Prevalence of Psychotropic Medication Use Among Dutch Military Personnel Between 2003 and 2012 and Its Comparison to the Dutch General Population

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ABSTRACT Background: The armed forces work under high pressure and in stressful environments and it is well known that being in the military is a risk factor for psychiatric problems. However, it remains unknown how prevalent psychotropic medication use is in military personnel. Objective: To assess prevalence of psychotropic medication use in Dutch military personnel and compare to the Dutch general population. Methods: Data were obtained from the military pharmacy. From 2003 to 2012, the year-prevalence of psychotropic medication use was calculated from the number of distributed psychotropic medications and the number of Dutch military personnel. For the year 2011, the year-prevalence of psychotropic medication use in the military was compared to that of the Dutch general population. Results: The year-prevalence of psychotropic medication use increased by 55%, from 1.64% in 2003 to 2.54% in 2012 in Dutch military personnel. An increase is seen in the number of users of psychotropic medication. Also the use of antidepressants and attention deficit hyperactivity disorder medication increased. Conclusion: Over the last decade, there has been a 1.5-fold increase in psychotropic medication dispensed to Dutch military personnel. However, Dutch military personnel were significantly less likely to use psychotropic medications compared to the Dutch general population.

INTRODUCTION

Military personnel consists of mostly young, physically healthy males, for which psychiatric health is of critical importance because of the potentially negative impact on functioning.[1–12] For this reason, recruits are tested physically, medically, and mentally before enrollment in the army in order to select a group of employees capable of dealing with exposure to traumatic and stressful events.[13] However, being in the military has been identified as a risk factor for psychiatric problems such as posttraumatic stress disorder, depression, generalized anxiety disorder, and panic disorder.[12] It is largely unknown whether an increased risk of psychiatric problems is also reflected in use of psychotropic medication in military personnel.

Use of psychotropic medication is an indication of diagnosed psychiatric problems. Furthermore, psychotropic medication use may influence military activities, because of their impact on performance of daily activities such as operating a motor vehicle.[14]

Over the last 20 years, psychotropic medication use has increased in the general population. This is the result of both increased acceptance of pharmacological treatment of psychiatric diseases as well as increased availability of psychotropic medications.[15–17] It is unknown whether the increase in psychotropic medication use in the general population is also seen in the military population.

The objective of this study was to assess the prevalence of dispensed prescriptions of psychotropic medication in Dutch military personnel in the years 2003 to 2012 and to compare the prevalence of psychotropic medication use in the military population to that in the Dutch general population.

MATERIALS AND METHODS

Study Population

All Dutch military personnel employed by the Netherlands Ministry of Defense in the years 2003 through 2012 were included in this study. The Netherlands Ministry of Defense employs 45,000 military personnel and is comprised of the Central Staff, the Royal Netherlands Army, the Royal Netherlands Air Force, the Royal Netherlands Navy, the Royal Netherlands Military Police, and supporting elements. Data on the number of military personnel at each time point were provided by the Human Resource Department of the Ministry of Defense. The Dutch general population was selected as the control group.

Data Collection

Dutch military personnel are treated within the military health care system paid for by mandatory health care insurance. Therefore, all medication is distributed within the military

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health care system. Psychotropic medication is distributed by the military pharmacy at the central military hospital in Utrecht. Drug-dispensing data were obtained from the pharmacy information system. Psychotropic medication use by the total number of Dutch military personnel was evaluated from 2003 to 2012. Information about dispensed medication included patient data (anonymous ID, gender, year of birth), drug dispensed, dispensing date, number of units dispensed, and prescribed daily dose.

Data on psychotropic medication prescriptions dispensed to the Dutch general population were collected from the open source database StatLine, the electronic database of Statistics Netherlands.[18] This database contains data on all medications prescribed by general practitioners and specialists and dispensed by pharmacists, general practitioners, and other outlets, as well as reimbursement under the health care insurance act.

