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Prevalence and trends in psychotropic medication use among US male veterans, 1999–2010†

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Abstract

Purpose—Prior studies of psychotropic medication use among US veterans are limited in their ability to generalize estimates to the full veteran population and make comparisons with non-veterans. This study estimated the prevalence of psychotropic medication use and trends over time among male US veterans, compared their use of psychotropic medications with non-veteran males, and examined differences among veteran subpopulations.

Methods—The data for our analysis came from the National Health and Nutrition Examination Survey (1999–2010), a cross-sectional, nationally representative study of the civilian, non-institutionalized US population.

Results—The percentage of male veterans who used any psychotropic medication increased from 10.4% in 1999–2002 to 14.3% in 2003–2006, then remained stable in 2007–2010 (14.0%). During the same time period, the percentage of non-veteran males who used psychotropic medications remained relatively stable (7.0%, 8.3%, and 9.2%, respectively). Veterans were more likely to use psychotropic medication, specifically antidepressants, than non-veterans. The percentage of non-Hispanic white veterans and veterans aged 60 years and over who used psychotropic medications increased between 1999–2002 and 2003–2006, but the percentages remained stable between 2003–2006 and 2007–2010. In 2003–2006 and 2007–2010, a higher percentage of non-Hispanic white veterans used psychotropic medications than non-Hispanic black veterans.

Conclusions—This study found that the use of psychotropic medications and antidepressants was higher among male veterans than male non-veterans, and that prevalence of use increased between 1999–2002 and 2007–2010 for male veterans but remained relatively stable for non-veterans. There were significant variations in the use of psychotropic medications among veteran subpopulations.

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CONFLICT OF INTEREST

The authors have no personal, commercial, or academic conflict of interest to report and no financial relationships relevant to this article to disclose.

ETHICS STATEMENT

Study protocols were approved by NCHS's Ethics Review Board and informed consent was obtained from all participants.

Keywords

antidepressants; NHANES; psychotropic medication; veterans; pharmacoepidemiology; CDC

INTRODUCTION

Psychotropic medications are one of the most commonly prescribed drug classes in the US, and their rate of use has increased in recent decades.¹ Prior studies have established that their use varies by population subgroups (e.g., age and race).²

One population subgroup that has been understudied is military veterans.³ Military personnel can experience events and environments during service that could increase the likelihood they use psychotropic medications during their tour of duty and after being discharged.⁴ These experiences, coupled with veterans' access to the Veteran Affairs (VA) healthcare system, may cause veterans to have higher rates of psychotropic medication use than their civilian counterparts.⁵

Although prior research has examined psychotropic medication use among veterans, those studies often focus on a specific cohort of veterans (e.g., those deployed in Operation Iraqi Freedom and Operation Enduring Freedom).⁶ In addition, many studies use administrative data from the VA healthcare system, which contains only a subsample of veterans, because many veterans choose not to use the VA system.⁷ This makes it challenging to generalize these findings to all veterans and impossible to compare them with non-veterans.

The current study had four objectives. First, to estimate the percentage of male veterans who used psychotropic medications between 1999–2002 and 2007–2010; second, to compare those estimates with male non-veterans to determine whether veterans used psychotropic medications at a higher rate than their civilian counterparts; third, to examine changes in veterans' use of psychotropic medications over time and among population subgroups; and finally, to examine variations in the use of psychotropic medications among the subgroups within each time period.

METHODS

Data

The National Health and Nutrition Examination Survey (NHANES) is a continuous, cross-sectional survey conducted by the National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention. For each 2 year cycle, a complex, multistage probability sampling design is used to generate a representative sample of the civilian, non-institutionalized US population (active duty military personnel are excluded from the survey).⁸ Participants receive a detailed in-home interview followed by a physical examination at a mobile examination center. Study protocols were approved by NCHS's Ethics Review Board and informed consent was obtained from all participants. Data from six 2-year cycles were combined into three time periods: 1999–2002; 2003–2006; and 2007–2010. The interview response rate was 83%, 80%, and 78.9%, respectively.⁹ Because of the small number of female veterans, the analytic sample was limited to men aged 20 years and

older who completed the household interview and provided a valid response to a question asking about military service (n = 15,397).

