dizziness	Problems Breathing	Chest Pain	Back Pain	Stomach Pain
Men Only								
Combat Veteran	40	35	30	23.3	11.7	11.7	21.7	13.3
Noncombat Veteran	23.8	23.8	26.2	7.1	2.4	16.7	38.1	7.1
Militia Nonveteran	21.6	32.4	21.6	16.2	10.8	18.9	27	10.8
Nonmilitia Nonveteran	16.3	12.2	10.2	8.2	4.1	6.1	16.3	6.1
Total								
Men Only								
Witnessed Atrocities/Mass Violence	33	32	30.9	18.6	9.3	13.4	29.9	12.4
Seriously Injured/Killed Another	58.8	52.9	44.1	29.4	17.7	23.5	29.4	8.2
Was Exposed to Toxic Substances	42.6	38.9	35.2	24.1	9.3	22.2	33.3	13

	Percent reporting Physician Diagnosed Chronic Illness at present:							
	Hyperten-sion	Heart Disease	Stroke	Bronchial, Lung Problems	Arthritis	Other	Diabetes	Cancer
Men Only								
Combat Veteran	33	13.3	18.3	16.7	41.7	35	5	0
Noncombat Veteran	23.8	9.5	16.7	11.9	35.7	45.2	0	0
Militia Nonveteran	29.7	13.5	13.5	16.2	35.1	37.8	5.4	2.7
Nonmilitia Nonveteran	26.5	16.3	10.2	2	20.4	24.5	0	0
Men Only								
Witnessed Atrocities/Mass Violence	34	14.4	15.5	14.4	37.1	36.1	4.1	0
Seriously Injured/Killed Another	41.2	17.7	23.5	17.7	55.9	38.2	2.9	0
Was Exposed to Toxic Substances	46.3	20.4	27.8	18.5	33.3	35.2	7.4	1.9

Source: VLS Health and Aging Pilot Survey, 2010

Table Three. Logistic Regression Coefficients: Poor Self-Reported Health Among Northern Vietnamese Adults Age 55 and Older