Psychotropic medications were identified using the anatomical therapeutic chemical (ATC) classification system. Medications included anti-epileptics (N03), antipsychotics (N05A not N05AN), benzodiazepines (N05B or N05C not N05CH), antidepressants (N06A), ADHD medication (N06B), and lithium (N05AN).

Data Analysis

Individuals were considered to be using psychotropic medication if they were dispensed at least one prescription of psychotropic medication that year. The proportion of military personnel using one or more psychotropic medications in a year was calculated by dividing the number of users each year by the military population size of the corresponding year.

Dutch military personnel were then stratified by gender in 5-year age groups, which is the smallest interval for age groups in the StatLine open source databank. Use of psychotropic medication was assessed as year-prevalence per calendar year. The year-prevalence in military personnel, stratified for gender and 5-year age groups, was compared to the general population for 2011, which was the most recent data available in the open source database. Relative risks (RR) with 95% confidence interval were calculated comparing the military with the general population. Statistical significance was set at the $p < 0.05$ level.

RESULTS

The total number of Dutch military personnel varied from 46,382 (8.19% female) in 2003 to 44,094 (9.34% female) in 2012, with a maximum of 50,265 (8.75% female) in 2005. Almost two-thirds of the population was below 40 years of age. The population age distribution showed 2 peaks, 1 at the age of 21 and 1 at the age of 44, and above the age of 45 only, 1.5 to 2.0% of the population was female. This age distribution was consistent between the years 2003 and 2012 (data not shown).

The year-prevalence of psychotropic medication prescriptions dispensed increased by 55%, from 1.64 to 2.54%, in Dutch military personnel between the years 2003 and 2012 (Fig. 1). In addition, the number of personnel using more than one type of psychotropic medication increased by 110% (from 2.05 to 4.31%).

Specifically, there was a substantial increase in dispensed prescriptions of ADHD medication (0.4 per 1,000 persons in 2003 and 6.0 per 1,000 persons in 2012) and an increase in antidepressants (8.1 per 1,000 persons in 2003 and 12.9 per 1,000 persons in 2012) (Fig. 2). In contrast, psychotropic medication prescriptions dispensed of anti-epileptics (3.5–3.4 per 1,000 persons), antipsychotics (0.3–1.3 per 1,000 persons), benzodiazepines (6.5–6.7 per 1,000 persons), and lithium (0.2–0.4 per 1,000 persons) remained relatively stable between the years 2003 and 2012.

When the year-prevalence of men and women in 5-year age groups for 2011 was compared, Dutch military men were significantly less likely to have been dispensed prescriptions of ADHD medication (RR 0.23–0.73), antidepressants (RR 0.20–0.34), anti-epileptics (RR 0.20–0.34), antipsychotics (RR 0.01–0.11), and benzodiazepines (RR 0.15–0.22) than the male Dutch general population (Table I). Dutch military women were significantly ($p < 0.05$) less likely to have been dispensed prescriptions of antidepressants (RR 0.14–0.36),

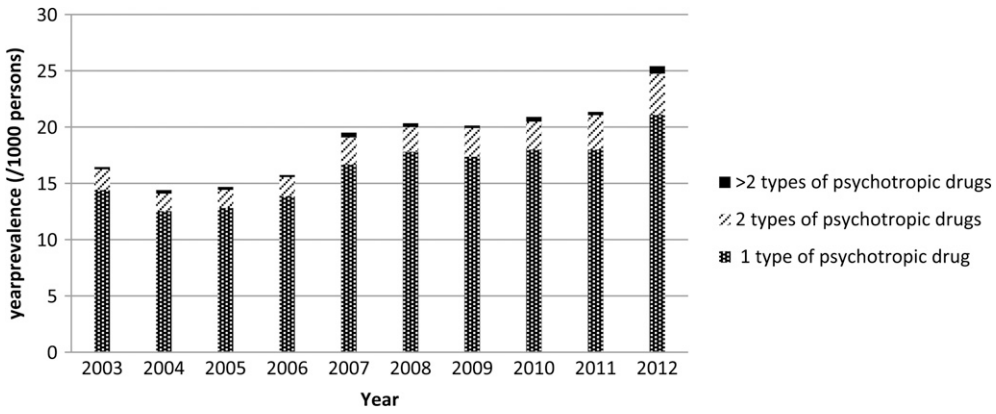

FIGURE 1. Year-prevalence of psychotropic medication in Dutch military personnel, number of users, between 2003 and 2012.

