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AN EXAMINATION OF FACTORS THAT INFLUENCE THE INITIATION AND INCREASE IN SMOKING AMONG DEPLOYED MILITARY MEMBERS

By

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DISCLAIMER

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ABSTRACT

The purpose of this research is to determine if a relationship exists between smoking initiation or relapse and military deployments among active duty personnel. If a relationship exists, this research could guide the formulation and development of future policies and programs to assist the Department of Defense (DoD) in implementing successful smoking cessation programs that ultimately improve the health and wellness of military personnel. An in-depth review of the comprehensive DoD Survey of Health Related Behaviors (HRB) Among Active Duty Military Personnel was conducted to obtain information. The survey provides necessary data to formulate assumptions. The survey consisted of 28,546 military personnel, both men and women, from all military Departments, with representation from all pay grades. A cross-sectional prevalence study was conducted which includes descriptive statistics and a univariate analysis of cigarette smoking and military deployment. The results of the analysis reveal there is a direct association between smoking initiation and military deployment. Further, these findings may complement research into future smoking cessation programs.

INTRODUCTION

Engaged in two operations in the Middle East, the military has seen a significant increase in deployments over the past ten years. Anxiety and stress are often associated with deployments due to family separation, substandard quality of life, boredom, death of a comrade, exposure to human remains, lack of activities, killing the enemy, and fear of safety, just to name a few. To deal with the stress associated with deployment, some United States (US) service members initiate or restart smoking. Medical research continues to show cigarette smoking produces long-term ill effects on health. Smoking is more likely to develop cardiovascular disease, cancer of various organs, and emphysema.[1] Previous research indicates that cigarette smoking in the military has adverse effects on performance, physical fitness,[2] and troop readiness and imposes high costs on the Department of Defense (DoD) and Veteran's Administration (VA).[3]

Tobacco use is of particular concern for the US DoD because the military members historically have a higher prevalence and heavier use rates of tobacco use than civilians.[4] Active-duty military personnel smoke at much higher rates than the general population.[5] Among deployed service members, smoking rates are particularly high. The VA estimated that more than 50 percent of all active duty personnel once stationed in Iraq smoke.[6]

Smoking is a frequently reported maladaptive coping mechanism among those reporting chronic and acute stress.[7] Individuals in stressful occupations use tobacco at higher rates than the general population.[8] Occupational stress related to serving in the military has also been a strong predictor for both cigarette smoking and nicotine dependence.[9] The stress of military

deployment may compound already high occupational stress and manifest in different maladaptive coping behaviors such as increases in the use of tobacco, alcohol, and other drugs.[10]

BACKGROUND

"These troops are essentially putting their lives at risk twice: once in service to their country and once in service to tobacco. Tobacco is a long-term engagement — it kills slowly and insidiously."[11]

Stuart Bondurant, Chair of the Committee on Smoking Cessation in Military and Veteran Populations

General Smoking and Tobacco Use

Cigarette smoking is the leading cause of preventable disease and death in the United States (US).[12] During 2002 to 2004, about 440,000 deaths reported were the result of smoking with an estimated 49,000 related to exposure to second hand smoke.[13] According to the Center for Disease Control (CDC), smokers die, on average 13 to 14 years earlier than non-smokers.[14] In the military where tobacco use is a serious problem and is higher than the civilian population, it is estimated that the DoD spends approximately $1.6 billion dollars per year due to tobacco related medical care, increased hospitalization, and lost days of work.[15] The Institute of Medicine reported that the Military Health Service estimated their tobacco-related costs to be $564 million in 2006.[16] In 2008, the VA reported spending over $5 billion to treat chronic obstructive pulmonary disease (COPD).[17]

Civilian Health Effects and Hazards

Smoking is directly responsible for more than 90 percent of chronic obstructive pulmonary disease (COPD) deaths and approximately 80 to 90 percent of lung cancer deaths.[18] It harms nearly every organ in the body. Smoking is also a major risk factor for coronary heart

disease, stroke and lower respiratory tract infections. In the military, the Institute of Medicine found that military personnel who smoked had lower visual acuity and poorer night vision than non-smokers. The report also noted that the adverse health effects of tobacco use such as decrease cognitive ability and impaired respiratory function affect aviation performance and military driving.[19] The overall economic burden of tobacco use costs more than $96 billion per year in medical expenditures and another $97 billion per year resulting from lost productivity.[20]