	Logistic Regression Coefficients: Poor/Very Poor Self-Reported Health							
	Model 1 b/se	Model 2 b/se	Model 3 b/se	Model 4 b/se	Model 5 b/se	Model 6 b/se	Model 7 b/se	Model 8 b/se
Count of Wartime Distress Events (0-6)			0.334**					
			(0.12)					
Reports Loss of Loved One Due to War				-0.210				
				(0.34)				
Reports Being a Civilian in a Warzone					0.506			
					(0.37)			
Reports Witness Atrocities/Mass Violence in Wartime						0.301		
						(0.26)		
Reports Seriously Injuring/Killing Another in Wartime							1.599**	
							(0.54)	
Reports Exposure to Toxic Substances in Wartime								0.762
								(0.44)
Age	0.023	0.012	0.009	0.014	0.013	0.011	0.010	0.013
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Female (Ref - Male)	0.640*	0.464	0.559	0.447	0.475	0.487	0.619	0.507
	(0.25)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.41)	(0.40)
Education Attainment: 0 to 4 years (Ref - 9 years)	-0.614	-0.552	-0.596	-0.570	-0.544	-0.591	-0.547	-0.564
	(0.34)	(0.36)	(0.37)	(0.36)	(0.36)	(0.36)	(0.37)	(0.36)
Education Attainment: 5 to 8 years (Ref - 9 years)	-0.024	-0.049	-0.044	-0.046	-0.040	-0.076	0.021	-0.062
	(0.30)	(0.31)	(0.32)	(0.31)	(0.32)	(0.32)	(0.32)	(0.32)
Education Attainment: 10+ years (Ref - 9 years)	-0.815*	-0.732	-0.749	-0.723	-0.668	-0.724	-0.881*	-0.776
	(0.39)	(0.41)	(0.41)	(0.41)	(0.41)	(0.41)	(0.42)	(0.41)
Income is Adequate to Meet Needs (ref - Inadequate)	-0.763**	-0.753**	-0.786**	-0.756**	-0.731**	-0.750**	-0.799**	-0.763**
	(0.24)	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)
Receives a Pension (ref - Does not Receive)	0.010	-0.242	-0.210	-0.258	-0.238	-0.248	-0.149	-0.230
	(0.30)	(0.33)	(0.33)	(0.33)	(0.33)	(0.33)	(0.33)	(0.33)
Currently Married (ref - Not Currently Married)	-0.155	-0.124	-0.193	-0.119	-0.119	-0.150	-0.188	-0.169
	(0.30)	(0.30)	(0.31)	(0.30)	(0.31)	(0.31)	(0.31)	(0.31)
Total Number of Living Children	0.080	0.089	0.107	0.087	0.096	0.093	0.094	0.099
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Any Child Coresides (Ref - No Child Coresides)	0.203	0.234	0.243	0.235	0.256	0.260	0.231	0.231
	(0.23)	(0.24)	(0.24)	(0.24)	(0.24)	(0.24)	(0.24)	(0.24)
Engages in Community Activities/Orgs at Least Monthly	-0.357	-0.367	-0.301	-0.369	-0.340	-0.388	-0.402	-0.352
	(0.23)	(0.23)	(0.24)	(0.23)	(0.23)	(0.23)	(0.24)	(0.23)
Visits with Friends at Least Weekly (ref - less than Weekly)	-0.586	-0.553	-0.643	-0.563	-0.583	-0.599	-0.578	-0.535
	(0.34)	(0.35)	(0.35)	(0.35)	(0.35)	(0.35)	(0.35)	(0.35)
Visits with nonresident Family at Least Weekly	-0.164	-0.143	-0.242	-0.143	-0.207	-0.156	-0.163	-0.179
	(0.23)	(0.23)	(0.24)	(0.23)	(0.24)	(0.23)	(0.24)	(0.24)
Engages in Daily Exercise (ref- less than daily)		0.180	0.173	0.177	0.179	0.183	0.145	0.192
		(0.24)	(0.24)	(0.24)	(0.24)	(0.24)	(0.24)	(0.24)
Smoke In the Present (ref - Never smoked)		-0.179	-0.136	-0.188	-0.165	-0.188	0.007	-0.205
		(0.42)	(0.43)	(0.42)	(0.42)	(0.42)	(0.44)	(0.42)
Smoked in the Past, Not at Present (ref - Never smoked)		-0.105	-0.075	-0.158	-0.106	-0.111	0.018	-0.100
		(0.42)	(0.43)	(0.43)	(0.42)	(0.42)	(0.44)	(0.43)
Drank Alcohol In the Present (ref - Never smoked)		-0.688	-0.696	-0.706	-0.687	-0.700	-0.565	-0.690
		(0.36)	(0.36)	(0.36)	(0.36)	(0.36)	(0.37)	(0.36)
Drank Alcohol in the Past, Not at Present (ref - Never smoked)		0.872	0.866	0.893	0.854	0.894	0.966	0.824
		(0.51)	(0.52)	(0.51)	(0.51)	(0.51)	(0.53)	(0.52)
Have Free Healthcare Certificat (ref - has Health Insurance)		0.003	0.048	0.026	0.145	0.000	-0.093	-0.006
		(0.45)	(0.46)	(0.45)	(0.46)	(0.45)	(0.46)	(0.45)
Do Not Have Health Insurance (ref - Has Health Insurance)		-0.299	-0.202	-0.315	-0.268	-0.271	-0.272	-0.239
		(0.27)	(0.27)	(0.27)	(0.27)	(0.27)	(0.27)	(0.27)
Military Service: Combat Veteran (ref - nonmilitian nonveteran)		0.197	-0.670	0.262	0.121	0.072	-0.618	-0.216
		(0.42)	(0.53)	(0.43)	(0.43)	(0.43)	(0.52)	(0.49)
Military Service: Noncombat Veteran (ref - nonmilitia nonveteran)		0.124	-0.038	0.157	0.090	0.078	-0.018	0.016
		(0.45)	(0.45)	(0.45)	(0.45)	(0.45)	(0.45)	(0.45)
Military Service: Militia Nonveteran (ref - Nonmilitia nonveteran)		0.043	-0.127	0.047	0.012	-0.014	0.036	0.024
		(0.29)	(0.30)	(0.29)	(0.29)	(0.29)	(0.29)	(0.29)
Constant	-0.747	0.081	-0.336	0.071	-0.444	0.169	0.133	-0.047
	(1.19)	(1.40)	(1.42)	(1.40)	(1.45)	(1.40)	(1.41)	(1.41)
bic	589.532	634.271	632.660	639.886	638.356	638.923	631.242	637.179
N	405	405	405	405	405	405	405	405

Source: VLS Health and Aging Pilot Survey, 2010

Table Four. OLS Regression Model of Disabling Chronic Illness in Past Year among Older Adults in Vietnam's Red River Delta