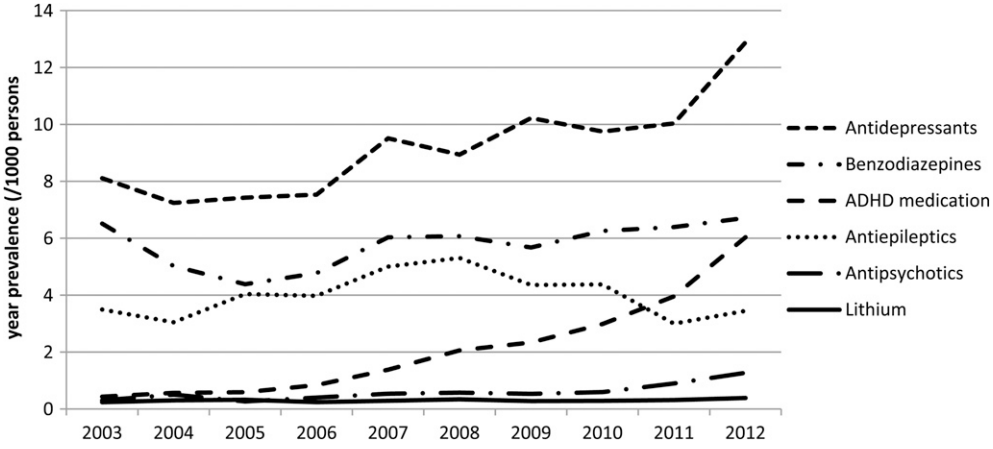

FIGURE 2. Year-prevalence of types of psychotropic medication between 2003 and 2012 in Dutch military personnel.

anti-epileptics (RR 0.12–0.56), and antipsychotics (RR 0.01–0.18) than the female Dutch general population. Women in the military and in the general population had similar rates of dispensed prescriptions of ADHD medication (RR 0.58–1.58) and benzodiazepines (RR 0.40–1.02). The number of female Dutch military personnel is relatively small and for some psychotropic medication groups no users were found in several 5-year age groups. Overall, Dutch military personnel had significantly less psychotropic medication dispensed compared to the Dutch general population.

DISCUSSION

This study revealed a 1.5-fold increase from 1.64 to 2.54% in the prevalence of psychotropic medication use in Dutch military personnel between 2003 and 2012. However, Dutch military personnel were significantly less likely (RR 0.01–0.25) to have been dispensed any psychotropic medication compared to the Dutch general population. Such results are important since use of psychotropic medication may adversely impact military personnel readiness for deployment, because of side effects of the medication and psychiatric conditions of military personnel.

The low prevalence of psychotropic medication use in Dutch military personnel use may be the result of the selection of personnel who are less likely to suffer from psychiatric problems. Although Forbes et al[19] found no difference in attitude toward mental illness between U.K. military personnel and the general population, the culture of the military may attract personnel with a negative attitude toward mental illness who are less likely to seek support for mental health issues.[10] Furthermore, it is possible that fewer psychiatric diagnoses are being made by military doctors or they may be less likely to prescribe psychotropic medications after diagnosis. Lastly, the Dutch Ministry of Defense implemented a preventive system for psychiatric problems related to deployment within the military organization, including a program for stress prevention during deployment, a social medical team that is available during deployment, and care after deployment including recuperation time and a 6-month follow-up.[20] Our results are in contrast with that of Sanyal et al, who found that 2.37% of the Canadian military personnel used antidepressants for major depressive episodes.[21] Their study population consisted of the 7.4% of the employees who reported a major depressive episode in the last 12 months, which might explain the higher number found.