Variables

During the household interview, respondents were asked: “Have you taken or used any medicines for which a doctor’s or dentist’s prescription is needed, in the past month?” Those who answered affirmatively were asked to give their prescription medication containers to the interviewer who then recorded the exact product name from the container’s label. If the container was unavailable, the participant verbally reported this information. From 1999–2002 to 2007–2010, over 80% of the medication data were recorded from the container. Collection methodology was similar for all NHANES cycles.¹⁰

A categorization scheme based on the American Hospital Formulary Service Pharmacologic Therapeutic Classification System,¹¹ and prior pharmacoepidemiological research¹² was used to put psychotropic drugs into the following categories: antidepressants; antipsychotics; anxiolytic, sedative and hypnotics (ASH); and antimanic agents.

Veteran status came from the response to the question, “Did you ever serve in the Armed Forces of the United States?” Demographic variables included respondents’ age (20–39 years; 40–59 years; 60+ years) and race/Hispanic origin (non-Hispanic white and non-Hispanic black).

Data analysis

Statistical analyses were conducted using the survey (SVY) commands in Stata 13.1 to adjust for differential probabilities of selection and the complex sampling design.¹³ Interview sample weights were used to obtain estimates representative of the civilian, non-institutionalized US population 20 years and older. Variance estimates were computed using the Taylor series linearization approximation method.

The analysis was divided into two parts. First, we generated estimates of psychotropic medication use among veterans (objective 1) and compared them with estimates from non-veterans (objective 2). We generated estimates for any psychotropic medication, any antidepressant medication, and any ASH agent in the past 30 days. Because of small sample sizes, antipsychotic and antimanic estimates were not reported individually but were retained in the measure of any psychotropic medication use. We also generated a population count of the number of male veterans in 2007–2010 who used any psychotropic medication.¹⁴ Because of significant age and race/Hispanic origin differences between veterans and non-veterans, we also generated weighted estimates that were adjusted to the age and race/Hispanic origin distribution of the 1999–2010 analytic sample using the direct standardization method.¹⁵ Second, we examined changes in veteran’s use of psychotropic medication between 1999–2002 and 2007–2010, for specific age-based and race-based population subgroups (objectives 3 and 4). For all tests, a significance level of 0.05 was utilized.

RESULTS

Veteran and non-veteran analysis, 1999–2010

Figure 1 presents the crude and adjusted prevalence of psychotropic medication use for male veterans and non-veterans. Among male veterans, use of any psychotropic medication increased from 10.4% (standard error [SE] = 0.94) in 1999–2002 to 14.3% (SE=1.11) in 2003–2006, then remained stable in 2007–2010 (14.0%, SE=0.92) [1a]. During 2007–2010, about 2.8 million (95% CI, 2.5–3.2 million) male veterans used psychotropic medications in the past 30 days. Veterans' use of antidepressants also increased from 1999–2002 to 2003–2006 (7.0% [SE = 0.70] to 11.0% [SE=1.03]) then remained stable between 2003–2006 and 2007–2010 (11.1% [SE = 0.81]). Veterans' use of ASH agents remained stable across the three time periods (3.9% [SE = 0.77]; 5.5% [SE = 0.79]; 5.3% [SE = 0.67], respectively). Male non-veterans' use of psychotropic medications, antidepressants, and ASH agents remained stable between 1999–2002 and 2007–2010 (any psychotropic: 7.0% [SE = 0.55], 8.3% [SE = 0.61], 9.2% [SE = 0.63], respectively; antidepressants: 4.6% [SE = 0.42], 5.6% [SE = 0.49], 5.9% [SE = 0.43], respectively; ASH: 3.0% [SE = 0.44], 3.4% [SE = 0.51], 4.8% [SE = 0.53], respectively).