The deadly effects of smoking do not end with the smoker. Past research demonstrates definitively that more than 126 million nonsmoking Americans, including children and adults, can be regularly exposed to secondhand smoke.[21] Even brief exposure can be dangerous because non-smokers inhale many of the same carcinogens and toxins in cigarette smoke as smokers. Secondhand smoke exposure causes serious disease and death, including heart disease and lung cancer in nonsmoking adults. Each year, primarily because of exposure to secondhand smoke, an estimated 3,000 nonsmoking Americans die of lung cancer and more than 46,000 (range: 22,700–69,600) die of heart disease.[22]

Addiction Characteristics

Nicotine dependence is the most common form of chemical dependence in the United States.[23] Cigarette smokers often find it quite difficult to quit smoking due to the characteristics of nicotine, the associated habits developed while smoking, and its withdrawal. Some research suggests nicotine is as addictive as heroin, cocaine or alcohol. Nicotine can act as both a stimulant and a depressant, depending on the dosage and timing of delivery, and has a variety of physiological actions.[24] Chronic use of nicotine results in dependence and eventually addiction. Studies have shown the average user becomes nicotine dependent within 2 years of initially smoking.[25]

Smokers use cigarettes for a variety of reasons in addition to physiological addiction. Initial use may be due to peer pressure, boredom, or the excitement of something new. In the case of military deployment, initial use of cigarettes may be due to boredom, lack of activities, other soldiers are doing it, fear of safety or death, unknown environment, way to cope with the death of a comrade, and family separation. Traumatic life events and chronic stressful experiences typically found in a combat environment are associated with the development of nicotine dependence.[26]

Data and Statistics

The percentage of American adults who smoke decreased from 20.9% in 2005 to 19.3% in 2010.[27] This translates to 3 million fewer smokers than there would have been with no decline. Cigarette smoking is more common among men (21.5%) than women (17.3%).[28] Based on the US poverty level, 28.9% adults below the poverty level smoked while only 18% of adults above the poverty level smoked. When looking at smokers by ethnic/racial groups, Native Americans had the highest percentage of smokers at 31.4%, while Asians had the lowest percentage of smokers at 9.2%. In the military, 32% of active duty personnel smoked, when compared to their civilian counterparts at 24%.[29]

Health Disparities

Tobacco-related health disparities still exist. Current smoking rates attribute to multiple factors including socioeconomic status, cultural characteristics, stress, targeted advertising, cigarette prices, and organization/parental/community disapproval of smoking.[30] Though the US has made progress in improving health and reducing disparities among its population, ongoing economic, racial/ethnic, and other social disparities in health still exist. Cigarette smoking disparities indicates declines in smoking among both male and female non-Hispanic white and

non-Hispanic black adult smokers 18 years and older.[31] Despite these declines, data for 2006-2008 indicate a much higher smoking prevalence among American Indian/Alaska Native men and women. Higher prevalence of smoking was present in persons whose household incomes were below or near the federal poverty level compared with persons whose household incomes were above the federal poverty level. Smoking results of those holding a college degree decreased significantly.

Tobacco Use and Cigarette Smoking in the US Military

History and Culture

The military has long been and continues to be a target for the tobacco industry.[32] Thus, cigarette smoking in the US military continues to be a serious problem for the DoD. The tobacco industry began targeting the military through distribution of cigarettes, in massive numbers, to service members and began including them in rations beginning in World War I.[33] During World War II, the Korean War, and the Vietnam War, free cigarette samples were a part of combat rations and were easily obtained at low cost from the commissaries.[34] Despite growing evidence in the 1950s of the adverse health effects of smoking and tobacco use, the military continued to include cigarettes in rations until 1975.[35] President Roosevelt even characterized cigarettes as an essential wartime material.[36] Consequently, wartime smoking became the culture of the military.