The increased prevalence of psychotropic medication use in Dutch military personnel over time may be explained by the increase in psychotropic medication use seen in the general population,[15–17,22–25] an increase in the acceptance of pharmacological treatment of mental disorders, increased availability of psychotropic medications, or changes in the selection criteria of new military personnel. This study adds to the literature by assessing the prevalence of psychotropic medication use in military personnel over an entire decade and comparing the prevalence to the general population.

This study had several limitations. First, although all military personnel are obligated to collect their medication within the military health care system, it is possible to go to an outside pharmacy, which would lead to an underestimation of the total use of psychotropic medications. The proportion of health care use outside the military system is approximately 10% for the Dutch armed forces (data from the foundation of armed forces health care insurance, not publicly available). Reasons to go outside the military system include acute need for care (emergency room), care that cannot be provided inside the military system (no specialist), and long wait lists. We have no reason to suspect that the percentage of leakage outside the military health care system would be higher for Dutch military personnel with psychiatric problems then for those with other health care problems. Since we used year-prevalence, the influence of leakage outside the military system is most likely less than 10%. Second, the data utilized in this study include the number of psychotropic medications collected from the military pharmacy. It is unknown whether the patients who collected a medication actually took their medication. However, this limitation also applies to the

TABLE I. Comparison of Year-Prevalence Per 1,000 Persons of Psychotropic Medication Use Between Dutch Military Personnel and Dutch Population in 2011

