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Does Military Service Modify the Relationship between Race/Ethnicity and Diabetes and Hypertension Prevalence and Control? National Health and Nutrition Examination Survey (NHANES) 2007–2014

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Abstract

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BACKGROUND: Studies on the effects of military service on the long-term health of veterans have produced mixed results. One factor explaining these differences in the health outcomes among veterans is race and ethnicity. Like racial and ethnic minorities in the general population, minority veterans experience worse health outcomes than do White veterans. However, unlike their civilian counterparts, minority service members receive a number of positive benefits from serving in the U.S. Armed Forces that disadvantaged racial and ethnic minorities do not experience. These include equal access to health care, economic, educational benefits and a culture of meritocracy. No detailed study has examined whether minority veterans have better health outcomes than do minorities in the general public.

PURPOSE: This study has two objectives. One is to determine if having served in the U.S. Armed Services affects the prevalence and control of hypertension and diabetes. The second

objective will be to determine if military service modifies the relationship between race and ethnicity and hypertension and diabetes.

METHODS: Data from the 2007–2014 National Health and Nutrition Examination Surveys enabled identification of 2,386 veterans and 9,586 non-veterans for this study. Differences in hypertension and diabetes prevalence and control between veterans and non-veterans were compared using adjusted logistical analysis. Multivariate logistic regression and models were used to adjust for age and then selected socio-demographic factors to assess whether military health service was associated with lower levels of diabetes and hypertension.

RESULTS: Veteran men were older than non-veteran men (59.6 years vs 40.4 years) and were more likely to be non-Hispanic White. Adjustments for age, and then age and socio-demographic factors, revealed no difference in the prevalence of diabetes or hypertension between veterans and non-veterans. African American veterans and non-veterans had a statistically significant higher likelihood of both diabetes and hypertension than did their White counterparts. Using logistical regression models to determine if there was an interaction between veteran status and race/ethnicity on the outcomes of interest, we found no evidence that military service modifies the effects of race/ethnicity on either hypertension or diabetes prevalence or control.

CONCLUSION: This study found that military service does not modify the effects of race/ethnicity on either hypertension or diabetes. It also found that African American males had a higher prevalence of hypertension than do White males, and that African American, Hispanic, and the other/multiracial group non-veteran males had a higher prevalence of diabetes than do White non-veteran males.

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BACKGROUND

Over the last several decades, researchers have examined whether military service has significant long-term health consequences for the men and women who serve in the U.S. Armed Forces.^{1,2} Studies examining the impact of military service on health and health behaviors have documented both beneficial and negative results.³ Due to the varied nature of military service, this is not surprising. Age at entry, length of service, exposure to combat, branch of service, whether a service member was an officer or enlisted personnel while in the military, and race and ethnicity may have a notable influence on the long-term health outcome of the individual military veteran.

More than 2.5 million members of the military have served in Iraq and Afghanistan since 2001,⁴ and the percentage of minorities serving in the military is expected to continue to rise.⁵ For these reasons, the impact of military service on the long-term health of our military service members in general, and minorities in specific, is an important area of research. This study attempts to determine whether military service and race and ethnicity affect the prevalence and control of hypertension and diabetes.

Racial and ethnic minorities suffer from higher rates of chronic disease and lower life expectancy than do White Americans. Among racial and ethnic minorities, African Americans suffer some of the highest health disparities. On average, African Americans have a life expectancy that is 3.8 years less than Whites.⁶ In addition to a lower life expectancy, African Americans suffer from higher rates of chronic disease such as hypertension and diabetes. They have higher rates of hypertension (41.3%) than do White Americans (28.6%)⁷ and are more likely to suffer from diabetes (11.6% versus 8.6%),⁸ and are 1.38 times more likely to die of cardiovascular disease than are White Americans.⁹

Hispanic Americans represent the fastest growing segment of the U.S. population. Their percentage of the American population is estimated to grow from 17.6% in 2015 to 28.6% in 2060.¹⁰ Unlike African Americans, Hispanic Americans have a lower rate of hypertension than that of White Americans (24.7% vs 28.0%).¹¹ However, Hispanic Americans are more likely to have poorly controlled hypertension, defined as not reaching recommended blood pressure treatment goals.¹² In addition, Hispanic Americans have a higher prevalence of diabetes (11.6% versus 8.6%) and are 23%¹³ more likely to be obese compared to White Americans. Native Americans and Pacific Islanders are also more likely to be diagnosed with hypertension and to suffer from higher rates of chronic disease than are White Americans. Native Americans have some of the highest rates of diabetes and obesity among all ethnic minorities.¹⁴