Throughout the 1980s and 1990s tobacco companies supplied military personnel around the world with branded entertainment, targeting personnel—and their families and dependents—with intensive cigarette marketing.[37] The tobacco industry used promotional methods such as in-store tobacco merchandising, sponsorships, and brand development to target the military, both in

the US and abroad during times of conflict.[38] The *Army Times*, *Navy Times*, and *Air Force Times* advertised cigarettes in publications targeted to military service members.[39]

Demographics

Today, there are roughly 1.4 million active duty personnel in the US military.[40] This population is a desirable market for the tobacco companies. Of the 1.4 million active duty soldiers, 32 percent smoked when compared to about 21 percent rate of the general population.[41] Basic characteristics of smokers in the military are similar to nonmilitary smokers. For instance, males are more likely to smoke than females. Among those with higher levels of education and higher pay grade, smoking rates are lower. Whites had a higher rate of smoking when compared to African Americans or Blacks. On average, military members 20 years of age or younger smoked cigarettes at a much higher rate than military members 35 years of age or older. Military members stationed overseas smoke at a higher rate and are more likely to smoke than those stationed in the US. Lastly, married service members are more likely to smoke when living away from their spouses, than service members who are living with their spouses.[42]

Prevalence and Trends of Smoking and Tobacco Use

In 2005, there were disparities among smoking rates in the different military branches.

Table 1. Smoking Rates in the United States Armed Forces (2005)*

GROUP	ANY SMOKING	HEAVY SMOKING**
ALL BRANCHES	31.7%	10.6%
ARMY	38.1%	15.6%
NAVY	32.3%	9.6%
MARINE CORPS	30.8%	9.5%
AIR FORCE	25.5%	7.7%

Source: DoD 2005 Survey of Health Related Behaviors Among Active Duty Military Personnel

*Smoking rates adjusted to account for differences between the groups in key demographics. This allows for comparison of smoking rates among groups.

**Heavy smoking defined in the DoD Survey as one or more packs per day.

In 2008, the military smoking rates decreased slightly, but there were still disparities among the different military branches. The Marine Corps, however, saw an increase in the smoking rate among its corps members.

Table 2. Smoking Rates in the United States Armed Forces (2008)

GROUP	AN Y SMOKING
ALL BRANCHES	31.%
ARMY	34.0%
NAVY	31%
MARINE CORPS	32%
AIR FORCE	25%

Source: DoD 2008 Survey of Health Related Behaviors Among Active Duty Military Personnel

Illness and Disease

Military members that smoke are at risk for serious illnesses much like their civilian counterparts. Past research and studies have linked cigarette smoking or tobacco use to short and long term illnesses. In the short term, smoking impairs military readiness by reducing physical fitness, impairing visual acuity, and contributing to hearing loss.[43] Cigarette smoking causes serious health problems over the long term. These problems include lung cancer and chronic obstructive pulmonary disease (COPD).[44] In addition, cigarette smoking contributes to numerous other health problems including cardiovascular disease, infections, and delayed wound healing.[45] Another illness that is serious among the soldiers deployed to Iraq is lung inflammation (pneumonitis) with elevated white blood cells (eosinophil). The DoD has advised personnel that cigarette smoking, particularly the initiation of smoking, might be associated with the development of severe acute pneumonitis with elevated eosinophil.[46]

Monetary and Other Costs for the DoD and the Veteran's Administration

The costs to the DoD of cigarette smoking are exorbitant. The DoD spends roughly $1.6 billion per year on tobacco–related medical care, increased hospitalizations, and lost days of work.[47] Military members who smoke are more apt to drop out of basic training, get sick, miss work and leave the service within the initial year. In 2008, the VA spent more than $5 billion to treat veterans with COPD, which directly links to cigarette smoking.[48] Based on an estimate by the Surgeon General, "about 90 percent of all deaths from chronic obstructive lung diseases are attributable to cigarette smoking."[49]

Possible Reasons Service Members Initiate Smoking

Many smokers that entered the military did not use tobacco products prior to joining;[50] but began smoking sometime after joining.[51] Understanding the factors that contribute to smoking is of great importance to the DoD because understanding this trend could contribute to preventing it. Smokers take up smoking for several reasons. Some of the reasons military members choose to smoke are to cope with anxiety or stress sometimes present in a military environment. Others may choose to smoke out of boredom or as a way to calm the nerves.