	Model 1 b/se	Model 2 b/se	Model 3 b/se	Model 4 b/se	Model 5 b/se	Model 6 b/se	Model 7 b/se
Military Service: Combat Veteran (ref - nonmilitian nonveteran)	0.618**	0.351	0.622**	0.540**	0.647**	0.363	0.297
	(0.19)	(0.24)	(0.20)	(0.19)	(0.20)	(0.22)	(0.22)
Military Service: Noncombat Veteran (ref - nonmilitia nonveteran	0.444*	0.392	0.446*	0.411*	0.454*	0.396	0.348
	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
Military Service: Militia Nonveteran (ref - Nonmilitia nonveteran)	0.254	0.202	0.254	0.229	0.267	0.253	0.240
	(0.14)	(0.14)	(0.14)	(0.13)	(0.14)	(0.13)	(0.13)
Count of Wartime Distress Events (0-6)		0.104					
		(0.05)					
Reports Loss of Loved One Due to War			-0.015				
			(0.15)				
Reports Being a Civilian in a Warzone				0.476**			
				(0.16)			
Reports Witness Atrocities/Mass Violence in Wartime					-0.075		
					(0.12)		
Reports Seriously Injuring/Killing Another in Wartime						0.526*	
						(0.24)	
Reports Exposure to Toxic Substances in Wartime							0.601**
							(0.19)
Age	0.014	0.013	0.014	0.014	0.014	0.013	0.015
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Female (Ref - Male)	0.282	0.311	0.280	0.289	0.276	0.340	0.329
	(0.18)	(0.18)	(0.19)	(0.18)	(0.19)	(0.19)	(0.18)
Education Attainment: 0 to 4 years (Ref - 9 years)	0.019	0.012	0.018	0.037	0.027	0.025	0.008
	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)
Education Attainment: 5 to 8 years (Ref - 9 years)	0.318*	0.324*	0.318*	0.331*	0.324*	0.343*	0.308*
	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)
Education Attainment: 10+ years (Ref - 9 years)	0.394*	0.398*	0.395*	0.463*	0.391*	0.356*	0.364*
	(0.18)	(0.18)	(0.18)	(0.18)	(0.18)	(0.18)	(0.18)
Income is Adequate to Meet Needs (ref - Inadequate)	-0.087	-0.093	-0.087	-0.065	-0.089	-0.098	-0.090
	(0.12)	(0.11)	(0.12)	(0.11)	(0.12)	(0.11)	(0.11)
Receives a Pension (ref - Does not Receive)	-0.168	-0.158	-0.169	-0.163	-0.168	-0.134	-0.158
	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)
Currently Married (ref - Not Currently Married)	0.150	0.131	0.150	0.160	0.155	0.132	0.115
	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)
Total Number of Living Children	0.022	0.027	0.021	0.027	0.021	0.023	0.030
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Any Child Coresides (Ref - No Child Coresides)	-0.280*	-0.276*	-0.280*	-0.256*	-0.287*	-0.283*	-0.286*
	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)
Engages in Community Activities/Orgs at Least Monthly	-0.250*	-0.228*	-0.251*	-0.221*	-0.246*	-0.255*	-0.231*
	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)
Visits with Friends at Least Weekly (ref - less than Weekly)	-0.207	-0.227	-0.208	-0.234	-0.196	-0.213	-0.191
	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)
Visits with nonresident Family at Least Weekly	0.047	0.014	0.047	-0.017	0.051	0.038	0.019
	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)
Engages in Daily Exercise (ref- less than daily)	0.025	0.021	0.025	0.020	0.026	0.010	0.032
	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)
Smoke In the Present (ref - Never smoked)	-0.307	-0.288	-0.308	-0.295	-0.308	-0.243	-0.305
	(0.19)	(0.19)	(0.19)	(0.19)	(0.19)	(0.20)	(0.19)
Smoked in the Past, Not at Present (ref - Never smoked)	-0.179	-0.165	-0.183	-0.180	-0.180	-0.131	-0.158
	(0.19)	(0.19)	(0.20)	(0.19)	(0.19)	(0.19)	(0.19)
Drank Alcohol In the Present (ref - Never smoked)	-0.020	-0.019	-0.021	-0.015	-0.016	0.033	-0.013
	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)
Drank Alcohol in the Past, Not at Present (ref - Never smoked)	0.101	0.089	0.102	0.092	0.096	0.114	0.056
	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)
Have Free Healthcare Certificat (ref - has Health Insurance)	0.001	0.014	0.002	0.128	0.002	-0.041	-0.009
	(0.20)	(0.20)	(0.21)	(0.21)	(0.20)	(0.20)	(0.20)
Do Not Have Health Insurance (ref - Has Health Insurance)	0.007	0.041	0.005	0.032	-0.002	0.018	0.057
	(0.13)	(0.13)	(0.13)	(0.13)	(0.13)	(0.13)	(0.13)
Constant	0.054	-0.093	0.055	-0.430	0.034	0.038	-0.097
	(0.64)	(0.65)	(0.64)	(0.66)	(0.64)	(0.64)	(0.64)
N	405	405	405	405	405	405	405
BIC	1282.33	1284.39	1288.32	1279.54	1287.91	1283.07	1277.99

Source: VLS Health and Aging Pilot Survey, 2010

Table Five. OLS Regression Model of Somatic Symptom Severity in the Past Month among Older Adults in Vietnam's Red River Delta

