

2018 Health Related Behaviors Survey

Physical Health and Functional Limitations Among the Active 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 active component.

In this brief, results for physical health and functional limitations are reviewed. Some 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

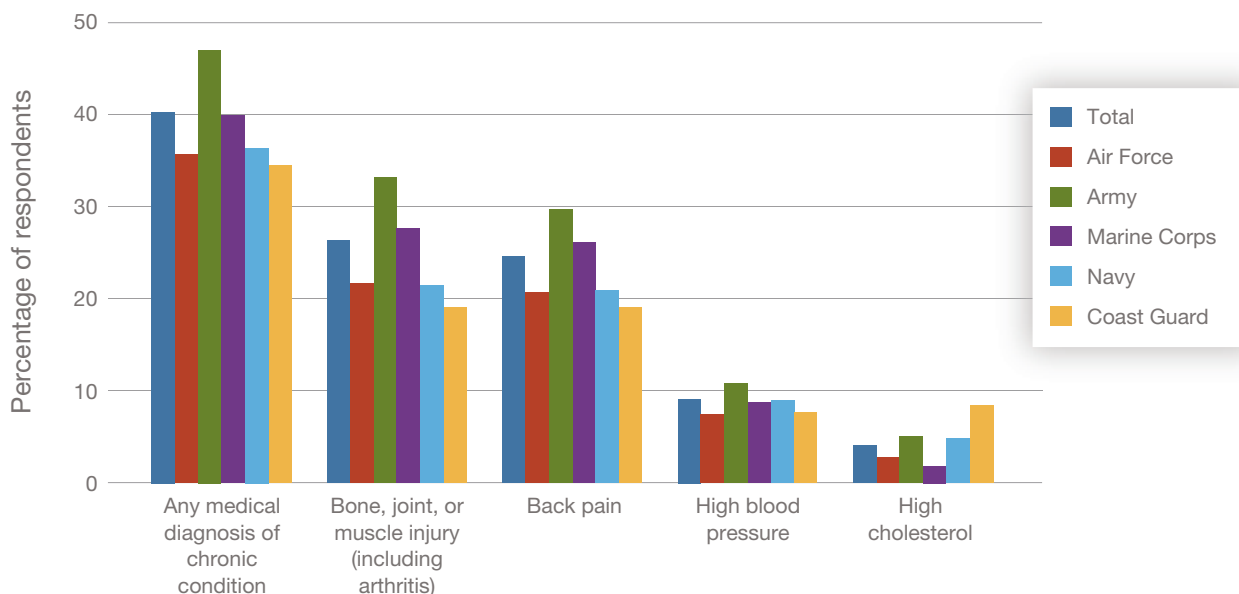
The burden of chronic disease in the United States is substantial. Chronic diseases are the leading cause of death in the United States and account for most U.S.

health care costs. The presence of chronic conditions is associated with functional, physical, social, and cognitive limitations, as well as 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 had 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, 40.3 percent (confidence interval [CI]: 39.1–41.5) reported being told that they had at least one of these eight chronic conditions, with those in the Army the most likely to report such a diagnosis (Figure 1).

The most commonly reported physician-diagnosed chronic condition was bone, joint, or muscle injury or condition, with 26.4 percent (CI: 25.3–27.4) reporting this. Army respondents were more likely to report this condition than members of any other service. Back pain was the second most commonly reported condition, reported by 24.6 percent (CI: 23.6–25.6). High blood pressure was the third most commonly reported condition, reported by 9.1 percent (CI: 8.4–9.8). 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 commonly reported condition, reported by 4.2 percent (CI: 3.8–4.5).

FIGURE 1
Physician-Diagnosed Chronic Conditions in Past 12 Months, by Service Branch



Methods

RAND fielded the 2018 HRBS among active component and reserve component U.S. military service members in the Air Force, Army, Marine Corps, Navy, and Coast Guard between October 2018 and March 2019. 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 9.6 percent, yielding a final analytic sample of 17,166 responses. Imputation was used to address missing data, a statistical procedure that uses the available data to predict missing values. To represent the active component population, RAND researchers weighted responses to account for the oversampling of service members in certain strata. In this research brief, point estimates and 95-percent CIs are reported.*

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 active component final report at www.rand.org/t/rr4222.

