RESEARCH BRIEF

2018 Health Related Behaviors Survey

Physical Health and Functional Limitations Among the Reserve Component

The Health Related Behaviors Survey (HRBS) is the U.S. Department of Defense's (DoD's) flagship survey for understanding the health, health-related behaviors, and well-being of service members. Fielded periodically for more than 30 years, the HRBS includes content areas that might affect military readiness or the ability to meet the demands of military life. The Defense Health Agency asked the RAND Corporation to revise and field the 2018 HRBS among members of both the active component and the reserve component. This brief discusses findings for the reserve component.

This brief reviews results for physical health and functional limitations. Some of the results are also compared with Healthy People 2020 (HP2020) objectives established by the U.S. Department of Health and Human Services for the general U.S. population. Because the military differs notably from the general population (for example, service members are more likely to be young and male than is the general population), these comparisons are offered only as a benchmark of interest.

Chronic Conditions

The burden of chronic disease in the United States is substantial. Chronic diseases are the leading cause of death in the United States and account for most U.S. health care costs. The presence of chronic conditions is associated with functional, physical, social, and cognitive limitations and reduced quality of life.

The HRBS asked whether respondents had been told by a physician or other health professional during the past 12 months that they have high blood pressure; high blood sugar or diabetes; high cholesterol; asthma; angina or coronary heart disease; heart attack (also called myocardial infarction); back pain; or a bone, joint, or muscle injury or condition. Overall, 36.6 percent (confidence interval [CI]: 35.5–37.7) reported being told that they had at least one of these eight chronic conditions (Figure 1).

The most commonly reported physician-diagnosed chronic condition was bone, joint, or muscle injury or condition, with 21.9 percent (CI: 21.0–22.8) reporting this. Back pain was the second most commonly reported condition, reported by 21.6 percent (CI: 20.7–22.5). High blood pressure was the third most commonly reported condition, reported by 9.3 percent (CI: 8.7–9.9). HP2020 goals seek to reduce the proportion of U.S. adults with high blood pressure to 26.9 percent. High cholesterol was the fourth most common condition, reported by 6.8 percent (CI: 6.3–7.2). HP2020 goals seek to reduce the proportion of U.S. adults with high cholesterol to 13.5 percent. Each of the other chronic conditions covered by the HRBS was reported by 2 percent or less of respondents.

Physical Symptoms

An estimated 34 percent of individuals in the general population report at least one frequent physical symptom, and one-third of physical symptoms are medically unexplained.[1] The presence of multiple physical symptoms is associated with greater rates of depression, anxiety, substance use disorders, and medical service use.

HRBS respondents completed a symptom checklist with eight common physical symptoms: stomach or bowel problems; back pain; pain in the arms, legs, or joints; headaches; chest pain or shortness of breath; dizziness; feeling tired or having low energy; and trouble sleeping. Respondents were asked how much they were bothered by each of these symptoms in the past 30 days.

Overall, 21.1 percent (CI: 20.2–22.0) reported that they were "bothered a lot" by one or more bodily pain symptoms, including headache. The most commonly reported individual symptom was trouble sleeping, with 13.7 percent (CI: 12.9–14.5) reporting that they were "bothered a lot" by this (Figure 2).

A high physical symptom severity score was calculated, with each symptom for each respondent as 0 (not bothered at all), 1 (bothered a little bit), or 2 (bothered a lot). Scores ranged from 0 to 16, and scores of 8 or

[1] J. I. Escobar, B. Cook, C. N. Chen, M. A. Gara, M. Alegria, A. Interian, and E. Diaz, "Whether Medically Unexplained or Not, Three or More Concurrent Somatic Symptoms Predict Psychopathology and Service Use in Community Populations," *Journal of Psychosomatic Research*, Vol. 69, No. 1, July 2010, pp. 1–8; K. Kroenke, "Patients Presenting with Somatic Complaints: Epidemiology, Psychiatric Comorbidity and Management," *International Journal of Methods in Psychiatric Research*, Vol. 12, No. 1, February 2003, pp. 34–43.

Methods

RAND fielded the 2018 HRBS among active component and reserve component U.S. military service members between October 2018 and March 2019. The survey of the reserve component included five reserve branches—Air Force, Army, Marine Corps, Navy, and Coast Guard—and two National Guard branches—Air National Guard and Army National Guard. The 2018 HRBS was a web-based confidential survey, which allowed researchers to target reminders to nonresponders and to reduce survey burden by linking responses to administrative data.