To support operations in the Middle East, some military members deployed to the region more frequently than others did. The DoD has seen an increase in smoking initiation in those members that have deployed more frequently or have participated in prolonged deployments.[52] Thus, an association exists with smoking initiation and military deployments. When military members were asked why they smoke, the response was not surprising. They smoke to help cope with the stress of family separation, combat, fear for personal safety, boredom, and substandard living, just to name a few. Unfortunately, while it is easy to initiate smoking, it is difficult to stop due to nicotine's highly addictive nature.[53]

THE PURPOSE OF THIS RESEARCH

Operation Enduring Freedom (OEF) (2001) and Operation Iraqi Freedom (OIF) (2003) placed a heavy burden on the US military in terms of resources, casualties and costs. The unexpected duration of these long-term operations required US troops to deploy multiple times in support. As a result, there have been many illnesses to include physical injuries, psychological trauma, and stress-related disorders, which will be long-term. In 1996, based on the former Gulf War, a Presidential Advisory Committee on Gulf War Veterans' Illnesses found

that stress was an important contributor to veterans' illnesses and encouraged the government to continue its research on stress-related disorders.[54] To gain an understanding why cigarette smoking continues to be a coping mechanism in response to the stress of military deployment, this research will look at some of the stressors encountered in a military environment.

The DoD has seen an increase in smoking among its military members, which has been associated with stressors that commensurate with a deployed environment. Stressors associated with deployment include exposure to gunfire and human remains, anxiety associated with kill or be killed, being captured or maimed, witness to serious injury or death of a comrade, unfamiliar territory, sleep deprivation, lack of activities, a substandard quality of life, and poor, bad, or failed communication. Less traumatic but more pervasive stressors include family separation and anxiety about home life such as loss of job, bills, and impacts on relationships. Prolonged exposure to any of the above factors contribute to stress which, in turn, contributes to maladaptive behaviors such as cigarette smoking.

Smoking remains the leading cause of preventable death in the US and is a coping mechanism used by military members in a deployed environment. More than 400,000 people die each year due to smoking-related illnesses, with $97 billion spent in annual health-related economic losses down from $167 billion in 2008.[55] Smoking has always been a concern for the military; particularly since a ready force is critical to operation success. Based on long-term research, the health consequences of tobacco use are well established; these include heart disease, multiple types of cancer, pulmonary disease, adverse reproductive effects, and the exacerbation of chronic health conditions. Current and past US military engagements have consistently raised concern over the unique spectrum of mental and psychological symptoms experienced by deployed service members.[56]

Rates of smoking in the military are higher than in the civilian population. According to a June 2009 Institute of Medicine (IoM) report commissioned by the Department of Veterans Affairs (VA) and the DoD, 32 percent of active duty military and 22 percent of all veterans smoke, compared with about 20 percent of the civilian adult population.[57] Smoking rates were higher among military personnel who deployed to the Middle East. In addition, there has been an increase in the number of service members' use of smokeless tobacco products.

Wars and threats to our security are no longer episodic, but require optimal performance, resilience and recovery.[58] In an age of sustained conflict,[59] troops must be prepared to engage in terrorists and guerilla tactics anytime, anywhere; and most importantly, are ready to defend America's security and national interests. To meet the demands of the 21st century, the US requires a healthy, fit, agile and ready force. In order to sustain a healthy force, there is a need to evaluate the effects and impact tobacco use has on force fitness and readiness. This research will synthesize available information and answer the research question, are military members more likely to quit or start smoking when they deploy? Through analysis of a variety of deployment data, this research will provide military personnel with insight into factors that influence smoking and provide recommendations to minimize those factors, thereby improving fitness and readiness. According to Brigadier General S.L.A. Marshall, "It is therefore reasonable to believe that the average and healthy individual—the man who can endure the mental and physical stresses of combat—still has such an inner and usually unrealized resistance towards killing a fellow man that he will not of his own volition take life if it is possible to turn away from that responsibility…..At the vital point he becomes a conscientious objector."[60]