This brief is one of eight on the active 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 reserve 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.

Coast Guard respondents were more likely to report high cholesterol than members of any other service, though the prevalence of high cholesterol for each service was below the HP2020 goal of 13.5 percent. Each of the other chronic conditions covered by the HRBS was reported by less than 5 percent of respondents.

Physical Symptoms

An estimated 34 percent of individuals in the general population reported at least one frequent physical symptom, and one-third of physical symptoms were 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 comprising 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, 29.4 percent (CI: 28.3–30.5) 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 20.2 percent (CI: 19.2–21.3) reporting that they were bothered a lot by this. Army, Marine Corps, and Navy respondents were more likely to report they were bothered a lot by trouble sleeping than were those in the Air Force and Coast Guard (Figure 2).

¹ J. Il 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, 2003, pp. 34–43.

A high physical symptom severity score was calculated, coding each symptom for each respondent as 0 (not bothered at all), 1 (bothered a little bit), and 2 (bothered a lot). Scores ranged from 0 to 16, and scores of 8 or higher indicated high physical symptom severity.² Overall, 16.7 percent (CI: 15.8–17.6) of respondents had high physical symptom severity. Respondents in the Army, Marine Corps, and Navy were more likely to have high physical symptom severity than were those in the Air Force or Coast Guard.

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 may 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 TBI (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.

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 that the scoring pattern is relatively infrequent in the population.

Overall, 26.9 percent (CI: 25.8–28.0) of HRBS respondents reported an injury in the past year. Injury rates were higher in the Army and Marine Corps than they were in the Air Force, Navy, and Coast Guard. Across all services, 6.1 percent of service members (CI: 5.4–6.7) screened positive for mTBI, 0.2 percent (CI: 0.1–0.4) screened positive for moderate to severe TBI, and 4.2 percent (CI: 3.6–4.7) reported postconcussive symptoms. Respondents in the Army, Marine Corps, and Navy were more likely to report mTBI or postconcussive symptoms than were those in the Air Force or Coast Guard.

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, 52.3 percent (CI: 51.1–53.6) 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 (lost work or school days because of health symptoms) and presenteeism (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 0.62 days (CI: 0.54–0.70) of absence from duty in the past 30 days, and 2.19 presentee days (CI: 2.03–2.35). Presenteeism was higher in the Army, Marine Corps, and Navy than it was in the Air Force and Coast Guard (Figure 3).

Conclusions and Policy Implications³

While most HRBS respondents reported excellent or very good health, the HRBS suggests that a substantial proportion of the active component has one or more physical vulnerabilities. Two in five reported at least one chronic condition, particularly trouble sleeping; bone, joint, or muscle injury; and back pain. High levels of pain may 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 use of opioids, makes this a potential area of military readiness concern. DoD 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.

On average, absenteeism appears to be fairly low, but presenteeism averages more than two days per month. Having reduced productivity across multiple days might have more of a negative impact on readiness than one missed day that allows for fuller recovery. DoD and the Coast Guard should address the underlying mental and physical health causes of absenteeism and presenteeism, including ways to reduce associated lost productivity.

³ Additional implications and recommendations can be found in the full report at www.rand.org/t/RR4222.

