

Adherence to National Diet and Physical Activity Objectives among Active Duty Military Personnel: What Are the Implications?

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THE FEDERAL GOVERNMENT ISSUES EVIDENCE-BASED nutrition and physical activity guidance, such as the Dietary Guidelines for Americans (DGA) and Physical Activity Guidelines for Americans, to promote health, reduce the risk of chronic diseases, and reduce the prevalence of overweight and obesity through improved nutrition and physical activity.^{1,2} These guidelines and the associated implementation and communication strategies that are developed for health professionals, program and policy groups, and the public aim to promote the consumption of nutrient-dense foods and beverages and regular physical activity to achieve reduction of chronic disease risk and foster health promotion and disease prevention. The guidelines also provide the foundation for Healthy People national health promotion and disease prevention objectives related to nutrition and physical activity and measurable targets to be achieved over a decade.³ In this issue of the *Journal of the Academy of Nutrition and Dietetics*, Smith and colleagues⁴ compare the diet and leisure-time physical activity behaviors of active duty military personnel based on the 2005 Department of Defense (DoD) Health Related Behaviors Survey (HRBS)⁵ to Healthy People 2010 objectives⁶ and 2005 DGA recommendations.⁷

The HRBS is a unique survey that targets the active duty military population, a group with demographic and lifestyle characteristics that differ from those of the civilian US population. Although active duty military personnel are sampled in the National Health Interview Survey and the Behavioral Risk Factor Surveillance System, this population subgroup is excluded from other surveys, including the National Health and Nutrition Examination Survey.⁸⁻¹⁰ In addition, although the National Health Interview Survey and Behavioral Risk Factor Surveillance System include active duty personnel in their

samples, separate health estimates are not reported for active duty personnel. Thus, the cross-sectional HRBS data are an important component of the DoD's ongoing efforts to assess, monitor, and improve the well-being of US active duty military personnel.¹¹

The foundation of the Healthy People 2010 initiative is "healthy people in healthy communities" in recognition of the fact that preventable conditions such as obesity and many chronic diseases have far-reaching economic and strategic consequences for the entire US population.⁶ The Healthy People 2010 framework includes specific objectives in 28 focus areas. Smith and colleagues⁴ focused on area 19, "Nutrition and Overweight," the overarching goal of which is to promote health and reduce chronic disease associated with diet and weight, and area 22, "Physical Activity and Fitness" that targets improved health, fitness, and quality of life through daily physical activity. The DGA provide the foundation for the Healthy People nutrition objectives, including specific evidence-based recommendations to help Americans choose a nutritious diet, maintain a healthy weight, and achieve adequate physical activity.⁶ The DoD made the assessment of progress toward achieving Healthy People 2010 health promotion objectives an integral component of the 2005 HRBS.¹¹

During recent decades, all sectors of US society have been affected by rising obesity and chronic disease health trends, including the US military, for which filling the ranks with healthy, fit young adults is vital to national security. The effect of the nation's obesity epidemic on military readiness, recruitment, and retention was brought to light in a recent report commissioned by Mission: Readiness, an organization composed of retired senior military leaders.¹² The coalition reported that 27% of Americans aged 17 to 24 years—the prime age group for military recruitment—do not meet weight-for-height standards. Further, the report recommended that the military continue efforts to promote healthy diet and physical activity lifestyles within its ranks to ensure that those who are recruited are retained, remain healthy, and are able to perform their duties to support national security. The article by Smith and colleagues⁴ is thus especially informative with respect to providing insight into the myriad factors that are associated with diet, leisure-time physical activity, and weight status of active duty military personnel. The study results attest to the challenges that the active duty military population faces with respect to achieving and maintaining weight status and healthy lifestyle behaviors. We take this opportunity to highlight the study results and to offer our perspective on new approaches to strengthen the scientific

evidence base on the health behaviors of active duty military personnel from our vantage point as federal staff associated with Healthy People and as retired service members.