	Model 1 b/se	Model 2 b/se	Model 3 b/se	Model 4 b/se	Model 5 b/se	Model 6 b/se	Model 7 b/se	Model 8 b/se
Military Service: Combat Veteran (ref - nonmilitian nonveteran)	2.796***	1.751**	0.863	1.776**	1.737*	1.811**	0.613	0.851
	(0.75)	(0.67)	(0.81)	(0.69)	(0.67)	(0.69)	(0.76)	(0.74)
Military Service: Noncombat Veteran (ref - nonmilitia nonveteran)	1.457	0.493	0.338	0.505	0.489	0.514	0.321	0.226
	(0.78)	(0.70)	(0.70)	(0.70)	(0.70)	(0.70)	(0.69)	(0.70)
Military Service: Militia Nonveteran (ref - Nonmilitia nonveteran)	0.634	0.142	-0.026	0.143	0.138	0.169	0.148	0.111
	(0.52)	(0.46)	(0.47)	(0.46)	(0.46)	(0.47)	(0.46)	(0.46)
Count of Wartime Distress Events (0-6)			0.359*					
			(0.18)					
Reports Loss of Loved One Due to War				-0.083				
				(0.52)				
Reports Being a Civilian in a Warzone					0.112			
					(0.57)			
Reports Witness Atrocities/Mass Violence in Wartime						-0.148		
						(0.40)		
Reports Seriously Injuring/Killing Another in Wartime							2.460**	
							(0.80)	
Reports Exposure to Toxic Substances in Wartime								1.756**
								(0.67)
Female (Ref - Male)	2.591***	1.820**	1.936**	1.812**	1.824**	1.810**	2.134***	1.963**
	(0.71)	(0.63)	(0.63)	(0.64)	(0.63)	(0.63)	(0.63)	(0.63)
Age	0.031	0.017	0.015	0.018	0.017	0.018	0.017	0.022
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Education Attainment: 0 to 4 years (Ref - 9 years)	-0.207	-0.156	-0.184	-0.162	-0.153	-0.142	-0.132	-0.190
	(0.65)	(0.57)	(0.57)	(0.57)	(0.57)	(0.57)	(0.57)	(0.57)
Education Attainment: 5 to 8 years (Ref - 9 years)	-0.375	-0.771	-0.732	-0.769	-0.766	-0.760	-0.634	-0.764
	(0.57)	(0.51)	(0.51)	(0.51)	(0.51)	(0.51)	(0.50)	(0.50)
Education Attainment: 10+ years (Ref - 9 years)	0.889	0.267	0.285	0.272	0.285	0.264	0.103	0.205
	(0.69)	(0.62)	(0.61)	(0.62)	(0.62)	(0.62)	(0.61)	(0.61)
Income is Adequate to Meet Needs (ref - Inadequate)	-0.743	-0.445	-0.470	-0.445	-0.441	-0.448	-0.502	-0.455
	(0.44)	(0.39)	(0.39)	(0.39)	(0.39)	(0.39)	(0.39)	(0.39)
Receives a Pension (ref - Does not Receive)	-1.123	-0.841	-0.808	-0.846	-0.840	-0.840	-0.681	-0.833
	(0.59)	(0.52)	(0.52)	(0.52)	(0.52)	(0.52)	(0.52)	(0.51)
Currently Married (ref - Not Currently Married)	-0.357	-0.461	-0.525	-0.458	-0.458	-0.449	-0.545	-0.555
	(0.55)	(0.49)	(0.48)	(0.49)	(0.49)	(0.49)	(0.48)	(0.48)
Total Number of Living Children	0.118	0.072	0.092	0.071	0.074	0.070	0.084	0.099
	(0.11)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
Any Child Coresides (Ref - No Child Coresides)	-0.658	-0.171	-0.159	-0.171	-0.166	-0.184	-0.197	-0.185
	(0.43)	(0.38)	(0.38)	(0.38)	(0.38)	(0.38)	(0.38)	(0.38)
Engages in Community Activities/Orgs at Least Monthly	-0.227	-0.021	0.043	-0.022	-0.016	-0.011	-0.060	0.013
