

2015 Health Related Behaviors Survey

Summary Findings and Policy Implications

The Health Related Behaviors Survey (HRBS) is the U.S. Department of Defense (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—such as substance use, mental and physical health, sexual behavior, and postdeployment problems—that may affect force readiness or the ability to meet the demands of military life. The Defense Health Agency asked the RAND Corporation to revise and field the 2015 HRBS.

In this brief, we present high-level summary results for broad topics of the HRBS, as well as policy implications of key findings. Where available, we report comparable findings from prior HRBSs and estimates of the U.S. general population to assist with interpretation; in particular, we report progress toward Healthy People 2020 (HP2020) objectives established by the U.S. Department of Health and Human Services. Because the military differs notably from the general population (e.g., service members are more likely to be young and male than the general population is), comparisons to the general population are offered only as a benchmark of interest. We also suggest improvements that the Defense Health Agency may wish to consider for future iterations of the HRBS.

Summary HRBS Findings

The 2015 HRBS examined health-related behaviors in several areas, including health promotion and disease prevention; substance use; mental and emotional health; physical health and functional limitations; sexual behavior and health; sexual orientation, transgender identity, and health; and deployment experiences and health. Next, we review key findings in each of these areas.

Health Promotion and Disease Prevention

We examined physical activity, weight status, routine medical care, complementary and alternative medicine use, sleep

Methods

RAND fielded the 2015 HRBS among active-duty U.S. military service members in the Air Force, Army, Marine Corps, Navy, and Coast Guard between November 2015 and April 2016. The survey used a random sampling strategy, stratified by service branch, pay grade, and gender (as obtained from Defense Manpower Data Center records). Respondents completed the anonymous survey online, with a response rate of 8.6 percent. This resulted in 16,699 usable surveys (of 201,990 invited to participate).¹ For some analyses, the number of usable surveys may differ because of differences in nonresponse for individual items. To represent the active-duty population, we weighted responses to account for the oversampling of service members in certain strata. In this research brief, we report point estimates and 95-percent confidence intervals (CIs).²

We tested differences in each outcome across levels of key factors or by subgroups—service branch, pay grade, gender, age group, race/ethnicity, and education level—using a two-stage procedure based on (1) a Rao-Scott chi-square test for overall differences across levels within a single factor and, if the overall test was statistically significant, (2) two-sample *t*-tests that explore all possible pairwise comparisons between levels of the factors (e.g., junior officers compared with noncommissioned senior officers). Readers interested in these differences should consult the full 2015 HRBS final report at www.rand.org/t/RR1695.

This brief is one of eight; each of the other seven corresponds to a different chapter in the full report.

¹ When calculating response rates, we excluded service members whom we were unable to contact because of incorrect email or mailing addresses. The number we were unable to contact was 6,770, or 3.4 percent of the sample.

² CIs provide a range in which we expect the true population value 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.

health, supplement and energy drink use, and texting while driving. Key findings include the following:

- Based on 2015 survey estimates, active-duty service members met or exceeded HP2020 targets for physical activity.
- About one-third (32.5 percent; CI: 31.0–34.0) of active-duty service members aged 20 or older were a normal weight, which is slightly below the HP2020 target of 33.9 percent. A majority of service members were classified as overweight (51.0 percent; CI: 49.4–52.6) or obese (14.7 percent; CI: 13.5–15.8); however, because body mass index is an indirect measure of body fat, muscular service members may have been misclassified into the overweight and obese categories.
- Among active-duty service members, 93.2 percent (CI: 92.4–94.1) reported having a routine checkup with a doctor in the past two years.
- Nearly half (47.6 percent; CI: 46.0–49.2) of service members reported using complementary and alternative medicine, such as massage therapy, relaxation techniques, exercise or movement therapy, or creative outlets.
- More than half (56.3 percent; CI: 54.5–58.0) of active-duty service members reported getting less sleep than they need, and 29.9 percent (CI: 28.2–31.5) reported being moderately or severely bothered by lack of energy due to poor sleep.
- Overall, 32.0 percent (CI: 30.6–33.5) of all service members reported using at least one supplement daily. Supplements used daily included protein powder (16.9 percent; CI: 15.7–18.1), fish oil (15.6 percent; CI: 14.5–16.7), body-building supplements (11.8 percent; CI: 10.7–12.9), and supplements for joint health (10.9 percent; CI: 9.9–11.9).
- More than half (51.0 percent) of service members reported using caffeine-containing energy drinks in the past month, and 7.2 percent (CI: 6.3–8.0) used them daily.