FIGURE 2

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

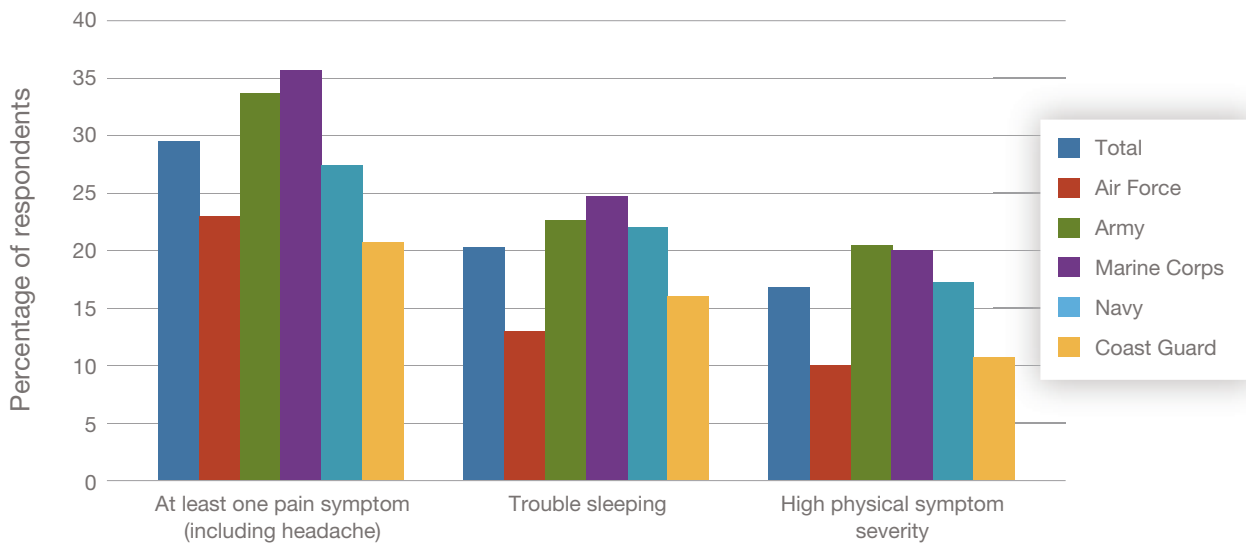
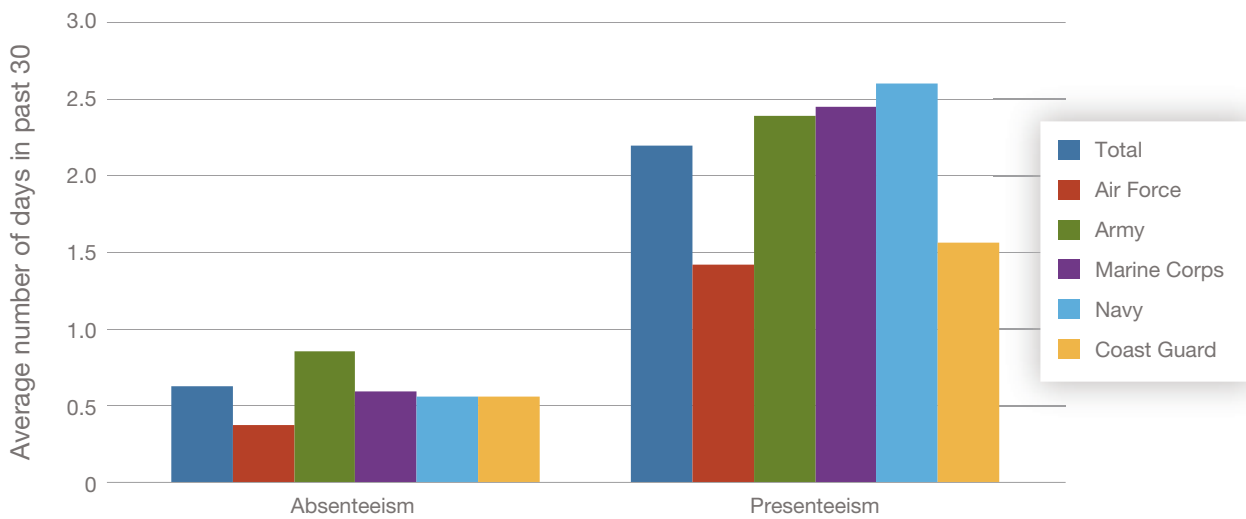


FIGURE 3

Absenteeism and Presenteeism, by Service Branch



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 Active 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-4222-OSD, 2021 (available at www.rand.org/t/RR4222). To view this brief online, visit www.rand.org/t/RB10116z5. 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. **RAND**[®] is a registered trademark.

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