Deployment and Combat Stressors in an Operational Environment

Operations in the Middle East expose military personnel (civilian and contract workers) to many stressors. These stressors can lead to a variety of negative physical and mental health consequences such as drinking, smoking, post traumatic stress disorder (PTSD), and depression. Increased deployments entail other stressful changes in military units as well, such as an increased number (and intensity) of training exercises, planning sessions, and equipment inspections, all of which increase the workload and pace of operations.[61] Additionally, frequent deployments also involve more family separations, a recognized stressor for soldiers.[62]

Why are military deployments stressful for those performing them? Past research with US military units deployed to Croatia, Bosnia, Kuwait, and Saudi Arabia from 1993 through 1996, including interviews, observations, and survey data, aimed to identify the primary sources of stress for soldiers on operations. This work led to the identification of five primary psychological stress dimensions in modern military operations.[63] These are isolation, ambiguity, powerlessness, boredom, and danger. Today, the increased frequency and pace of deployments for US forces and the long work hours and days that these deployments entail[64] merit the inclusion of another factor, probably

best described as workload or deployment stress. Table 3 summarizes these dimensions.

Table 3. Stressor Dimensions in Modern Military Operations

Stressor	*Characteristic*
1. Isolation	Remote location Foreign culture and language Distant from family and friends Communication tools Newly configured units, do not know your coworkers
2. Ambiguity	Unclear mission or changing mission Unclear rules of engagement Unclear command or leadership structure Role confusion (what is my job?) Unclear norms or standards of behavior (what is acceptable here and what is not?)
3. Powerlessness	Movement restrictions Rules of engagement constraints on response options Policies prevent intervening, providing help Forced separation from local culture, people, events, and places Unresponsive supply chain—trouble getting needed supplies and repair parts Differing standards of pay, movement, behavior, etc., for different units in area Indeterminate deployment length—do not know when we are going home Do not know or cannot influence what is happening with family back home
4. Boredom (alienation)	Long periods of repetitive work activities without variety Lack of work that can be construed as meaningful or important Overall mission or purpose not understood as worthwhile or important Few options for play and entertainment
5. Danger (threat)	Real risk of serious injury or death, from: Enemy fire, bullets, mortars, mines, explosive devices, etc. Accidents, including "friendly fire" Disease, infection, toxins in the environment Chemical, biological, or nuclear materials used as weapons
6. Workload	High frequency, duration, and pace of deployments Long work hours and/or days during the deployments Long work hours and/or days in periods before and after deployments

Adapted from Bartone, Paul T. Resilience Under Military Operational Stress: Can Leaders Influence Hardiness? *Military Psychology*. 2006, S134

Combat stress is the perception of an imminent threat of serious personal injury or death, or the stress and responsibility to protect another party from imminent serious injury or death, under conditions where response is minimal.[65] It is a reality for deployed military members. Experiences in a combat environment affect military members throughout the length of their military service. Combat stress may be associated with a personal injury, killing of combatant, witnessing the death of an individual, death of another member, or injury resulting in the loss of a limb. Soldiers surveyed in Iraq indicated that those who experienced the most combat were the most likely to screen positive for a behavior health problem.[66]

It is not natural of humans to kill. There is an inherent resistance in most human beings to killing other people.[67] Military members train to fight and kill should they have to engage or deter enemy combatants. Military training methods teach military personnel to turn off that "don't kill" instinct. The psychological burden of killing in combat can be tremendous; it contributes to the psychiatric casualties of war.[68]

Fear in a High Operations Tempo Environment

Fear is a physical and emotional response to a perceived threat or danger. Fear is a natural outgrowth of war. It is present on every battlefield and is an unpredictable phenomenon. Many things can induce fear in soldiers, and there are many types of fear encountered by soldiers.[69] Fear of being alone, fear of the enemy, and anticipated fear of physical harm all contribute to the psychological burdens of a deployed and combative environment. The military profession places emphasis on the traditional value of personal courage. Thus, fear of failure weighs heavily on soldiers.

Anxiety – Family Separation

Anxiety is a feeling of fear, unease, and worry. Military members deploy sometimes twice within an 18 month period leaving their families behind. Last minute, long term, and consecutive deployments contribute to a soldier's feeling of anxiety. They worry about health, money, work, and school. Soldiers not knowing whether they will ever see their loved ones again make it difficult to concentrate on the mission, which could jeopardize mission effectiveness. Additionally, soldiers separated from family experience strong separation anxiety and fear about the well-being of their family.