Much has been written about the differences in health-related behaviors and health outcomes between racial and ethnic minority veterans and White veterans.^{15,16,17} However, fewer nationally representative studies have directly compared the differences in health between racial and ethnic minority veterans and non-veterans minorities.^{18,19,20} Though several studies have documented worse health outcomes for minority veterans,^{21,22} others have found that minority veterans (i.e., African American veterans) seem to experience better health outcomes than do their civilian counterparts,^{1,23} with military service attenuating the mortality disadvantage suffered by African American veteran men.^{1,23}

Several possible causes may account for this difference. One is that military service provides equal access to quality care for all active duty (AD) service members regardless of race or ethnicity. Minority veterans can continue to receive ongoing care in the Veterans Healthcare Administration (VHA). In addition, the military has provided, and continues to provide, socioeconomic and educational advantages to African American and other disadvantaged minorities.²³ Compared to African Americans who did not serve in the military, African Americans who joined the Armed Services have higher incomes. This includes African

Americans who served in World War II, the Vietnam War, and those who have served in the all-volunteer forces (AVF) since 1973.²³

Regarding the question of the long-term impacts of military service on health, a large body of literature has documented an increased risk of adverse physical and psychological health problems associated with military service. Generally, these adverse health outcomes can be divided into three broad categories. These include increased risk of cardiovascular diseases (CVD) and/or risk factors such as hypertension or diabetes and CVD associated mortality,^{2,24} increase in risk-taking behaviors such as substance abuse and motor vehicle accidents,^{25,26} and finally, an increase in mental health disorders among service members, especially in those with combat experience.^{26,27,28}

These categories are not mutually exclusive. Many military veterans and active-duty service members experience medical problems in more than one area. For example, the mental health effects of combat experience have been associated with a higher incidence of CVD and mortality.²⁹ This finding is consistent with a large body of literature that indicates that mental health disorders are associated with a greater incidence of chronic diseases in general and CVD in particular.^{30,31,32}

Several studies have found that increased risk of CVD and mortality are correlated with a history of increased participation in risky behavior. WW II and Vietnam veterans had higher rates of smoking and alcohol intake that were associated with an increased risk of CVD, mortality, and physical disabilities.^{2,33}

Other researchers have either found no increased risk in chronic health conditions such as CVD or cancer associated with military service,^{3,25} or lower mortality rates associated with chronic diseases in veterans as compared to the non-veterans.^{25,34} The authors of the last two studies have associated these results with the “healthy soldier effect.” According to the concept of the

healthy soldier effect, the initial health screening of military recruits, ongoing requirements of maintaining physical fitness, and free access to medical services mean that military service members are on average healthier than their civilian counterparts.^{34,35} These effects continue to be seen after the service member retires from the military service.

This study has two objectives. One is to determine whether having served in the U.S. Armed Services is associated with a lower prevalence and better control of two common cardiovascular risk factors — hypertension and diabetes. The second objective will be to determine whether military experience modifies the relationship between race/ethnicity and hypertension and diabetes.

METHODS

This cross-sectional study analyzed data from the National Health and Nutrition Examination Survey (NHANES) from 2007–2014, in which more than 40,617 individuals participated.

Data

NHANES is a complex, multistage survey conducted by the National Center for Health Statistics, Centers for Disease Control and Prevention. The NHANES was designed to assess the health and nutritional status of representative samples of the United States civilian, non-institutionalized population, which is surveyed on a continuous basis.

The primary sampling units for NHANES are counties. Segments within the county are composed of a block or group of blocks containing a group of households. Approximately 30 counties located across the U.S. are selected and visited during each two-year survey cycle. On average, 12,000 individuals are asked to participate in the NHANES during each cycle. Of this number, approximately 10,500 individuals agree to participate. The NHANES is conducted in a two-stage process; an initial household interview is followed by a standardized examination at a mobile examination center (MEC). In general, 95% of respondents who participate in the NHANES complete both the interview and examination.³⁶

Because of the Centers for Disease Control and Prevention's interest in obtaining a broad range of data on subgroups for public health interest, NHANES oversamples specific populations such as Hispanics, non-Hispanic black persons, or Asian Americans. This method both increases the precision of the health estimates and decreases the sampling errors for these populations.

Utilization of a post-stratification factor accounts for non-coverage and non-response.

Information on the NHANES sample design, datasets, or other aspects of the survey are publically available on the Centers for Disease Control and Prevention NHANES website³⁷

Study Population

The flow diagram (Fig. 1) documents those individuals who did and did not meet the eligibility criteria to be included in the study. All individuals not meeting the minimal age requirement for enlistment in the U.S. Armed Forces (i.e., age 18 years of age) were excluded from the study population. Participants who responded in the affirmative to the question “Have you served in the U.S. Armed Forces?” (n=2631) were identified as veterans. Due to the small number of female veterans in the NHANES 2007–2014 surveyed population (n=162), only males were included in this study. Finally, only those males who had participated in both the interview and MEC portions of the NHANES survey, 2,386 veterans and 9,586 males, were included in the study for analysis.