In the crude analysis, veterans were significantly more likely to use psychotropic medications [1a] and antidepressants compared with non-veterans during all three time periods. After adjusting for age and race/Hispanic origin, veterans significantly differed from non-veterans in use of any psychotropic drug only during 2007–2010 (12.6% [SE = 1.01] vs. 9.9% [SE = 0.68], Figure 1b). There were significant differences in antidepressant use between veterans and nonveterans during 2003–2006 (9.5% [SE = 1.25] vs. 5.8% [SE = 0.49], respectively) and 2007–2010 (10.3% [SE = 1.31] vs. 6.4% [SE = 0.43], respectively). There were no significant differences in ASH use (crude or adjusted) between veterans and non-veterans during any time period.

Veteran subgroup analysis, 1999–2010

Table 1 presents the prevalence of psychotropic medication use among veterans by age-based and race-based population subgroups. Between 1999–2002 and 2003–2006, use of psychotropic medications increased among veterans aged 60 years and older (10.0% to 16.2%) and among non-Hispanic white veterans (10.5% to 14.6%), but then remained stable between 2003–2006 and 2007–2010. During 2003–2006 and 2007–2010, non-Hispanic white veterans were significantly more likely to use a psychotropic medication than non-Hispanic black veterans (14.6% vs. 7.7% and 14.7% vs. 10.2%, respectively).

DISCUSSION

From 1999–2002 to 2003–2006, male veterans' use of psychotropic medication increased while from 2003–2006 to 2007–2010, prevalence remained stable. In 2007–2010, almost one in seven male veterans used a psychotropic medication. In contrast, male non-veterans' use of any psychotropic medication remained relatively stable from 1999–2002 to 2007–2010. Even after adjusting for age and race/Hispanic origin, a higher percentage of male veterans used psychotropic medications and antidepressants during 2007–2010. These

findings provide evidence that, overall, the use of psychotropic medication was higher among male veterans compared with their civilian counterparts.

Trends and use of psychotropic medications varied among veteran subpopulations. Psychotropic medication use increased for veterans aged 60 years and older and non-Hispanic white veterans between 1999–2002 and 2003–2006. In 2003–2006 and 2007–2010, non-Hispanic white veterans were significantly more likely to use psychotropic medications than non-Hispanic black veterans. This disparity corresponds with prior research, in which African-American military personnel were less likely to use mental health services than white personnel.³ Additional research is needed to untangle the mechanisms behind this variation.

Limitations

Our measure of veteran status is based on a response to a single self-report question. NHANES does not collect additional information about respondents' military history (e.g., combat exposure). Also, because of the relatively small number of veterans in NHANES, some of the confidence intervals were wide and may have resulted in a lack of power to identify significant effects.

The strengths of this study are that it is based on a large, nationally representative sample of US adults including veterans who may not use the VA healthcare system, and medication data were collected and categorized with validated procedures used in prior pharmacoepidemiological studies.¹²

CONCLUSION

This study found a significant increase in use of psychotropic medications between 1999–2002 and 2007–2010 among male veterans, with most of the increase being caused by an increase in the use of antidepressants. During the same time period, the use of psychotropic medications among male non-veterans remained relatively stable. Use of psychotropic medications and antidepressants was higher among veterans than non-veterans. There was a variation in use of psychotropic medication among veteran subpopulations over time and within groups. Monitoring and understanding patterns of psychotropic medication use among veterans may improve service provision in both public and private healthcare systems.