Substance Use

We examined use of alcohol; tobacco; illicit drugs; and prescription drugs, including use as prescribed, misuse (i.e., using a drug without a valid prescription), and overuse (i.e., using more of a drug than prescribed). Key findings include the following:

- Nearly one in three service members (30.0 percent; CI: 28.4–31.5) were current binge drinkers. We defined *binge drinking* as five or more drinks for men or four or more for women in one sitting at least once in the past month.
- One in 12 service members (8.2 percent; CI: 7.2–9.1) experienced one or more serious consequences (e.g., “I hit my spouse/significant other after having too much to drink”) from drinking in the past year.

- Among active-duty service members, 68.2 percent (CI: 66.8–69.7) perceived military culture as supportive of drinking, and 42.4 percent (CI: 40.9–44.0) indicated that their supervisor does not discourage alcohol use. These perceptions were more common among younger and junior enlisted personnel, who are the most likely to binge drink.
- According to the HRBS, 13.9 percent (CI: 12.7–15.2) of service members currently smoked cigarettes, and 12.7 percent (CI: 11.5–14.0) used smokeless tobacco.
- Among service members, 12.4 percent (CI: 11.2–13.7) used e-cigarettes in the past month, and 11.1 percent (CI: 9.0–13.2) used them daily. These are large increases over percentages in the 2011 HRBS, when 4.6 percent (CI: 4.2–5.0) of service members had used e-cigarettes in the past year.
- Of nonsmoking service members, 16.9 percent (CI: 15.5–18.3) reported past-week exposure to secondhand smoke at work, which is comparable to the percentage of civilians with an indoor nonsmoking workplace policy who reported such exposure.
- Among service members, 0.7 percent (CI: 0.4–1.1) reported use of any illicit drug, including marijuana or synthetic cannabis, in the past year.
- Reported use of prescription opioid pain relievers (6.2 percent; CI: 5.4–7.0) and sedatives (4.4 percent; CI: 3.8–5.0) among service members have both decreased by about half since 2011, although both remain the most likely to be misused among the prescription drugs studied.

Mental and Emotional Health

We examined mental health indicators (for probable depression, generalized anxiety disorder [GAD], and posttraumatic stress disorder [PTSD]), social and emotional factors associated with mental health, history of sexual assault and physical abuse, self-harm, use of mental health services, and stigma. Key findings include the following:

- About one in ten (9.4 percent; CI: 8.4–10.5) active-duty service members met survey criteria for probable depression, 14.2 percent (CI: 13.0–15.5) for probable GAD, and 8.5 percent (CI: 7.4–9.5) for probable PTSD. Altogether, 17.9 percent (CI: 16.5–19.2) of service members met survey criteria for at least one of these disorders.
- Nearly half (47.0 percent; CI: 45.3–48.6) of service members reported aggressive behavior in the past month, and 12.7 percent (CI: 11.4–14.0) met the criteria for high impulsivity. In addition, 8.4 percent (CI: 7.4–9.4) reported aggressive behavior five or more times in the past month.