Measures

The primary dependent variables were hypertension, hypertension control, diabetes, and diabetes control. Hypertension was defined as an average systolic blood pressure of ≥ 140 mmHg, an average diastolic blood pressure of ≥ 90 mmHg, or a positive answer to the question: “Are you taking an antihypertensive medication?” A participant’s blood pressure was considered controlled if he was taking an antihypertensive medication and if his systolic blood pressure was < 140 mm Hg and diastolic blood pressure was < 90 mm Hg.

For calculating an average blood pressure, NHANES blood pressure measurement protocol instructs the MEC physician to obtain three measurements from all individuals aged 8 years and older.³⁸ The physician is instructed to only obtain a fourth blood pressure measurement if one of the three previous blood pressure measurements could not be ascertained. We calculated the average blood pressure using all measurements that were obtained.³⁹

Diabetes was defined as either having a hemoglobin A1c (HbA1c) $\geq 6.5\%$ or a self-report of taking medication for diabetes. Participants who answered yes to either one of two survey

questions — “Are you taking a medication to lower your blood sugar?” or “Are you taking insulin?” — were considered to have diabetes. A respondent’s diabetes was considered controlled if he answered yes to one of the two survey questions on taking a diabetic medication and had an HbA1c < 7%.⁴⁰

The primary independent variables were having served in the U.S. Armed Forces (veteran) and race and ethnicity. Based on their response to the question of Armed Forces service, males in the study were stratified into two mutually exclusive groups: veterans and non-veterans. Race and ethnicity were defined in the NHANES as Non-Hispanic White, Non-Hispanic Black, Hispanic, and Other/Multiracial. The Hispanic category included those individuals who had reported that they were either “Mexican American” or “other Hispanic.” The Other-Multiracial category was composed of those individuals who reported that they were either “Non-Hispanic Asians” or “other Race, including Multiracial.” For race/ethnicity, we created mutually exclusive categories: White (non-Hispanic White), African American (non-Hispanic Black), Hispanic, and Other Race/Multiracial (other race including multiracial).

Data Analysis

Data analysis was performed using STATA, version 14.2. Because of the complex survey data methods used in NHANES, the survey (svy) command was used to analyze the study data. The svy command in STATA accounts for the survey weights, oversampling, and post-stratification factors used in NHANES. Because random sampling is not used to obtain NHANES data, the CDC assigns a post-stratification weight to each respondent to account for the unequal probability of selection, nonresponse, and adjustment to independent population controls.

We performed bivariate analysis, calculating crude and age-standardized prevalence estimates for hypertension and diabetes and compared them by veteran status and race/ethnicity using t-tests. We next used multivariable logistic regression models to examine first whether veteran

status resulted in differences in hypertension and diabetes prevalence or control. We controlled for confounding initially by adjusting for age and then for age and selected socioeconomic factors including: poverty level, health insurance status, access to healthcare, education, health condition, marital status, and depressive symptoms.

Next, using logistic regression models, we assessed first whether veteran status was associated with hypertension and diabetes prevalence and control and then whether there was an interaction between our two main predictor variables, veteran status and race/ethnicity and our outcomes of interest — hypertension and diabetes prevalence and control. Using the margins command in STATA version 14.2, we estimated the predicted probabilities for the association between the exposures, military status and race, and ethnicity and the outcomes of hypertension and diabetes. We also used the predictive margins command to examine whether military status modified the effects of race and ethnicity on the likelihood of an individual's hypertension or diabetes being controlled.

RESULTS

The study included 11,972 respondents (n=2386 veterans, and n=9586 non-veterans). For eligibility criteria, please see Fig. 1. Table 1 shows the distribution of demographic selected characteristics of the study population. The racial and ethnic groups across all four NHANES survey cycles included 43.4% Whites (n=5187), 21.6% Blacks (n=2589), 24.9% Hispanics (n=2983), and 10.1% Other/Multiracial individuals. Veterans represented 20% of the eligible male population. Veterans on average were older than non-veterans (60 years versus 41.4 years). Relative to White veterans, Black, Hispanic, and the other/multiracial veterans were on average younger in age. Veterans were more likely to be older, more educated, married, have health insurance, and more affluent than were non-veterans. Veterans were also more likely than non-veterans to report having fair or poor health.

Age is one of the strongest factors associated with the development of chronic diseases such as hypertension or diabetes. As a strong confounder, age therefore has to be adjusted for in any statistical analysis, especially one with such a difference in mean age between our two exposure groups (i.e., veterans and non-veterans) as reported in this study. Crude estimates of hypertension and diabetes prevalence in this study population indeed showed a statistically significant difference between veterans and non-veterans. We therefore decided to present only the results of age-adjusted models in our data tables.