The sampling frame used a random sampling strategy stratified by service branch, pay grade, and gender. The overall weighted response rate for the survey was 9.4 percent, yielding a final analytic sample for the reserve component of 16,475 responses. To address missing data, RAND researchers used imputation, a statistical procedure that uses available data to predict missing values. To represent the reserve component population, they weighted responses to account for the oversampling of service members in certain strata. This research brief reports point estimates and 95-percent CIs.*

RAND researchers tested differences in each outcome across levels of key factors or by subgroups—service branch, pay grade, gender, race/ethnicity, and age group—using a two-stage procedure based on a Rao-Scott chi-square test for overall differences across levels within a single factor and, if the overall test was statistically significant, two-sample *t*-tests that explored all possible pairwise comparisons between levels of the factors (for example, men versus women). Readers interested in these differences should consult the full 2018 HRBS reserve component final report at www.rand.org/t/rr4228.

This brief is one of eight on the reserve component; this brief and six of the other seven each correspond to a different chapter in the full report, with the eighth presenting an overview of all findings and policy implications. A similar series of eight briefs discusses findings for the active component.

* CIs provide a range in which the true population value is expected to fall. They account for sampling variability when calculating point estimates but do not account for problems with question wording, response bias, or other methodological issues that, if present in the HRBS, might bias point estimates.

FIGURE 1

Physician-Diagnosed Chronic Conditions in Past 12 Months, by Service Branch

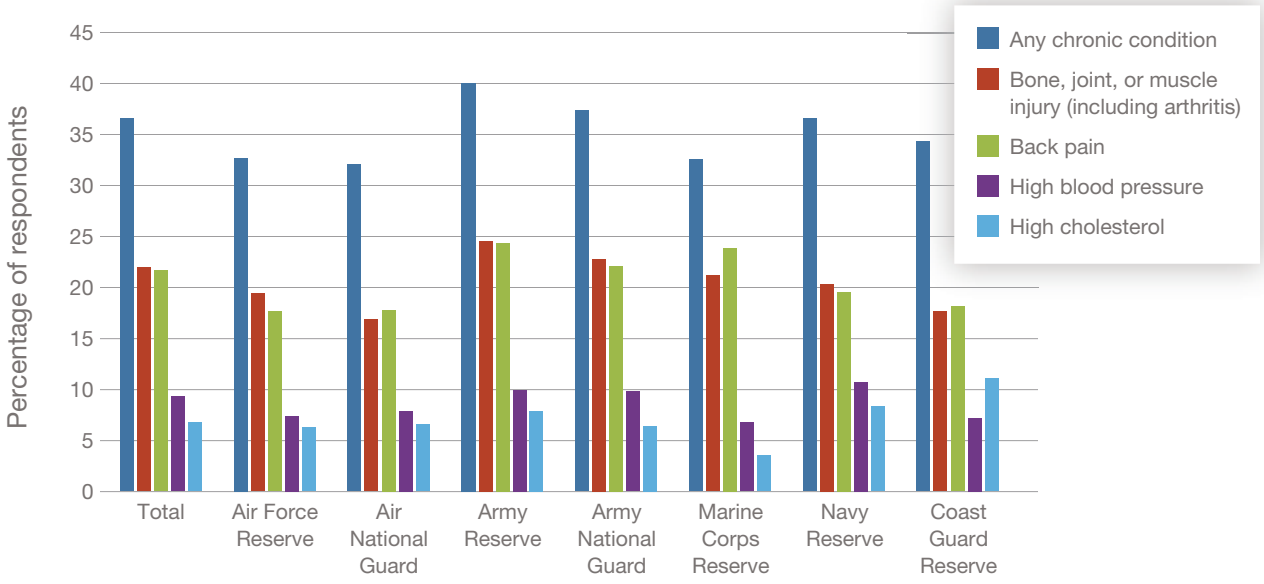
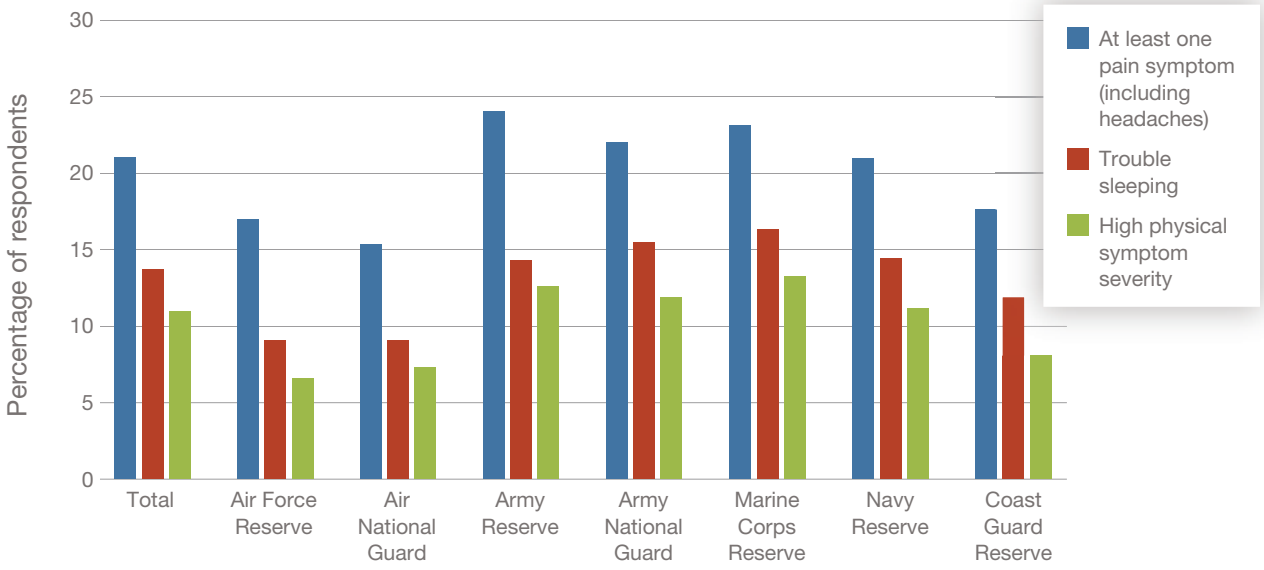