	(0.43)	(0.38)	(0.38)	(0.38)	(0.38)	(0.38)	(0.37)	(0.37)
Visits with Friends at Least Weekly (ref - less than Weekly)	-0.607	-0.433	-0.509	-0.439	-0.440	-0.412	-0.458	-0.411
	(0.61)	(0.54)	(0.54)	(0.54)	(0.54)	(0.54)	(0.53)	(0.53)
Visits with nonresident Family at Least Weekly (ref - less than weekly	0.149	0.170	0.050	0.170	0.154	0.177	0.125	0.086
	(0.42)	(0.37)	(0.37)	(0.37)	(0.38)	(0.37)	(0.36)	(0.37)
Engages in Daily Exercise (ref- less than daily)	0.089	0.119	0.103	0.116	0.117	0.119	0.044	0.143
	(0.43)	(0.37)	(0.37)	(0.37)	(0.37)	(0.37)	(0.37)	(0.37)
Smoke In the Present (ref - Never smoked)	-0.702	0.086	0.143	0.082	0.088	0.085	0.352	0.098
	(0.75)	(0.66)	(0.66)	(0.66)	(0.66)	(0.66)	(0.66)	(0.66)
Smoked in the Past, Not at Present (ref - Never smoked)	-0.367	-0.070	-0.020	-0.092	-0.070	-0.071	0.133	0.012
	(0.74)	(0.65)	(0.65)	(0.67)	(0.65)	(0.65)	(0.65)	(0.65)
Drank Alcohol In the Present (ref - Never smoked)	-0.228	-0.338	-0.338	-0.345	-0.337	-0.330	-0.086	-0.330
	(0.65)	(0.57)	(0.57)	(0.57)	(0.57)	(0.57)	(0.57)	(0.57)
Drank Alcohol in the Past, Not at Present (ref - Never smoked)	1.789*	1.544*	1.519	1.553*	1.543	1.534	1.636*	1.437
	(0.89)	(0.78)	(0.78)	(0.79)	(0.78)	(0.79)	(0.78)	(0.78)
Have Free Healthcare Certificat (ref - has Health Insurance)	0.417	-0.097	-0.050	-0.091	-0.066	-0.094	-0.276	-0.159
	(0.79)	(0.70)	(0.70)	(0.70)	(0.72)	(0.70)	(0.70)	(0.70)
Do Not Have Health Insurance (ref - Has Health Insurance)	-0.965*	-1.174**	-1.055*	-1.181**	-1.168**	-1.191**	-1.110*	-1.038*
	(0.49)	(0.43)	(0.44)	(0.44)	(0.44)	(0.44)	(0.43)	(0.43)
Reports Severe Hypertension		0.381*	0.344*	0.380*	0.378*	0.382*	0.336*	0.320*
		(0.16)	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)
Reports Severe Diabetes		0.453	0.431	0.455	0.449	0.455	0.537	0.358
		(0.52)	(0.52)	(0.52)	(0.52)	(0.52)	(0.52)	(0.52)
Reports Severe Heart Disease		0.951***	0.966***	0.951***	0.952***	0.951***	0.948***	0.928***
		(0.22)	(0.22)	(0.22)	(0.22)	(0.22)	(0.22)	(0.22)
Reports Severe Lung/Bronchial Problems		0.730**	0.695**	0.731**	0.725**	0.726**	0.706**	0.670**
		(0.24)	(0.24)	(0.24)	(0.24)	(0.24)	(0.24)	(0.24)
Reports Severe Arthritis		1.032***	1.021***	1.032***	1.030***	1.031***	0.980***	1.047***
		(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)
Reports Other Severe Chronic Illness		0.306*	0.302*	0.308*	0.306*	0.307*	0.308*	0.312*
		(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)
Constant	3.723	2.972	2.420	2.971	2.854	2.924	2.827	2.459
	(2.48)	(2.24)	(2.25)	(2.24)	(2.32)	(2.25)	(2.22)	(2.23)
BIC	2374.845	2297.292	2299.202	2303.268	2303.254	2303.150	2293.285	2295.814
R-squared	0.16	0.37	0.37	0.37	0.37	0.37	0.38	0.38
N	405	405	405	405	405	405	405	405