Quality of Life

In an operational environment away from home, soldiers do not have many amenities and comforts readily available to them. They are also exposed to the elements of an unknown terrain. They may live in tents, sleep on cots, eat military ready-to-eat meals, and almost have no privacy. Limited facilities, telephones and internet access are difficult for most to be without in the technological advanced world. When on the battlefield, soldiers may experience fatigue due to a high, continuous operations tempo. Cumulative lack of sleep, combined with other privations such as hunger, affect efficiency on the field and the will to resist fear.[70] In fact, various operational and environmental factors conjoin to create physiological and psychological effects on soldiers that can ultimately lead to combat ineffectiveness.[71]

Boredom

An expectation exists there will be no down time in a deployed environment or time for leisurely activities based on the operations tempo. Though the military member may work 24/7, there may be long periods of repetitive and monotonous work activities without variety. This type of work leads to boredom. Lack of work and overall mission or purpose not understood as

worthwhile or important could also lead to boredom. When few options for entertainment exist, soldiers seek activities to occupy their time. When there is downtime, soldiers do not have much to do because of limited or no resources. Because soldiers are bored, they may become unmotivated and seek constructive ways to utilize their time. Others may remain idle and eventually participate in less than desirable behaviors such as smoking.

Smoking Effects on Military Population

Smoking is a detriment to physical readiness among relatively young, fit military personnel.[72] Based on multiple studies, smoking has immediate adverse health effects such as increased injury risk and diminished physical performance. Those who smoke are less productive and do not perform as well on physical fitness tests relative to nonsmoking personnel.[73] Findings suggest that smokers have lower physical endurance than non-smokers, even after taking into account the differences in exercise levels of smokers and non-smokers.[74] A study of US Navy recruits found that the average number of days hospitalized was significantly longer by about half a day for daily smokers when compared to those who were former smokers or smoked only occasionally. In addition, smokers are more likely to drop out of the military before they fulfill their enlistment commitments; they have worse vision and night-vision; they do not perform as well on fitness tests; and they do miss more work than non-smokers.

Implementation and Evaluation

Smoking is a frequently reported maladaptive coping mechanism among those reporting chronic and acute stress.[75] While research has shown occupational stress, related to the military, is a strong predictor for both cigarette smoking and nicotine dependence.[76] The stress of military deployment may compound already high occupational stress and manifest in different

coping behaviors, such as increases in the use of tobacco, alcohol, or other drugs.[77] In a 2005 cross-sectional survey of US troops deployed to Iraq and Afghanistan, nearly 40% smoked at least one-half pack of cigarettes per day, with nearly half of all smokers stating that they started or resumed smoking during their deployment.[78] To gain an understanding why soldiers may initiate smoking or resume smoking while in a deployed environment, the 2008 Department of Defense (DoD) Survey of Health Related Behaviors Among Active Duty Military Personnel (HRB Survey) will be used to assess the smoking habits, to include changes in cigarette use, and activities of active duty personnel. Additionally, assessing the possible stressors found in a deployed environment may provide understanding on why cigarette smoking is a coping mechanism.

Survey Description

The 2008 DoD HRB Survey is a component of the Defense Lifestyle Assessment Program. A total of ten studies were conducted--in 1980, 1982, 1985, 1988, 1992, 1995, 1998, 2002, 2005, and 2008--of active duty military personnel, and each year, the study has been improved to capture additional data critical to health improvement. The survey results consist of self-reported data from randomly selected military. The study includes the Army, Air Force, Marine Corps, Navy, and for the first time in 2008, the inclusion of active duty Coast Guard personnel. The inclusion of all Services provides a comprehensive assessment of all active military components. The Research Triangle Institute (RTI), under the guidance of the Office of the Assistant Secretary of Defense (Health Affairs), TRICARE Management Activity, and the United States Coast Guard, conducted the HRB Survey.