- Lifetime physical abuse was reported by 13.0 percent (CI: 11.8–14.1) of service members, and most of these incidents reportedly occurred off duty.
- Lifetime non-suicidal self-injury was reported by 11.3 percent (CI: 10.2–12.4) of service members, and 5.1 percent (CI: 4.3–5.9) reported that this behavior occurred since joining the military.
- Almost one-fifth (18.1 percent; CI: 16.7–19.4) of service members reported thinking about trying to kill themselves at some point in their lives, and 12.3 percent (CI: 11.2–13.5) reported thinking about doing so since joining the military; 5.1 percent (CI: 4.3–5.9) reported at least one suicide attempt in their lifetime.
- One in three (29.7 percent; CI: 28.1–31.3) service members reported a self-perceived need for mental health services in the past year, and 17.4 percent (CI: 16.1–18.7) reported that others had told them they should seek treatment.
- One in four (26.2 percent; CI: 24.7–27.7) service members reported using mental health services in the past year, with 18.8 percent (CI: 17.5–20.2) receiving services from a specialist (e.g., psychiatrist, psychologist, or social worker), 9.9 percent (CI: 8.9–10.9) from a general medical doctor, and 8.0 percent (CI: 7.0–8.9) from a civilian clergyman or military chaplain (respondents could report receiving mental health services from more than one type of provider).
- Among service members who said they needed mental health care in the past year but did not receive it, the most commonly reported reasons for not receiving treatment were a desire to handle the problem on their own, belief that treatment would harm their career, and belief that treatment would not help.
- Altogether, 35.0 percent (CI: 33.3–36.7) of active-duty service members said they believed that seeking mental health treatment is damaging to one's military career, which is down from 44.1 percent in 2005 (but essentially stalled since 2008).
- Since 2005, self-reported need for treatment has increased from 17.8 percent to 29.7 percent, and reported receipt of services has increased from 14.6 percent to 26.2 percent. Survey question changes may contribute to some, but not all, of this change.

Physical Health and Functional Limitations

We examined chronic conditions, physical symptoms, and health-related functional limitations. Key findings include the following:

- About two in five (38.6 percent; CI: 37.1–40.0) service members reported at least one of nine diagnosed chronic physical health conditions in their lifetime; the most

common conditions were high blood pressure, high cholesterol, and arthritis.

- The percentage of service members taking related medication for their condition ranged from 3.9 percent (CI: 0.8–7.0) among those with skin cancer to 38.5 percent (CI: 30.1–46.9) among those with physician-diagnosed ulcers.
- Among service members, 35.7 percent (CI: 34.2–37.3) reported being bothered a lot by at least one physical symptom (including headaches) in the past 30 days. The most-common somatic symptoms reported were trouble sleeping; feeling tired or having low energy; back pain; and pain in the arms, legs, or joints.
- Approximately one-third of service members reported a functional impairment at work or school, in their social life, or in their family life or home responsibilities.

Sexual Behavior and Health

We examined sexual behavior that poses a risk to health, including sex with more than one partner, sex with a new partner without using a condom, experience of a sexually transmitted infection, inconsistent use of birth control during most-recent vaginal sex, and unintended pregnancy. Key findings include the following:

- Among active-duty service members, 19.4 percent (CI: 18.0–20.8) reported more than one sex partner in the past year.
- More than one-third (36.7 percent; CI: 35.0–38.3) of service members reported sex with a new partner in the past year without using a condom.
- A sexually transmitted infection in the past year was reported by 1.7 percent (CI: 1.2–2.2) of service members.
- The 2015 HRBS defines *high risk for human immunodeficiency virus (HIV) infection* as having sex with more than one partner in the past year, having a past-year sexually transmitted infection other than HIV, or being a man who had sex with one or more men in the past year. Among service members, 20.9 percent (CI: 19.5–22.4) were at high risk for HIV infection.
- More than one in five (22.2 percent; CI: 20.7–23.7) service members used a condom when they last had vaginal sex in the past year; among unmarried and non-cohabiting service members, 34.8 percent (CI: 31.9–37.7) reported doing so.
- Among service members not already expecting a child or trying to conceive, 19.4 percent (CI: 18.1–20.7) did not use birth control the most-recent time they had vaginal sex in the past year. The percentage was 24.0 percent (CI: 22.3–25.7) among married or cohabiting service members, which is about twice the percentage among

those who were unmarried or noncohabiting (12.2 percent; CI: 10.2–14.1).