FIGURE 2

Pain Symptoms and Symptom Severity in Past 30 Days, by Service Branch



higher indicated high physical symptom severity.[2] Overall, 11.0 percent (CI: 10.3–11.7) of respondents had high physical symptom severity.

Traumatic Brain Injury and Postconcussive Symptoms

Military service members are at risk for experiencing a range of physical injuries. Some factors potentially related to injury, such as physical training, are common in the military. Other potential contributors include vehicle crashes and sports injuries. Deployment also increases the risks of certain types of injury. These and other factors can place service members at increased risk for a traumatic brain injury (TBI).

The HRBS assessed TBI using three sets of items based on the Brief Traumatic Brain Injury Screen. It classified respondents as having mild traumatic brain injury (mTBI) if respondents reported one or more injuries in the past 12 months and recalled having lost consciousness for up to 20 minutes; feeling dazed, confused, or "seeing stars"; experiencing postconcussive symptoms; or lack of memory of the event. It classified respondents as having moderate to severe TBI if they reported loss of consciousness for more than 20 minutes. The HRBS classified respondents as having postconcussive symptoms if they screened positive for TBI and endorsed at least four postconcussive symptoms in the past 30 days.

Overall, 21.2 percent (CI: 20.2–22.1) of HRBS respondents reported an injury in the past year. Across all services, 4.3 percent (CI: 3.8–4.8) of reservists screened positive for mTBI, 0.2 percent (CI: 0.1–0.3) screened positive for moderate to severe TBI, and 2.7 percent (CI: 2.3–3.1) reported postconcussive symptoms.

[2] Note, however, that there is no existing literature that validates this scoring against the probability of a clinical diagnosis; "high" in this sense reflects that the scoring pattern is relatively infrequent in the population.

Self-Rated Health

In addition to reporting on physical symptoms, service members were asked to self-report their overall physical health. Such measures have been shown to be valid measures of physical and emotional health and to predict all-cause mortality. Service members were asked to classify their health as excellent, very good, good, fair, or poor. Altogether, 57.3 percent (CI: 56.2–58.5) classified their health as excellent or very good.

Health-Related Functional Limitations

Chronic conditions and physical limitations can affect individuals' use of health care, quality of life, and ability to carry out normal daily responsibilities. This can result in reduced productivity and missed days of school or work.

The HRBS assessed absenteeism—that is, lost work or school days because of health symptoms—and presenteeism—that is, days present at work or school but with performance compromised because of health symptoms. Respondents were asked how many days in the past 30 their mental or physical symptoms caused them to miss school or work or to feel so impaired that, even though they went to school or work, their performance was compromised.

On average, service members reported 0.53 days (CI: 0.47–0.59) of absence from duty in the past 30 days (Figure 3). They also reported 1.50 presentee days (CI: 1.39–1.61) in the past 30 days.