Table 2A shows the predicted probabilities of the prevalence and control of hypertension in men by veteran status. When adjusted for age and then age and socioeconomic factors, the data showed no statistically significant differences in predicted probabilities of hypertension prevalence between veterans and non-veterans. Assessing for the predicted probability of hypertension control in veterans and non-veterans on antihypertensive medication showed a statistically significant difference between veterans (88%) and non-veterans (83%, $p < 0.05$).

When adjusted for both age and all other socioeconomic factors, the data showed no statistically significant difference between veterans and non-veterans in regard to BP control.

Table 2B presents the predicted probabilities of the prevalence and control of diabetes in men by veteran status. When adjusted for age and then age and socioeconomic factors, the data showed no statistically significant difference between veterans and non-veterans in either the prevalence of diabetes prevalence or diabetes control.

Table 3A shows the results of the effects of veteran status and race/ethnicity on the predicted probabilities of hypertension prevalence adjusted for both age and then age plus socioeconomic factors. After these adjustments, we found no statistically significant difference among any of the veteran and non-veteran members of any of the racial or ethnic groups. However, after we adjusted both for age and then age plus socioeconomic factors, only African American veterans and non-veterans had a statistically higher prevalence of hypertension compared to White veterans and non-veterans respectively. With age adjustment, the difference was 39% vs 31% ($p=0.002$) between African American and White veterans and 40% vs 29% ($p<0.001$) between African American and White non-veterans. After adjusting for both age and socioeconomic factors, the difference was 40% vs 34% ($p=0.025$) between African American and White veterans and 41% and 31% ($p<0.001$) between African American and White non-veterans.

Table 3B presents the effects of veteran status and race/ethnicity on the predicted probability of hypertension control in individuals taking antihypertensive medication. Within each racial/ethnic category, adjustment for age and then age plus socioeconomic factors, showed no evidence of statistically significant differences between any of the veteran and non-veteran members of any of the racial/ethnic groups. Evidence of a statistically significant difference in hypertension control was only found between White and African American non-veterans was found after we adjusted for age but not for age plus socioeconomic factors. After adjusting for age, the difference between African American and White nonveterans in the predicted probability of

hypertension control in individuals on antihypertensive medication was 84.6% vs 77% ($p=0.005$) respectively, with White non-veterans having better hypertension control.

Table 3C shows the results of the effects of veteran status and race/ethnicity on the predicted probabilities of diabetes prevalence after adjusting for age and then age plus socioeconomic factors. Adjusting for both showed no statistically significant difference in the predicted probabilities of diabetes prevalence between any of the veteran and non-veteran members of any of the racial or ethnic groups. After adjusting for age among veterans, we found that only African American veterans when compared to White veterans, had statistically higher prevalence of diabetes —15.1% vs 10.0% for White veterans ($p=0.001$). After adjusting for both age and socioeconomic factors, the data revealed that African American, Hispanic, and the other/multiracial group non-veterans all had statistically higher predicted probabilities of diabetes than did White non-veterans (16.6%, 15.2% and 13.8% vs 8.6% respectively; all p 's <0.005).

Table 3D presents the effects of veteran status, race, and ethnicity on the predicted probability of diabetes control in individuals taking diabetes medication. Within each racial/ethnic category, after adjusting for both age and age plus socioeconomic factors, the only statistical difference between any of the veteran and non-veteran members of any of the racial/ethnic groups was in the other/multiracial category. In this group, veterans had a statistically significant lower predicted probability of diabetes control than did non-veterans after age adjustment (20.7% vs 49.7%; p -value, 0.026) and after adjustment for both age plus socioeconomic factors, 22.9% vs. 54.4% ($p=0.038$), respectively. Among veterans, after adjusting for both age and age plus socioeconomic factors, data showed that White veterans had a statistically higher predicted probability of diabetic control than did the other/multiracial group (62.2% vs 20.7%; $p=0.002$ after age-adjustment and 66.7 vs 22.9%; $p=0.001$ after adjustment for both age and socioeconomic factors).

DISCUSSION

After adjusting for age and selected socioeconomic factors, this study found no difference between veterans and non-veterans as a group for the prevalence and control of hypertension and diabetes. These results are similar to the results of a recent study assessing cardiovascular risk factors among male veterans and non-veterans.²⁰

Among both veterans and non-veterans after adjusting for age, African American men had a statistically higher probability of both diabetes and hypertension than did White male veterans and non-veterans, respectively. In both veterans and non-veteran males, Whites had better hypertension control than did African American males. These results are in keeping with a large body of evidence showing that African American males have a higher prevalence of hypertension^{7,41} and diabetes^{8,42} than do White males.