- Across all services, 2.4 percent (CI: 1.9–2.9) of service members reported experiencing or causing an unintended pregnancy in the past year.

Sexual Orientation, Transgender Identity, and Health

The 2015 HRBS provides the first direct estimate of the percentage of service personnel who identify as lesbian, gay, bisexual, or transgender (LGBT). It also provides the first examination of the health behavior and health status of LGBT service members. Key findings include the following:

- LGBT personnel constituted 6.1 percent (CI: 5.3–6.9) of all service members. The Navy had the highest overall percentage of LGBT personnel and of gay or bisexual men serving, and the Marine Corps had the highest percentage of lesbian or bisexual women serving.
- LGBT personnel reported routine medical care in percentages equivalent to non-LGBT personnel, with 81.7 percent (CI: 76.4–87.0) reporting a routine checkup in the past year.
- LGBT personnel were less likely to be overweight than non-LGBT personnel but were more likely to report smoking, binge drinking, and risky sexual behavior.
- LGBT personnel were also more likely than non-LGBT personnel to report depression, non-suicidal self-injury, suicide ideation or attempts, unwanted sexual contact, and physical abuse.

Deployment Experiences and Health

We examined deployment frequency and duration, combat exposure, deployment-related injuries or traumatic brain injuries (TBIs), deployment-related substance use, and deployment-related mental and physical health. Key findings include the following:

- Among active-duty service members, 61.3 percent (CI: 59.8–62.8) reported at least one deployment since joining the military. Among those previously deployed, most reported one or more combat deployments (80.9 percent), as well as spending more than 12 months deployed in their military career (60.1 percent).
- Among service members reporting at least one previous deployment, 64.9 percent (CI: 63.2–66.9) reported exposure to at least one combat-related traumatic event, and 45.8 percent (CI: 44.1–47.5) had *high combat exposure* (that is, reported at least five such exposures).
- Among previously deployed personnel, 27.7 percent (CI: 26.0–29.4) reported a combat injury, 11.9 percent (CI: 10.6–13.1) screened positive for deployment-related mild TBI, and 8.6 percent (CI: 7.5–9.7) experienced

postconcussive symptoms that could be related to a deployment-related injury, a concussion, or a head injury.

- Two-thirds (67.6 percent; CI: 65.8–69.5) of service members who had ever deployed reported some substance use during their most-recent deployment; the substances used most typically were alcohol and cigarettes, and very few reported using marijuana or opiates during deployment.
- One in ten (10.4 percent; CI: 8.5–12.2) service members who deployed in the past three years met the criteria for probable depression, 15.0 percent (CI: 12.9–17.0) met the criteria for probable GAD, and 9.9 percent (CI: 8.2–11.6) met the criteria for probable PTSD. Those with high combat exposure were more likely than those without to meet the criteria for probable GAD and probable PTSD.
- Among service members deployed in the past three years, 11.7 percent (CI: 9.9–13.6) reported lifetime non-suicidal self-injury, 17.7 percent (CI: 15.7–19.7) reported lifetime suicide ideation, and 12.2 percent (CI: 10.5–14.0) reported suicide ideation since joining the military; suicide ideation since joining the military was higher among those with high combat exposure.
- More than one-third (37.8 percent; CI: 35.3–40.3) of those who deployed in the past three years reported chronic physical symptoms. Among those who had recently deployed and had high exposure to combat, 46.5 percent (CI: 42.6–50.4) reported chronic symptoms, and among those who recently deployed and screened positive for mild TBI, 62.2 percent (CI: 55.3–69.1) reported chronic symptoms.