Our first comment pertains to weight status and the problem of achieving and maintaining healthy weight throughout adulthood. We acknowledge that the US armed forces have experienced serious problems with respect to readiness and force retention related to overweight and obesity. We caution however that the estimates presented by Smith and colleagues⁴ are based solely on body mass index (BMI) results. The sensitivity and specificity of BMI have been shown to be poor. BMI does not take age, sex, bone structure, fat distribution, or fat mass into account.¹³ The relationship between BMI and percentage of body fat is not linear and differs for men and women.¹³ Thus, lean, muscled individuals, man or woman, with a BMI in the overweight range (ie, 25.0 to 29.9) may be classified as overweight even though their percentage body fat is in a healthy range. BMI is only one measure of body composition used by the military and it may not be the best measure given the limitations noted. Most of the military services use BMI as a screening measure. An active duty service member whose BMI value exceeds the standards for his or her branch of service receives additional assessments to calculate percentage of body fat.^{11,14} Another intriguing question related to BMI status that was not explored by Smith and colleagues⁴ has to do with the reasons active duty personnel cited for weight change during the past year. Of potential relevance to the topic of weight gain are the health, personal, and service-related factors that influence the weight status of active duty personnel. Self-reported information was collected during the 2005 HRBS on the reasons for recent weight gain.¹¹ This information could inform efforts to develop tailored health programs for active duty personnel, particularly those older than age 30 years, as a means of preventing inappropriate weight gain during adulthood.

With respect to achieving and maintaining healthy weight status, diet and physical activity are two important components of ongoing public health efforts to achieve and maintain healthy weight status. The study results showed that adherence to diet and physical activity recommendations was lower among adults older than age 30 years compared with younger service members. One possibility is that younger service members, especially those aged 17 to 20 years, have more structured meal and physical activity routines than service members aged 21 to 30 years, 31 to 39 years, or ≥ 40 years. As such, younger service members may dine in mess halls and dining facilities that typically offer a varied selection of foods, including fruits, vegetables, and whole grains. In addition, basal energy requirements are higher among younger service members. Their higher metabolic energy requirements coupled with increased total energy expenditure related to duty-related and leisure-time physical activity may make it easier for younger service members to achieve energy balance. The study results showed that skipping breakfast and higher frequencies of away-from-home dining were associated with higher rates of weight gain during the past year and lower rates of meeting the Healthy People dietary intake targets. Additional research is needed to identify the factors that contribute to age-related changes in physical activity, food choices, and meal patterns of active duty service members.

Several new lines of research could explore the reasons why, for example, older service members are less likely to engage in leisure-time physical activity or prepare meals at home. As is true with the civilian US population, the decision-making processes are likely influenced by personal, family, worksite, and, in this case, service duty factors. With respect to physical activity behavior, the focus in this study was on leisure-time activity defined, but not explicitly stated in the question as, "exercise, sports, and physically active hobbies performed during one's leisure time (ie, not work or duty-related in this case). One could postulate that in this population, individuals who engage in physically strenuous service-related activities may not engage in leisure-time activity because they have already exerted themselves during their tour or work shift. In addition, the concept of vigorous and moderate intensity leisure-time physical activity may have a different meaning in this population compared with the civilian population. In any case, an element of subjectivity remains in the self-appraisals of activity intensity. The physical activities in which active duty service personnel engage may differ from those of the civilian population, too. Service duty activities such as walking/marching, swimming, climbing, and running would likely be categorized as leisure-time physical activity by civilians. Qualitative research with this population would be informative to understand how the standardized physical activity questionnaire instruments that are used in many health surveys are interpreted by active duty military personnel. Finally, with respect to older active duty personnel, the observed declines in leisure-time physical activity may reflect time and logistical constraints related to one's family, career, and duty station location. We do not have enough information regarding time use, real or perceived time constraints, decision making, and other influences on leisure-time physical activity behavior in this diverse population.

Numerous factors also influence meal patterns and food choices, some of which are related to time use and constraints and the conscious and unconscious decision-making processes. Little is known about the meal patterns of military families, their lifestyles and factors that influence food choices and meal planning. Active duty personnel are required to be on duty 24 hours a day, 7 days a week. Depending on their duty station, dining facilities may be closed during evening and weekend hours, leaving fewer healthy dining options. In addition, whereas some military bases are large and offer commissary, dining, fitness, recreational facilities, and post exchanges on the base or in the surrounding communities, many active duty personnel serve on ships, submarines, and in remote areas for extended periods of time.

The HRBS dietary results are based on food frequency data rather than 24-hour dietary recall data, the data source that is used to assess adherence to the dietary guidelines in Healthy People. Food frequency methods are widely used in epidemiologic studies to collect information about usual long-term food consumption patterns.¹⁵ Although the HRBS dietary pattern information is useful and sheds light on several questions of interest, the HRBS food frequency data are not sufficiently detailed to answer other important questions related to dietary behavior such as when and where meals are eaten, specific food selections and meal patterns, and the quantities of food consumed by active duty personnel. Additional research is needed to explore the dietary patterns of active duty per-

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