For Hispanic males, there was no difference between veterans and non-veterans in hypertension or diabetes prevalence or control. However, Hispanic non-veteran males did have a statistically significant lower prevalence of hypertension than White non-veteran males and a higher likelihood of uncontrolled hypertension. These results are consistent with previous findings.¹² Hispanic non-veteran males also had a higher prevalence of diabetes than White non-veteran males.

In addition to Black and Hispanic non-veteran males, the other/multiracial group non-veterans had a higher prevalence of diabetes than did White non-veteran males after adjusting for age. In addition, data showed a significant difference in the level of diabetes control in male veterans in the other/multiracial category, both when compared to non-veteran members of the same group and also when compared to the White referent veteran group. Among the 79 members of the other/multiracial group, only 19 were diabetics, which might account for much lower probability of diabetes control in veteran males in this study

Overall, there was no evidence that military service modifies the effects of race on either hypertension or diabetes, two significant cardiovascular risk factors. As far as we know, no recent national studies have directly comparing minority veteran and civilian health outcomes. A recent cross-sectional study did investigate the health behavior differences among veterans, active duty members, reservists, and civilians. The authors¹⁸ found that veterans were more likely to rate their health as fair or poor, report poor physical health, depressive symptoms, and cardiovascular disease than did civilians. However, the study did not specifically explore any racial or ethnic differences between veterans or civilians.

Strengths and Limitations

The major strength of this study was the ability to assess laboratory and examination data to assess the prevalence and control of hypertension and diabetes in veterans and non-veterans. The NHANES is unique among the large national cross-sectional surveys in that objective data is collected as opposed to just subjective data from telephone and mail-based cross-sectional surveys.

This study has several limitations. One is associated with the study design. Cross-sectional data can provide only a limited picture of an incredibly complex and varied veteran population. The NHANES did not obtain important information from veterans such as their length of service, whether they were an officer or enlisted personnel, deployment status, or combat experience — all important questions in regard to military experience. In addition, such mediating variables as economic and educational opportunities, measures of potential reduction in discrimination associated with service in the military were also not investigated.

There was also a potential for misclassification of exposure status. The formal definition of a veteran is anyone who served in the Armed Services. Though more than 75% of the veterans in

our study met this criterion as they were over 65 years of age or older, an unknown number of individuals were probably still in the military.

Also important is the likelihood that life experiences following military service, as opposed to active duty military experiences, including long-term differences in health care access and socioeconomic factors, might be a more important factor in a veteran's long-term health, especially if a veteran served in the military for only a few years.²² Another weakness of the study was that our study population included only 79 individuals in the other/multiracial group. This small sample makes it very likely that our results for this group are more likely than not due to chance alone.

A final limitation of this study was that it did not include female veterans. Over the last 25 years, female veterans have come to comprise a larger percentage of the active duty and retired military population. Assessing the association between military service, gender, race, and ethnicity and health outcomes is a key area that needs investigation.