Policy Implications

We offer two sets of policy implications. The first addresses ways in which DoD and the U.S. Coast Guard may improve the readiness, health, and well-being of the force. The second offers suggestions for future iterations of the HRBS.

Force Readiness, Health, and Well-Being

The HRBS can help strategically maximize force health and identify the greatest health risks to military readiness. In this section, we indicate particular health topics and demographic groups for potential interventions (e.g., health messaging, targeted programs).

Health Topics and Demographic Groups

Although DoD and the Coast Guard are doing well in many areas, there are a few health outcomes and behaviors that warrant more-urgent attention.

Substance use. Among active-duty service members, 30 percent reported binge drinking, and a roughly equal number met survey criteria indicating hazardous drinking

and possible alcohol use disorder. Problematic drinking may be addressed by shifting the culture and climate surrounding alcohol use. This might include focusing attention on leader-based efforts to discourage problem drinking, communicating risks associated with alcohol misuse, and changing on-base alcohol prices and sales policies. In addition, although the military has made progress with declining rates of cigarette smoking, use of other forms of nicotine, especially smokeless tobacco and e-cigarettes, has grown in recent years.

Sleep. More than half of service members report getting less sleep than needed, and one-third are bothered by lack of energy due to poor sleep. Insufficient sleep is associated with adverse health outcomes and poorer work functioning, which can impair readiness. The services may also wish to monitor use of caffeine-containing energy drinks, given their association with adverse health outcomes.

Overweight or obesity. DoD is already aware of high percentages of overweight and obesity among service members and has policies in place to address this issue. Opportunities for more-systematic tracking that account for muscle mass (e.g., during routine physical examinations or physical fitness testing) would provide more-precise estimates of overweight and obesity among active-duty service members. If the large percentage of service members categorized as overweight or obese is a result of higher body mass index among those with more muscle mass, then this issue may be of less concern.

Sexual behavior and health. Inconsistent use of contraception increases the risk for unintended pregnancy and presents a possible threat to readiness. The services may wish to consider mandating more-frequent HIV testing for those at high risk for HIV infection (nearly half of unmarried and noncohabiting service members fall in this group), as well as implementing interventions to increase use of condoms with new partners and monitoring high-risk behaviors.

Mental health needs. The percentage of service members reporting mental health needs and seeking mental health services continues to increase, but many also report needing but not receiving such services. In response, DoD should characterize and maximize the population reach of existing mental health services. DoD should also develop, test, and implement consistent, military-relevant surveillance indexes of mental health stigma. These efforts could help determine why stigma remains a barrier to care for many service members, despite ongoing efforts to mitigate it. Finally, while the military has devoted significant funding and effort toward understanding and addressing suicide, more information is needed on its early precursors and how different strategies may be needed for different populations, depending on their level of risk.

LGBT health. LGBT service members reported higher rates of mental health problems and more frequently have a history of sexual assault and physical abuse. They also reported higher rates of smoking, binge drinking, and sexual risk behaviors. Addressing and monitoring this population may be especially important in the Navy, which had the highest percentage of gay or bisexual men and LGBT service members overall, and in the Marine Corps, which had the highest percentage of lesbian or bisexual women serving.

Establishing DoD Benchmarks

DoD and the services should establish appropriate population benchmarks of health and health-related behaviors for the military and set incremental goals for improvement where appropriate. Some goals and benchmarks already exist, but, in some cases, no clearly defined military indicators or objectives are available. General population indicators or objectives (e.g., HP2020) are usually problematic for the military because of the major differences in the distribution of important demographic variables, such as age, gender, and employment status. In addition, although the ultimate goal for many health-related behaviors may be zero incidence of them, such a goal may not be realistic, especially in the short term. Instead, setting smaller, achievable, short-term goals for military populations could lead to sustained improvements.

Future Iterations of the HRBS

In the course of fielding this survey, we encountered several issues that led us to the suggestions outlined here. Some of these stem from the short time between the 2014 and 2015 versions of the HRBS, as well as difficulties in reaching respondents and generating responses.