Table Five. OLS Regression Model of Somatic Symptom Severity in the Past Month among Older Adults in Vietnam's Red River Delta

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
Military Service: Combat Veteran (ref - nonmilitian nonveteran)	0.218	-0.348	0.319	-0.420	-0.275	-0.121	-0.226	0.014
	(0.87)	(0.85)	(1.04)	(0.87)	(0.86)	(0.88)	(0.98)	(0.96)
Military Service: Noncombat Veteran (ref - nonmilitia nonveteran	0.802	0.366	0.482	0.331	0.388	0.445	0.385	0.473
	(0.91)	(0.89)	(0.89)	(0.89)	(0.89)	(0.89)	(0.89)	(0.90)
Military Service: Militia Nonveteran (ref - Nonmilitia nonveteran)	0.907	0.535	0.666	0.531	0.560	0.639	0.535	0.548
	(0.61)	(0.59)	(0.60)	(0.59)	(0.59)	(0.60)	(0.59)	(0.59)
Count of Wartime Distress Events (0-6)			-0.268					
			(0.24)					
Reports Loss of Loved One Due to War				0.247				
				(0.67)				
Reports Being a Civilian in a Warzone					-0.549			
					(0.74)			
Reports Witness Atrocities/Mass Violence in Wartime						-0.560		
						(0.51)		
Reports Seriously Injuring/Killing Another in Wartime							-0.264	
							(1.04)	
Reports Exposure to Toxic Substances in Wartime								-0.706
								(0.85)
Age	0.060	0.065	0.066	0.064	0.064	0.069*	0.065	0.063
	(0.04)	(0.03)	(0.03)	(0.04)	(0.03)	(0.04)	(0.03)	(0.03)
Female (Ref - Male)	2.132*	1.745*	1.659*	1.771*	1.726*	1.704*	1.711*	1.688*
	(0.83)	(0.80)	(0.81)	(0.81)	(0.81)	(0.81)	(0.82)	(0.81)
Education Attainment: 0 to 4 years (Ref - 9 years)	1.151	1.164	1.190	1.180	1.151	1.221	1.162	1.178
	(0.76)	(0.73)	(0.73)	(0.73)	(0.73)	(0.73)	(0.73)	(0.73)
Education Attainment: 5 to 8 years (Ref - 9 years)	1.558*	1.298*	1.272	1.294*	1.279*	1.338*	1.283*	1.295*
	(0.67)	(0.65)	(0.65)	(0.65)	(0.65)	(0.65)	(0.65)	(0.65)
Education Attainment: 10+ years (Ref - 9 years)	-0.934	-1.443	-1.459	-1.458	-1.531	-1.457	-1.426	-1.419
	(0.81)	(0.78)	(0.78)	(0.78)	(0.79)	(0.78)	(0.79)	(0.78)
Income is Adequate to Meet Needs (ref - Inadequate)	-2.601***	-2.375***	-2.353***	-2.376***	-2.393***	-2.387***	-2.369***	-2.371***
	(0.52)	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)
Receives a Pension (ref - Does not Receive)	-0.919	-0.625	-0.650	-0.607	-0.629	-0.624	-0.642	-0.628
	(0.68)	(0.66)	(0.66)	(0.66)	(0.66)	(0.66)	(0.66)	(0.66)
Currently Married (ref - Not Currently Married)	-1.268*	-1.335*	-1.294*	-1.342*	-1.355*	-1.289*	-1.326*	-1.297*
	(0.64)	(0.62)	(0.62)	(0.62)	(0.62)	(0.62)	(0.62)	(0.62)
Total Number of Living Children	0.021	-0.004	-0.021	0.000	-0.013	-0.012	-0.005	-0.014
	(0.13)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)
Any Child Coresides (Ref - No Child Coresides)	0.345	0.728	0.727	0.727	0.711	0.681	0.731	0.735
	(0.50)	(0.49)	(0.49)	(0.49)	(0.49)	(0.49)	(0.49)	(0.49)
Engages in Community Activities/Orgs at Least Monthly	-0.471	-0.383	-0.434	-0.379	-0.413	-0.345	-0.379	-0.397
	(0.50)	(0.48)	(0.48)	(0.48)	(0.48)	(0.48)	(0.48)	(0.48)
Visits with Friends at Least Weekly (ref - less than Weekly)	-1.059	-0.761	-0.724	-0.742	-0.746	-0.684	-0.758	-0.771
	(0.72)	(0.69)	(0.70)	(0.70)	(0.70)	(0.70)	(0.70)	(0.70)
Visits with nonresident Family at Least Weekly	-0.864	-0.871	-0.785	-0.871	-0.798	-0.845	-0.866	-0.838
	(0.49)	(0.47)	(0.47)	(0.47)	(0.48)	(0.47)	(0.47)	(0.47)
Engages in Daily Exercise (ref- less than daily)	-1.078*	-1.115*	-1.107*	-1.107*	-1.112*	-1.115*	-1.107*	-1.124*
	(0.50)	(0.48)	(0.48)	(0.48)	(0.48)	(0.48)	(0.48)	(0.48)
Smoke In the Present (ref - Never smoked)	0.957	1.391	1.347	1.405	1.384	1.384	1.363	1.386
	(0.87)	(0.84)	(0.84)	(0.85)	(0.84)	(0.84)	(0.85)	(0.84)
Smoked in the Past, Not at Present (ref - Never smoked)	1.082	1.194	1.159	1.259	1.195	1.190	1.172	1.161
	(0.86)	(0.83)	(0.83)	(0.85)	(0.83)	(0.83)	(0.83)	(0.83)
Drank Alcohol In the Present (ref - Never smoked)	-0.950	-0.971	-0.969	-0.951	-0.976	-0.940	-0.998	-0.974
	(0.76)	(0.73)	(0.73)	(0.73)	(0.73)	(0.73)	(0.73)	(0.73)
Drank Alcohol in the Past, Not at Present (ref - Never smoked)	1.491	1.448	1.464	1.421	1.452	1.408	1.439	1.491
	(1.04)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)
Have Free Healthcare Certificat (ref - has Health Insurance)	0.460	0.085	0.059	0.065	-0.061	0.098	0.105	0.112
	(0.93)	(0.90)	(0.90)	(0.91)	(0.93)	(0.90)	(0.91)	(0.90)
Do Not Have Health Insurance (ref - Has Health Insurance)	-0.939	-0.931	-1.017	-0.910	-0.961	-0.993	-0.938	-0.985
	(0.58)	(0.56)	(0.56)	(0.56)	(0.56)	(0.56)	(0.56)	(0.56)
Reports Severe Hypertension		0.074	0.101	0.077	0.085	0.080	0.079	0.098
		(0.20)	(0.21)	(0.20)	(0.20)	(0.20)	(0.21)	(0.21)
Reports Severe Diabetes		1.715*	1.728**	1.709*	1.732**	1.721*	1.706*	1.753**
		(0.67)	(0.67)	(0.67)	(0.67)	(0.67)	(0.67)	(0.67)
Reports Severe Heart Disease		0.951***	0.944***	0.951***	0.951***	0.951***	0.952***	0.961***
		(0.28)	(0.28)	(0.28)	(0.28)	(0.28)	(0.28)	(0.28)
Reports Severe Lung/Bronchial Problems		0.433	0.457	0.431	0.456	0.416	0.435	0.457
		(0.31)	(0.31)	(0.31)	(0.31)	(0.31)	(0.31)	(0.31)
Reports Severe Arthritis		0.612***	0.619***	0.612***	0.621***	0.608***	0.617***	0.606***
		(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.18)	(0.17)
Reports Other Severe Chronic Illness		0.274	0.277	0.269	0.276	0.275	0.274	0.272
		(0.18)	(0.18)	(0.18)	(0.18)	(0.18)	(0.18)	(0.18)
Constant	19.080***	17.285***	17.733***	17.278***	17.899***	17.106***	17.299***	17.494***
	(2.93)	(2.89)	(2.92)	(2.90)	(3.01)	(2.90)	(2.90)	(2.91)
bic	2480.775	2474.497	2479.124	2480.344	2479.898	2479.205	2480.423	2479.752
N	405	405	405	405	405	405	405	405