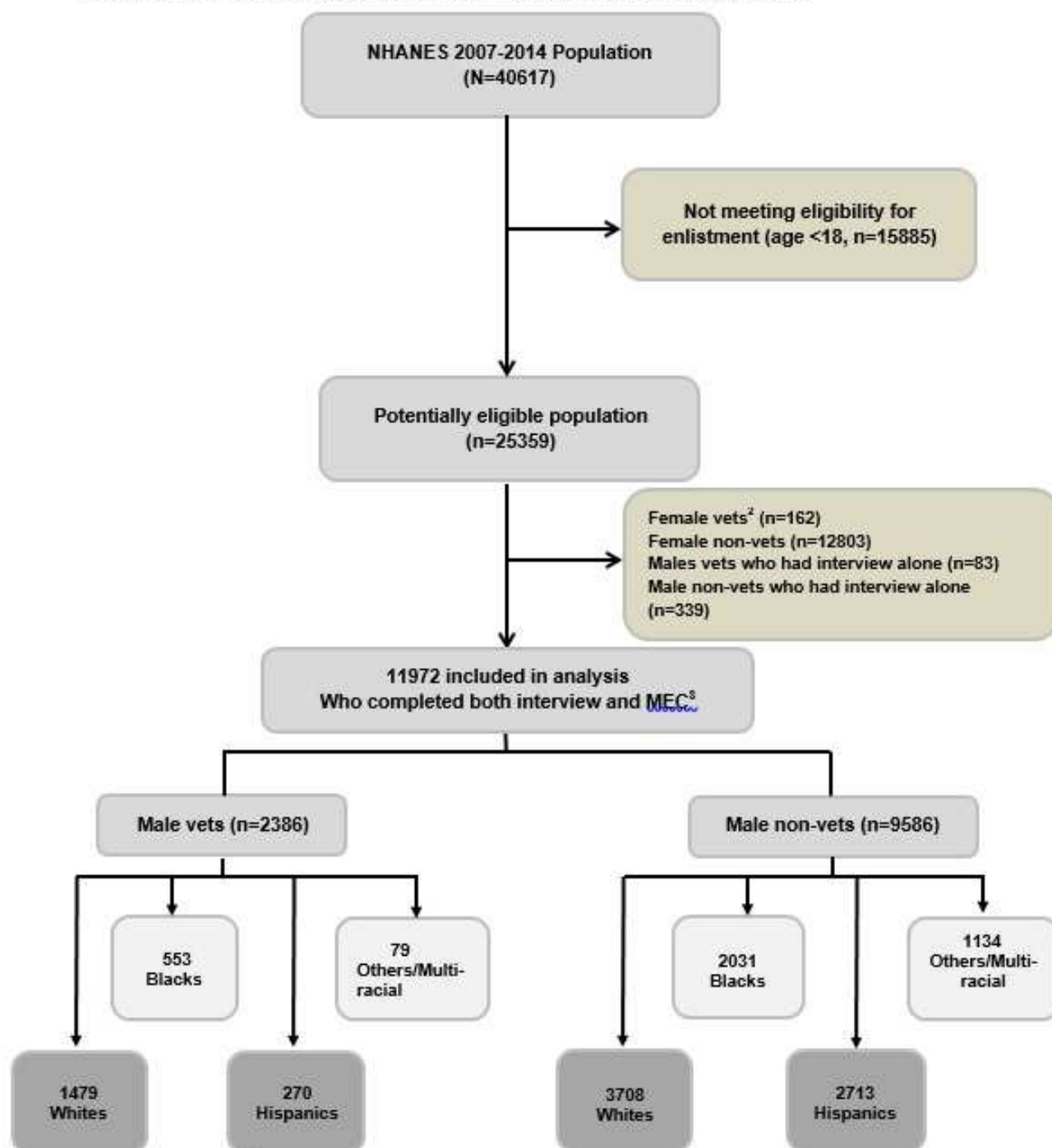
CONCLUSIONS

We did not find a difference between veterans and non-veteran males in the prevalence and control of hypertension and diabetes. There was no evidence that military service modifies the association of race/ethnicity on either hypertension or diabetes prevalence or control. We did find that certain minority groups, principally African American males, had worse CVD health outcomes when compared to both White veteran and non-veteran males.

As initially noted in this paper, studies on the long-term health effects of military service have produced mixed results. We know that veterans are not a homogenous group and that differences may be due to socioeconomic status, military and combat experience, and rank at retirement. That race and ethnicity play an instrumental role in health-related disparities in both veterans and civilians has been well documented.

Military service has the potential to transform the life course of disadvantaged minority youth by providing them with the benefits of access to preventative health care, occupational, and educational opportunities not available to their civilian counterparts.^{19,23} What is needed is a comprehensive, longitudinal study to determine if minority veterans have better long-term health outcomes than do civilian racial and ethnic minorities. If it turns out that they do, then the exploration of the causes of these differences could help address the overall health disparities facing minorities in the U.S. in general.

Figure 1. Distribution of eligible patients by veteran's status and race/ethnicity among National Health and Nutrition Examination Survey (NHANES) 2007-2014 Respondents.



Notes: ¹veterans, ²mobile examination center

Table 2A Predicted Probabilities of Hypertension (HTN) by Veteran Status (Prevalence¹ and Control²)				
	Veterans	Non-veterans	Difference	P-value
HTN Prevalence¹				
N, total estimated subpop: 108,517,895				
crude #	n= 749	n= 2,828		
HTN Prevalence (Age Adjusted)	31.4%	29.5%	1.9%	0.143
HTN Prevalence (Fully Adjusted)³	33.4%	31.4%	2.0%	0.090
HTN Control²				
N, total estimated subpop: 32,625,147				
crude #	n= 656	n= 2,353		
HTN Control (Age Adjusted)	87.6%	83.2%	4.4%	0.052
HTN Control (Fully Adjusted)³	88.2%	85.8%	2.4%	0.340
Notes: ¹ Hypertension prevalence is defined as the number of individuals with hypertension. ² Hypertension control is defined as a systolic blood pressure (BP) <140 and diastolic BP<90 in individuals on antihypertensive medication. ³ Fully adjusted for all socioeconomic factors including: poverty level, health insurance status, access to health care, education, health condition, marital status and depressive symptoms.				