Age	ADHD Medication (%)			Antidepressants (%)			Antiepileptics (%)			Antipsychotics (%)			Benzodiazepines (%)		
	Mil	Civ	RR (95% CI)	Mil	Civ	RR (95% CI)	Mil	Civ	RR (95% CI)	Mil	Civ	RR (95% CI)	Mil	Civ	RR (95% CI)
Male															
20–25 (N = 9,531)	4.1	15.5	0.26 (0.19–0.35)	3.4	15.6	0.21 (0.15–0.30)	1.2	5.8	0.20 (0.11–0.35)	0.8	10.4	0.08 (0.04–0.16)	1.8	8.5	0.21 (0.13–0.34)
25–30 (N = 8,552)	5.3	9.9	0.52 (0.39–0.69)	5.8	24.8	0.23 (0.17–0.30)	1.5	7.2	0.21 (0.12–0.36)	1.5	13.7	0.11 (0.06–0.19)	2.3	13.1	0.18 (0.12–0.28)
30–35 (N = 5,232)	6.7	8.9	0.73 (0.53–1.02)	9.7	36.0	0.26 (0.20–0.34)	2.7	8.6	0.30 (0.18–0.51)	1.7	18.0	0.09 (0.05–0.18)	4.2	18.6	0.22 (0.15–0.34)
35–40 (N = 3,733)	4.3	7.8	0.54 (0.33–0.88)	15.8	44.7	0.34 (0.26–0.44)	3.5	11.2	0.30 (0.18–0.53)	0.3	19.6	0.01 (0.00–0.09)	3.8	22.3	0.17 (0.10–0.28)
40–45 (N = 3,541)	2.3	6.8	0.33 (0.16–0.66)	11.0	52.2	0.20 (0.15–0.27)	3.7	13.1	0.27 (0.16–0.47)	0.8	20.1	0.04 (0.01–0.13)	4.2	26.3	0.16 (0.10–0.26)
45–50 (N = 5,001)	1.2	5.2	0.23 (0.10–0.51)	17.4	59.8	0.28 (0.22–0.34)	5.4	16.5	0.32 (0.22–0.47)	0.8	20.9	0.04 (0.01–0.10)	5.8	30.6	0.19 (0.13–0.27)
50–55 (N = 4,724)	1.3	4.0	0.32 (0.14–0.71)	17.1	64.9	0.20 (0.16–0.25)	6.8	19.9	0.34 (0.24–0.47)	2.5	20.2	0.12 (0.07–0.22)	7.0	33.6	0.20 (0.14–0.29)
55–60 (N = 1,104)	0.9	2.8	0.32 (0.05–2.30)	16.3	68.6	0.22 (0.14–0.36)	7.2	22.8	0.31 (0.16–0.62)	0.0	18.7	0.00 (-)	5.4	35.0	0.15 (0.07–0.34)
Female															
20–25 (N = 1,236)	5.7	9.4	0.58 (0.28–1.23)	12.9	33.9	0.36 (0.22–0.59)	1.6	7.7	0.20 (0.05–0.81)	0.8	8.4	0.09 (0.01–0.66)	6.5	13.9	0.46 (0.23–0.93)
25–30 (N = 1,203)	10.8	6.8	1.55 (0.90–2.67)	12.5	51.1	0.23 (0.14–0.38)	0.0	9.6	0.00 (-)	1.7	11.6	0.14 (0.03–0.55)	12.5	20.7	0.60 (0.36–0.99)
30–35 (N = 763)	6.6	5.9	1.09 (0.45–2.62)	19.7	67.2	0.27 (0.16–0.46)	1.3	11.0	0.12 (0.02–0.83)	2.6	14.3	0.18 (0.04–0.71)	11.8	26.6	0.44 (0.23–0.84)
35–40 (N = 477)	6.3	6.1	1.02 (0.32–3.17)	18.9	81.3	0.21 (0.11–0.42)	8.4	14.7	0.56 (0.21–1.50)	2.1	16.3	0.01 (0.00–0.09)	21.0	31.1	0.67 (0.36–1.25)
40–45 (N = 275)	7.3	5.6	1.29 (0.32–5.19)	14.5	94.6	0.14 (0.05–0.38)	7.3	18.4	0.39 (0.04–1.56)	0.0	18.4	0.00 (-)	25.5	36.6	0.69 (0.32–1.46)
45–50 (N = 144)	6.9	4.4	1.58 (0.22–11.3)	27.8	109.1	0.23 (0.09–0.63)	6.9	22.7	0.30 (0.04–2.14)	0.0	20.8	0.00 (-)	20.8	44.8	0.45 (0.14–1.42)
50–55 (N = 77)	0.0	2.9	0.00 (-)	26.0	116.3	0.20 (0.05–0.82)	13.0	26.4	0.48 (0.07–3.46)	0.0	22.1	0.00 (-)	51.9	51.1	1.02 (0.37–2.78)
55–60 (N = 8)	0.0	2.0	0.00 (-)	0.0	115.3	0.00 (-)	0.0	28.1	0.00 (-)	0.0	21.1	0.00 (-)	0.0	52.3	0.00 (-)

Mil = Dutch military personnel; Civ = Dutch population; 95% CI = 95% confidence interval; N = number of Dutch military personnel.

control group. Finally, the indications for which any of the psychotropic medications were prescribed are unknown. Psychotropic medications can be used to treat various indications that are not always psychiatric. However, it is unlikely that the military population uses psychotropic medications for other indications at a different rate than the general population.

This study also has several strengths, the most important of which was the comparison of psychotropic medication use in the entire Dutch military population to the entire Dutch general population. Also, to the best of our knowledge, this is the first study to show psychotropic medication use in general military personnel. Finally, this study revealed psychotropic medication use in large military population with access to routine clinical care over 10 years.

In conclusion, Dutch military personnel had significantly less psychotropic medication prescriptions dispensed compared to the Dutch general population. An increase in antidepressant and ADHD medication prescriptions dispensed has previously been noted in the general population and also occurs in military personnel. The increase in psychotropic medication use is extremely relevant when considering readiness for deployment. In addition, further research is needed to determine the relationship between deployment and subsequent psychotropic medication use. The impact of underlying mental health problems and side effects of psychotropic medication use in this highly selective population are also unknown. Finally, comparing the prevalence of psychotropic medication use in the Dutch military population to that in military populations from other countries is an important step in addressing this concerning trend.

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