Source: VLS Health and Aging Pilot Survey, 2010

Table Five. OLS Regression Model of Somatic Symptom Severity in the Past Month among Older Adults in Vietnam's Red River Delta

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
Military Service: Combat Veteran (ref - nonmilitian nonveteran)	0.218	-0.348	0.319	-0.420	-0.275	-0.121	-0.226	0.014
	(0.87)	(0.85)	(1.04)	(0.87)	(0.86)	(0.88)	(0.98)	(0.96)
Military Service: Noncombat Veteran (ref - nonmilitia nonveteran	0.802	0.366	0.482	0.331	0.388	0.445	0.385	0.473
	(0.91)	(0.89)	(0.89)	(0.89)	(0.89)	(0.89)	(0.89)	(0.90)
Military Service: Militia Nonveteran (ref - Nonmilitia nonveteran)	0.907	0.535	0.666	0.531	0.560	0.639	0.535	0.548
	(0.61)	(0.59)	(0.60)	(0.59)	(0.59)	(0.60)	(0.59)	(0.59)
Count of Wartime Distress Events (0-6)			-0.268					
			(0.24)					
Reports Loss of Loved One Due to War				0.247				
				(0.67)				
Reports Being a Civilian in a Warzone					-0.549			
					(0.74)			
Reports Witness Atrocities/Mass Violence in Wartime						-0.560		
						(0.51)		
Reports Seriously Injuring/Killing Another in Wartime							-0.264	
							(1.04)	
Reports Exposure to Toxic Substances in Wartime								-0.706
								(0.85)
Age	0.060	0.065	0.066	0.064	0.064	0.069*	0.065	0.063
	(0.04)	(0.03)	(0.03)	(0.04)	(0.03)	(0.04)	(0.03)	(0.03)
Female (Ref - Male)	2.132*	1.745*	1.659*	1.771*	1.726*	1.704*	1.711*	1.688*
	(0.83)	(0.80)	(0.81)	(0.81)	(0.81)	(0.81)	(0.82)	(0.81)
Education Attainment: 0 to 4 years (Ref - 9 years)	1.151	1.164	1.190	1.180	1.151	1.221	1.162	1.178
	(0.76)	(0.73)	(0.73)	(0.73)	(0.73)	(0.73)	(0.73)	(0.73)
Education Attainment: 5 to 8 years (Ref - 9 years)	1.558*	1.298*	1.272	1.294*	1.279*	1.338*	1.283*	1.295*
	(0.67)	(0.65)	(0.65)	(0.65)	(0.65)	(0.65)	(0.65)	(0.65)
Education Attainment: 10+ years (Ref - 9 years)	-0.934	-1.443	-1.459	-1.458	-1.531	-1.457	-1.426	-1.419
	(0.81)	(0.78)	(0.78)	(0.78)	(0.79)	(0.78)	(0.79)	(0.78)
Income is Adequate to Meet Needs (ref - Inadequate)	-2.601***	-2.375***	-2.353***	-2.376***	-2.393***	-2.387***	-2.369***	-2.371***
	(0.52)	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)
Receives a Pension (ref - Does not Receive)	-0.919	-0.625	-0.650	-0.607	-0.629	-0.624	-0.642	-0.628
	(0.68)	(0.66)	(0.66)	(0.66)	(0.66)	(0.66)	(0.66)	(0.66)
Currently Married (ref - Not Currently Married)	-1.268*	-1.335*	-1.294*	-1.342*	-1.355*	-1.289*	-1.326*	-1.297*
	(0.64)	(0.62)	(0.62)	(0.62)	(0.62)	(0.62)	(0.62)	(0.62)
Total Number of Living Children	0.021	-0.004	-0.021	0.000	-0.013	-0.012	-0.005	-0.014
	(0.13)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)
Any Child Coresides (Ref - No Child Coresides)	0.345	0.728	0.727	0.727	0.711	0.681	0.731	0.735
	(0.50)	(0.49)	(0.49)	(0.49)	(0.49)	(0.49)	(0.49)	(0.49)