This survey is used by DoD to collect data about the health behaviors and health readiness of active duty military personnel and detect emerging health risks. DoD, military

leaders, and health experts use the data to assess the nature, extent, and consequences of substance use and abuse [of alcohol, illicit drugs, and tobacco] in each service and across the military. The survey is a systematic effort to obtain data used to guide and evaluate health and substance abuse programs and policies. The 2008 HRB Survey examined mental well-being and suggested further evaluation for depression, psychological distress, generalized anxiety disorder, posttraumatic stress disorder (PTSD), and physical and sexual abuse. Further, the survey assessed combat exposure experiences, deployment experiences, possible suicidal indicators, and possible traumatic brain injury (TBI). Lastly, the survey appraised stress and coping at work and in the family, explored topics such as sexual health, gender-specific issues, oral health, gang involvement, and hearing protection. This survey provides the military with information on how well it is doing in meeting selected Healthy People 2010 objectives. The eligible population for the survey consisted of all active duty military personnel, except recruits, service academy students, personnel absent without official leave, and personnel incarcerated at the time of data collection. (This sentence looks award hanging out by itself.

METHODS

Study Design

The 2008 DoD cross-sectional study of active military personnel provides critical input pertaining to tobacco use, military readiness, and stressors in a combat deployed environment. The habits and reasons soldiers decided to initiate or resume smoking are of particular interest. The research includes descriptive statistics, involving a univariate analysis, and an analysis of the association of cigarette smoking during the past 30 days to examine the relationship between smoking initiation and smoking resumption in a combat deployed environment. The research also performed an evaluation of all tobacco use-related survey questions. For the purpose of this

study, heavy smokers are individuals that smoke at least one pack of cigarettes per day. This research paper describes tobacco use and the propensity for the military member to initiate or restart smoking in a deployed environment due to stressors. This paper includes graphics and summaries to highlight substantive findings.

Study Population

The survey sample participants consisted of 28,546 military personnel (5,972 Army, 6,637 Navy, 5,117 Marine Corps, 7,009 Air Force, and 3,856 Coast Guard) who completed self-administered anonymous questionnaires. The sample is representative of male and female personnel in all pay grades of the active military forces throughout the world. Data was collected in person from participants who were part of the group sessions at military installations, while those not attending the sessions mailed their responses. Overall response rate was 71.6%. The collected data was weighted, thus represents population estimates of the entire active force.[79]

Smoking Predictors

Two predictors for this research come from the HRB survey. They include: Question 113 - During the Last 12 months, how much stress did you experience from deployment at sea, in the field, or on a remote and Question 14- When you feel pressured, stressed, depressed, or anxious, how often do you engage in lighting up a cigarette? Two additional predictors were included: "Did you smoke prior to deploying?" and "Number of deployments?" Lastly, the final predictor "What methods were used to cope with feeling stress?" is included.

Smoking Data and Outcome Variable

The 2008 HRB contains questions to assess the use of tobacco in the military. The outcome variable is any cigarette use, smoking in the past 30 days. This variable (asmoke30) will identify Questions 56 and 58 below.

Question 56. When was the last time you smoked a cigarette?

- Today
- During the past 30 days
- 1-3 months ago
- 4-6 months ago
- 7-12 months ago
- 1-3 years ago
- More than 3 years ago
- I never smoked cigarettes

Question 58. Think about the past 30 days. How many cigarettes did you usually smoke on a typical day?

- More than 35 cigarettes (about 2 packs or more a day)
- 26-35 cigarettes(about 1 ½ packs a day)
- 16-25 cigarettes (about 1 pack a day)
- 6-15 cigarettes (about ½ pack a day)
- 2-5 cigarettes a day
- 1 cigarette a day
- Less than 1 cigarette a day, on the average
- I did not smoke any cigarette in the past 30 days

Question 68. The following list includes reasons that people sometimes give why they started smoking cigarettes regularly. If you have ever smoked cigarettes regularly, please tell us how important each reason was for you starting to smoke.

a. To fit in with my friends
b. To fit in with my military unit
c. To rebel against my parents or others in authority
d. To look “cool” or be “cool”
e. To help retrieve stress
f. To help me relax or calm down
g. To relieve boredom
h. So I wouldn’t want to eat as much
i. To look or feel like an adult
j. Because most people in my family smoked cigarettes
k. To prove I could handle it
l. To be like someone I admired

m. To show I was tough
n. To avoid gaining weight
o. To help keep me awake or alert