First, *the survey should be dramatically shortened*, with more-focused emphasis. Although originally designed to assess substance use, the HRBS has expanded well beyond that and now duplicates some data collected elsewhere. By focusing content on what cannot be collected elsewhere, the survey could be shortened and allow flexibility to address areas of emerging concern.

Second, DoD should *consider sending survey invitations from a military email account*. We believe this could reduce issues that we had with blocked emails and blocked content within emails. We recognize, however, that this could cause respondents to view the security of their personal data differently. Both the costs and benefits of using a .mil email address for survey invitations should be considered and, if possible, assessed empirically.

Third, the services should *explore options to contact non-responders*, particularly by switching from an anonymous to a confidential survey. Using a confidential survey would make it possible for the survey contractor, but not the services,

to know who has and has not completed the survey, which allows the contractor to follow up specifically with those who have not. Such targeted follow-up with personalized reminders would be more effective than blanket follow-ups sent to all potential respondents.

Fourth, DoD may wish to *consider offering incentives for survey participation*. Incentives help increase response rates for all survey modes. Those completing the survey might also be entered for a lottery, although lottery incentives are generally not as effective as direct financial incentives.

Fifth, DoD may wish to *investigate the feasibility of a member panel*. Survey response rates for both civilian and military samples are decreasing over time, suggesting that alternative means of collecting information from individuals should be explored. One option is a panel, where individuals agree to remain available for interview for a period of time. Panel surveys allow for real-time data collection, and surveys

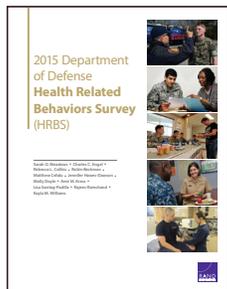
for the panel need not be limited to health and health behaviors. A panel design also alleviates response burden. However, panel surveys have their own sampling design and composition issues that may limit their usefulness. For low-base-rate behaviors (such as illicit substance use), a panel may not be the best option. Thus, a service member panel may be appropriate for some, but not all, of the topics in the HRBS.

Conclusion

The 2015 HRBS was designed to help the services evaluate the current health and well-being of the force and address possible threats to readiness. Going forward, the survey may be used to supplement data already collected by the services to track key trends in health outcomes and health-related behaviors, as well as to inform policy initiatives and make programmatic decisions aimed at helping the force meet its mission today and into the future.

Limitations

HRBS response rates were lower in 2015 than in prior iterations of the survey. Low response rates do not automatically mean that the results are biased, but they do increase the likelihood that service members who responded differ qualitatively from those who did not. Those differences, then, could bias our estimates of health and health-related behavior; however, it is impossible to know whether the potential bias would result in better or worse outcomes than those observed in the data. Thus, the results of this survey should be interpreted cautiously and in conjunction with other existing data. In addition, comparing the HRBS with other civilian populations (e.g., all U.S. adults) may be difficult to interpret because of both observed (e.g., demographic) and unobserved differences between the two populations. Finally, because we altered the wording of some questions in the 2015 HRBS, the results presented in this brief may not always be comparable to prior versions of the HRBS.



This brief describes research done in the Forces and Resources Policy Center of the RAND National Defense Research Institute and documented in *2015 Department of Defense Health Related Behaviors Survey (HRBS) of Active-Duty Service Members: Final Report*, by Sarah O. Meadows, Charles C. Engel, Rebecca L. Collins, Robin Beckman, Matthew Cefalu, Jennifer Hawes-Dawson, Molly Doyle, Amii M. Kress, Lisa Sontag-Padilla, Rajeev Ramchand, and Kayla M. Williams, RR-1695-OSD (available at www.rand.org/t/RR1695), 2018. To view this brief online, visit www.rand.org/t/RB9955. 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. © RAND 2018

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