Table 2B Predicted Probabilities of Diabetes (DM) by Veteran Status (Prevalence¹ and Control²)				
	Veterans	Non-veterans	Difference	P-value
DM Prevalence¹				
N, total estimated subpop: 91,565,987				
crude #	n= 310	n= 1,246		
DM Prevalence (Age Standardized)	11.1%	10.7%	0.4%	0.629
DM Prevalence (Fully Adjusted)³	12.2%	11.1%	1.1%	0.136
DM Control²				
N, estimated total subpop: 11,879,495				
crude #	n= 178	n= 642		
DM Control (Age Adjusted)	57.7%	51.5%	6.2%	0.091
DM Control (Fully Adjusted)³	62.7%	56.5%	6.2%	0.142
Notes: ¹ Diabetes prevalence is defined as the number of individuals with diabetes. ² Diabetes control is defined as a hemoglobin A1c < 7.0 in individuals on diabetic medication. ³ Fully adjusted for all socioeconomic factors including: poverty level, health insurance status, access to health care, education, health condition, marital status and depressive symptoms.				

Table 3A. Predicted Probabilities of Hypertension (HTN) Prevalence¹ by Veteran status and Race and Ethnicity. Adjusted for Age, and Age and Socioeconomic Factors²				
	Veteran	Non-Veterans	Differences	p-value
HTN Prevalence¹ (Age Adjusted)				
N, total estimated subpop: 108,517,895				
crude #	n= 749	n=2,828	Differences⁴	p-value
Race/Ethnicity				
White, referent group	30.5%	28.9%	1.6%	0.313
Black	39.1%	39.9%	-0.8%	0.698
Differences³	8.6%	11.0%	n.a.	n.a.
p-value	0.002	<0.001		
Hispanic	27.9%	26.2%	1.7%	0.432
Differences³	-2.6%	-2.7%	n.a.	n.a.
p-value	0.698	0.002		
Other/Multiracial	28.7%	28.1%	0.6%	0.915
Differences³	-1.8%	-0.8%	n.a.	n.a.
p-value	0.709	0.701		
HTN Prevalence¹ (Fully Adjusted)²				
N, total estimated subpop: 90.039,101				
crude #	n= 749	n= 2,828	Differences⁴	p-value
Race/Ethnicity				
White, referent group	33.5%	30.9%	2.6%	0.164
Black	39.9%	41.2%	-1.3%	0.540
Differences³	6.4%	10.3%	n.a.	n.a.
p-value	0.025	<0.001		
Hispanic	28.4%	26.8%	1.6%	0.602
Differences³	-5.1%	-4.1%	n.a.	n.a.
p-value	0.074	0.016		
Other/Multiracial	30.8%	30.5%	0.3%	0.967
Differences³	-2.7%	-0.4%	n.a.	n.a.
p-value	0.693	0.876		
Notes: ¹ Hypertension prevalence is defined as the number of individuals with hypertension.				
² Socioeconomic factors include: poverty level, health insurance status, access to health care, education, health condition, marital status, depressive symptoms. ³ Reading down, the difference is between each racial/ethnicity group and Whites, the reference group for the racial/ethnicity categories. ⁴ Reading across, non-veterans are the reference group for veteran status; differences are within each racial category between Veterans and Non-Veterans.				

Table 3B Predicted Probabilities of Hypertension (HTN) Control¹ by Veteran Status and Race/Ethnicity. Adjusted for Age, and Age and Socioeconomic Factors²				
	Veteran	Non-Veterans	Differences	p-value
HTN Control¹ (Age Adjusted)				
N, total estimated subpop: 32,625,147				
crude#	n= 656	n= 2,353	Differences⁴	p-value
Race/Ethnicity				
White, referent group	89.0%	84.6%	0.044	0.083
Black	82.1%	77.1%	0.05	0.186
Differences³	-7.5%	7.5%	n.a	n.a.
p-value	0.057	0.005		
Hispanic	86.0%	82.5%	0.04	0.536
Differences³	-3.0%	-2.6%	n.a.	n.a.
p-value	0.600	0.322		
Other/Multiracial	86.0%	0.878	-0.018	0.835
Differences³	-3.0%	3.2%	n.a.	n.a.
p-value	0.709	0.368		
HTN Control¹ (Fully Adjusted)²				
N, total estimated subpop: 28,829,588				
crude#	n= 656	n= 2,353	Differences⁴	p-value
Race/Ethnicity				
White, referent group	87.7%	83.9%	0.038	0.188
Black	83.0%	80.8%	0.022	0.572
Differences³	-4.7%	-3.1%	n.a.	n.a.
p-value	0.188	0.286		
Hispanic	84.1%	85.6%	-0.015	0.828
Differences³	-3.6%	1.7%	n.a.	n.a.
p-value	0.561	0.544		
Other/Multiracial	90.7%	88.1%	0.026	0.735
Differences³	3.0%	4.2%	n.a.	n.a.
p-value	0.665	0.322		
Notes: ¹ Hypertension control is defined as a systolic blood pressure (BP) <140 and diastolic BP<90 in individuals on antihypertensive medication. ² Socioeconomic factors include: poverty level, health insurance status, access to health care, education, health condition marital status, depressive symptoms. ³ Reading down, the difference is between each racial/ethnicity group and Whites, the reference group for the racial/ethnicity categories. ⁴ Reading across, non-veterans are the reference group for veteran status; differences are within each racial category between Veterans and Non-Veterans.				