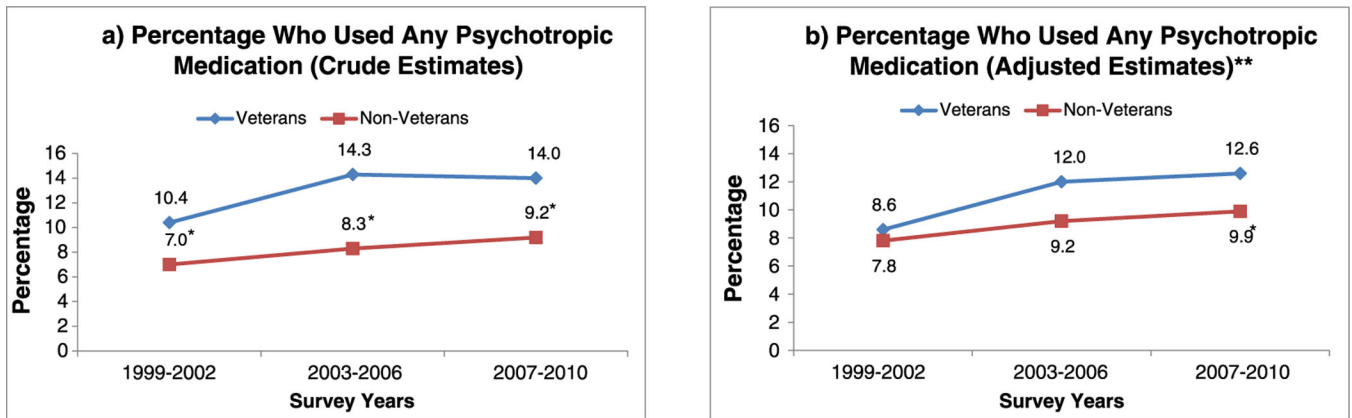
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KEY POINTS

- The percentage of male veterans who used at least one psychotropic medication (i.e., antidepressants, anxiolytic, sedative and hypnotic agents, antipsychotics, and antimanics) increased from 10.4% in 1999–2002 to 14.3% in 2003–2006 then remained stable in 2007–2010 (14.0%).
- During 2007–2010, an estimated 2.8 million male veterans used at least one psychotropic medication in the past 30 days.
- Male veterans were more likely to use at least one psychotropic medication compared with male non-veterans. They were also more likely to use an antidepressant than non-veterans.
- From 1999–2002 to 2003–2006, use of psychotropic medications increased among male veterans over the age of 60 years and non-Hispanic white veterans; from 2003–2006 to 2007–2010 the use of psychotropic medications remained stable for these groups.



* Statistically significant difference from veterans ($p < 0.05$)

** Adjusted for the age and race/Hispanic origin of the entire sample using the direct standardization method

Figure 1.

Estimates of psychotropic medication use in the past 30 days among men 20 years and older by veteran status, NHANES 1999–2002 to 2007–2010.

Table 1. Prevalence of prescription psychotropic medication use* in the past 30 days among male veterans by population subgroups, NHANES 1999–2002 to 2007–2010

	NHANES 1999–2002 (n = 1457)		NHANES 2003–2006 (n = 1364)		NHANES 2007–2010 (n = 1436)	
	Number of users	Percent (95% CI)	Number of users	Percent (95% CI)	Number of users	Percent (95% CI)
Age group years						
20–39	7	4.8 (1.1–8.6) [¶]	8	7.9 (2.9–12.9) [¶]	9	8.4 (1.7–15.1) [¶]
40–59	50	12.9 (9.3–16.5)	42	13.9 (9.9–18.0)	49	17.1 (12.3–22.0)
60+ [ref]	99	10.0 (7.6–12.5)	144	16.2 (13.7–18.7) [‡]	139	13.7 (11.0–16.4)
Race/Hispanic Origin [‡]						
Non-Hispanic white [ref]	114	10.5 (8.4–12.7)	152	14.6 (12.1–17.0) [‡]	142	14.7 (12.5–17.0)
Non-Hispanic black	26	10.9 (6.7–15.2)	21	7.7 (5.1–10.2) [§]	30	10.2 (7.2–13.2) [§]

NHANES, National Health and Nutrition Examination Survey.

Interview sample weights utilized to adjust for differential probabilities of selection and the complex sampling design.

* Includes antidepressants, anxiolytics/sedatives/hypnotics, antipsychotics, and antimanics.

[‡] Statistically significant increase between 2003–2006 and 2007–2010 (pairwise t-test; p < 0.05).

[¶] Estimates for persons from other race, Mexican American, and other Hispanic ethnicity groups are not provided separately, but members of these groups are included in total estimates.

[§] Statistically significant difference (p < 0.05) from reference group.

[¶] Estimate does not meet standard of statistical reliability and precision (relative standard error > 30% < = 40%).

[§] Estimate does not meet standard of statistical reliability and precision (relative standard error > 40% < = 50%).