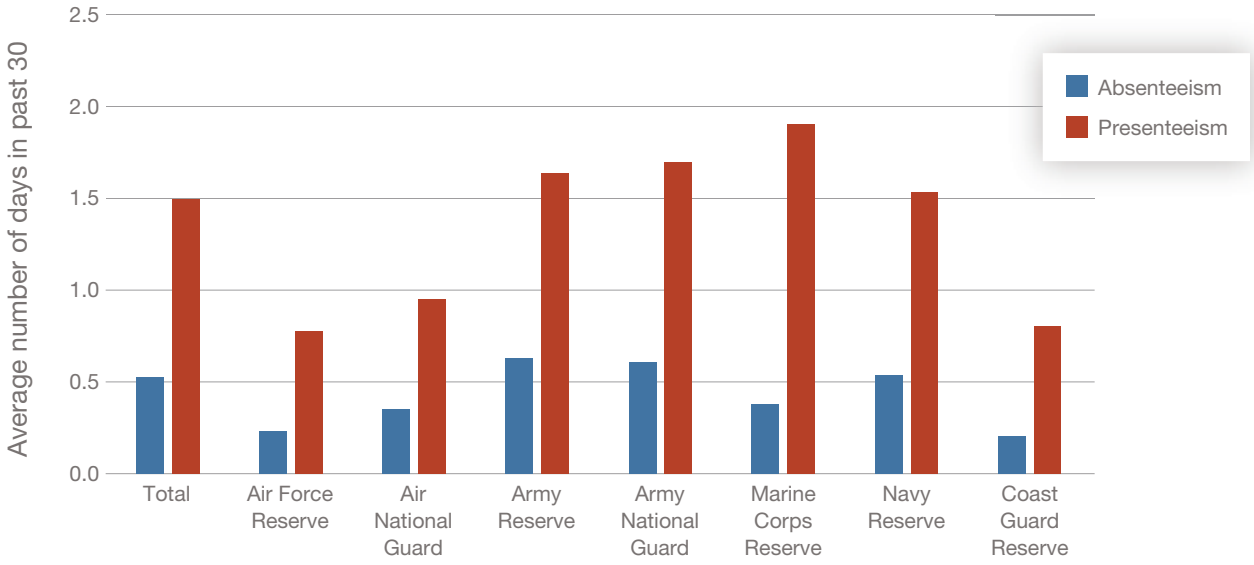
Comparisons with the Active Component

To compare HRBS results for the active and reserve components, RAND researchers constructed regression models that control for demographic characteristics of the respondents. Significant differences identified for reservists relative to active component members included

- lower likelihood of several physician-diagnosed chronic conditions: high blood pressure; back

FIGURE 3

Absenteeism and Presenteeism, by Service Branch



pain; and bone, joint, and muscle injury (including arthritis)
- lower likelihood of having any physician-diagnosed chronic condition in the past year
- lower likelihood of bodily pain and of high physical symptom severity
- lower likelihood of traumatic brain injury and postconcussive symptoms
- higher likelihood of reporting "excellent" or "very good" health
- fewer days of missed work (absenteeism) and fewer days of reduced productivity (presenteeism) because of health symptoms.

Conclusions and Policy Implications

Pain was a commonly reported health condition by reservists. High levels of pain might be unsurprising given the physical demands associated with military service. Nevertheless, the potential for pain to reduce physical functioning or lead to health risks associated with prescription analgesic use, including opioids, makes this a potential area of military readiness concern. DoD, the services, and the Coast Guard should continue to place policy and program attention on both preventing injury and pain and emphasizing a variety of nonpharmacologic pain management approaches.

Limitations

The response rate is considered low for survey research. Although low response rates do not automatically mean that survey data are biased, they do increase the possibility of bias. As with any self-report survey, social desirability bias is a possibility, especially for sensitive questions and topics. For some groups that make up a small percentage of the overall DoD population, survey estimates might be imprecise and should be interpreted with caution.

This brief describes research conducted in the Forces and Resources Policy Center of the RAND National Defense Research Institute and documented in *2018 Department of Defense Health Related Behaviors Survey (HRBS): Results for the Reserve Component*, by Sarah O. Meadows, Charles C. Engel, Rebecca L. Collins, Robin L. Beckman, Joshua Breslau, Erika Litvin Bloom, Michael Stephen Dunbar, Mary Lou Gilbert, David Grant, Jennifer Hawes-Dawson, Stephanie Brooks Holliday, Sarah MacCarthy, Eric R. Pedersen, Michael W. Robbins, Adam J. Rose, Jamie Ryan, Terry L. Schell, and Molly M. Simmons, RR-4228-OSD, 2021 (available at www.rand.org/t/RR4228). To view this brief online, visit www.rand.org/t/RB10117z5. The RAND Corporation is a research organization that develops solutions to public policy challenges to help make communities throughout the world safer and more secure, healthier and more prosperous. RAND is nonprofit, nonpartisan, and committed to the public interest. RAND's publications do not necessarily reflect the opinions of its research clients and sponsors.

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