Table 3C Predicted Probabilities of Diabetes (DM) Prevalence¹ by Veteran Status and Race and Ethnicity. Adjusted for Age, and Age and Socioeconomic Factors²				
	Veteran	Non-Veterans	Differences	p-value
DM Prevalence¹ (Age Adjusted)				
N, total estimated subpop: 107,963,006				
crude#	n= 310	n= 1,246	Differences⁴	p-value
Race/Ethnicity				
White, referent group	10.0%	8.7%	1.3%	0.104
Black	15.1%	16.6%	-1.5%	0.351
Differences³ p-value	5.1% 0.001	7.9% <0.001	n.a.	n.a.
Hispanic	12.1%	15.2%	-3.1%	0.148
Differences³ p-value	2.1% 0.294	6.5% <0.001	n.a.	n.a.
Other/Multiracial	20.2%	13.8%	6.4%	0.267
Differences³ p-value	10.2% 0.070	5.1 % 0.002	n.a.	n.a.
DM Prevalence (Fully Adjusted)²				
N, total estimated subpop: 89,189,935				
crude#	n= 310	n= 1,246	Differences⁴	p-value
White, referent group				
White, referent group	11.6%	9.7%	1.9%	0.038
Black	14.2%	15.8%	-1.6%	0.394
Differences³ p-value	2.6% 0.073	6.1% <0.001	n.a.	n.a.
Hispanic	11.4%	13.1%	-1.7%	0.440
Differences³ p-value	0.2% 0.696	3.4% 0.006	n.a.	n.a.
Other/Multiracial	17.9%	13.6%	4.3%	0.492
Differences³ p-value	6.3% 0.309	3.9% 0.026	n.a.	n.a.
Notes: ¹ Diabetes prevalence is defined as the number of individuals with diabetes. ² Socioeconomic factors include: poverty level, health insurance status, access to health care, education, health condition, marital status, depressive symptoms. ³ Reading down, the difference is between each racial/ethnicity group and Whites, the reference group for the racial/ethnicity categories. ⁴ Reading across, non-veterans are the reference group for veteran status; differences are within each racial category between Veterans and Non-Veterans.				

Table 3D Predicted Probabilities of Diabetes (DM) Control¹ by Veteran Status and Race and Ethnicity. Adjusted for Age and Age Plus Socioeconomic Factors²				
	Veteran	Non-Veterans	Differences	p-value
DM Control¹ (Age Adjusted)				
N, total estimated subpop: 11,879,495				
crude#	n= 178	n= 642	Differences⁴	p-value
Race/Ethnicity				
White, referent group	62.2%	53.3%	8.9%	0.106
Black	57.5%	56.3%	1.2%	0.819
Differences³ p-value	-4.7% 0.433	-7.7% 0.549	3.0%	n.a.
Hispanic	47.4%	45.6%	1.8%	0.833
Differences³ p-value	-14.8% 0.076	-7.7% 0.112	-7.1%	n.a.
Other/Multiracial	20.7%	49.7%	-29.0%	0.026
Differences³ p-value	-41.5% <0.005	-3.6% 0.619	-37.9%	n.a.
DM Control (Fully Adjusted)²				
N, total estimated subpop: 10,290,501				
crude#	n= 178	n= 642	Differences⁴	p-value
White, referent group	66.7%	57.1%	0.096	0.100
Black	61.1%	61.3%	-0.002	0.959
Differences³ p-value	-5.6% 0.270	4.2% 0.371	-9.8%	n.a.
Hispanic	56.0%	52.1%	0.039	0.655
Differences³ p-value	-10.7% 0.156	-5.0% 0.344	-5.7%	n.a.
Other/Multiracial	22.9%	54.4%	0.315	0.038
Differences³ p-value	-43.8% 0.001	-2.3% 0.771	-41.5%	n.a.
Notes: ¹ Diabetes control is defined as a hemoglobin A1c < 7.0 in individuals on diabetic medication. ² Socioeconomic factors include: poverty level, health insurance status, access to health care, education, health condition, marital status, depressive symptoms. ³ Reading down, the difference is between each racial/ethnicity group and Whites, the reference group for the racial/ethnicity categories. ⁴ Reading across, non-veterans are the reference group for veteran status; differences are within each racial category between Veterans and Non-Veterans.				

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