Engages in Community Activities/Orgs at Least Monthly	-0.471	-0.383	-0.434	-0.379	-0.413	-0.345	-0.379	-0.397
	(0.50)	(0.48)	(0.48)	(0.48)	(0.48)	(0.48)	(0.48)	(0.48)
Visits with Friends at Least Weekly (ref - less than Weekly)	-1.059	-0.761	-0.724	-0.742	-0.746	-0.684	-0.758	-0.771
	(0.72)	(0.69)	(0.70)	(0.70)	(0.70)	(0.70)	(0.70)	(0.70)
Visits with nonresident Family at Least Weekly	-0.864	-0.871	-0.785	-0.871	-0.798	-0.845	-0.866	-0.838
	(0.49)	(0.47)	(0.47)	(0.47)	(0.48)	(0.47)	(0.47)	(0.47)
Engages in Daily Exercise (ref- less than daily)	-1.078*	-1.115*	-1.107*	-1.107*	-1.112*	-1.115*	-1.107*	-1.124*
	(0.50)	(0.48)	(0.48)	(0.48)	(0.48)	(0.48)	(0.48)	(0.48)
Smoke In the Present (ref - Never smoked)	0.957	1.391	1.347	1.405	1.384	1.384	1.363	1.386
	(0.87)	(0.84)	(0.84)	(0.85)	(0.84)	(0.84)	(0.85)	(0.84)
Smoked in the Past, Not at Present (ref - Never smoked)	1.082	1.194	1.159	1.259	1.195	1.190	1.172	1.161
	(0.86)	(0.83)	(0.83)	(0.85)	(0.83)	(0.83)	(0.83)	(0.83)
Drank Alcohol In the Present (ref - Never smoked)	-0.950	-0.971	-0.969	-0.951	-0.976	-0.940	-0.998	-0.974
	(0.76)	(0.73)	(0.73)	(0.73)	(0.73)	(0.73)	(0.73)	(0.73)
Drank Alcohol in the Past, Not at Present (ref - Never smoked)	1.491	1.448	1.464	1.421	1.452	1.408	1.439	1.491
	(1.04)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)
Have Free Healthcare Certificat (ref - has Health Insurance)	0.460	0.085	0.059	0.065	-0.061	0.098	0.105	0.112
	(0.93)	(0.90)	(0.90)	(0.91)	(0.93)	(0.90)	(0.91)	(0.90)
Do Not Have Health Insurance (ref - Has Health Insurance)	-0.939	-0.931	-1.017	-0.910	-0.961	-0.993	-0.938	-0.985
	(0.58)	(0.56)	(0.56)	(0.56)	(0.56)	(0.56)	(0.56)	(0.56)
Reports Severe Hypertension		0.074	0.101	0.077	0.085	0.080	0.079	0.098
		(0.20)	(0.21)	(0.20)	(0.20)	(0.20)	(0.21)	(0.21)
Reports Severe Diabetes		1.715*	1.728**	1.709*	1.732**	1.721*	1.706*	1.753**
		(0.67)	(0.67)	(0.67)	(0.67)	(0.67)	(0.67)	(0.67)
Reports Severe Heart Disease		0.951***	0.944***	0.951***	0.951***	0.951***	0.952***	0.961***
		(0.28)	(0.28)	(0.28)	(0.28)	(0.28)	(0.28)	(0.28)
Reports Severe Lung/Bronchial Problems		0.433	0.457	0.431	0.456	0.416	0.435	0.457
		(0.31)	(0.31)	(0.31)	(0.31)	(0.31)	(0.31)	(0.31)
Reports Severe Arthritis		0.612***	0.619***	0.612***	0.621***	0.608***	0.617***	0.606***
		(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.18)	(0.17)
Reports Other Severe Chronic Illness		0.274	0.277	0.269	0.276	0.275	0.274	0.272
		(0.18)	(0.18)	(0.18)	(0.18)	(0.18)	(0.18)	(0.18)
Constant	19.080***	17.285***	17.733***	17.278***	17.899***	17.106***	17.299***	17.494***
	(2.93)	(2.89)	(2.92)	(2.90)	(3.01)	(2.90)	(2.90)	(2.91)
bic	2480.775	2474.497	2479.124	2480.344	2479.898	2479.205	2480.423	2479.752
N	405	405	405	405	405	405	405	405

Source: VLS Health and Aging Pilot Survey, 2010