Covariates

Socio-Demographic

- Gender: Male or Female
- Race/Ethnicity: White/Hispanic, African American/non-Hispanic, Hispanic, Other
- Education: High school or less, Some college, College graduate or higher
- Age: 20 or younger, 21-25, 26-34, 35 or older
- Family Status: Not married; Married, spouse not present; Married, spouse present
- Pay Grade: E1-E3, E4-E6, E7-E9, W1-W5, O1 – O3, O4-O10
- Number of times Combat Deployed since 2001: 1 Time, 2 Times, 3 or more times, Not combat deployed since Sept. 11, 2001.
- Major Command: Army, Navy, Marine Corps, Air Force, or Coast Guard
- Region: CONUS, OCONUS
- Lifetime Combat Exposure: Low, medium, high, never deployed

Reference Periods

- Past 30 days: Occurrence of the behavior 30 days before the survey was administered
- Past 12 months: Occurrence of the behavior 12 months before the survey was administered
- Lifetime: Occurrence of the behavior or condition at least once in a person's lifetime

Smoking Data/Tobacco Use

- Current Smokers: Those who smoked at least 100 cigarettes during their lifetime and who last smoked a cigarette during the past 30 days.
- Heavy Smokers: Current smokers who smoked one or more packs of cigarettes a day during the past 30 days.
- Lifetime Smokers: Smoked at least 100 cigarettes in their lifetime but did not smoke in the past 30 days
- Non-smokers: Not smoked 100 cigarettes in their lifetime

Nicotine Dependence/Severity of Smoking

- 5 or above: Nicotine dependent (Medium or high dependence)
- 4 or below: Not nicotine dependent (low or no dependence)

Other Health Behaviors

- Substance use (tobacco)
- Hospitalization for injuries
    - Intentional injuries: Result from deliberate intent to harm
    - Unintentional injuries: Uncontrollable events
- Risk Taking/Impulsivity:
    - Act on spur of the moment without stopping to think
    - Engage in things a little dangerous
    - Act impulsively
    - Do something a little chancy
    - Act in haste

Statistics

Statistical analyses utilizing the different variables were completed using Minitab, which is a statistical software often used for Six Sigma Black Belt instruction. Descriptive statistics of the predictors and the covariates are calculated using weighted and un-weighted samples. Univariate analyses between the outcome variable "any smoking" and the predictor variables are complete. If covariates were associated with "any smoking", they were included in the multivariate analysis. Additionally, covariates should not highly correlate with each other. Thus, since the two variables, pay grade and education are highly correlated, pay grade can be used for the multivariate analysis.

Confidentiality of Participants

No personally identifiable information resides with the data for this project. Since this survey was conducted by DoD, there was no need to contact the participants.

RESULTS

Trends in Tobacco Use Past 30 Days

Figure 1 shows that from 1980 to 1998, the rate of any past month smoking among DoD Services decreased steadily from 51% to 30% respectively. In 2002, the smoking rate increased to 34% and remained steady that year. Since 2005, there were no changes in current smoking for all DoD or any individual Service. A steady decrease in heavy smoking was apparent since the start of the survey. Consequently, the year 1980 had a high rate of heavy smoking - 34%; while in 2008, the rate dropped significantly to a low - 10%.

This data suggests that while there has been great stride in reducing current cigarette use since 1980, the reduction occurred over an eighteen-year span, from 1980 to 1998. Since 1998, there has not been any recognized improvement in current smoking rates. Rather, a slight incline is evident, which could be attributable to the operations tempo associated with combat operations in the Middle East. In stark contrast, since 1980, heavy smoking in the military continued to decline and by 2008 was at its lowest point from a high 34% to a low 10%.

Comparison of Current Cigarette Use Between Military and Civilian

Figure 2 presents the prevalence of current smoking for civilian and US-based military populations age 18-64. Comparability between the two data sets is possible by standardizing the civilian data to the socio-demographic distribution of the US-based military population--gender, age, education, race/ethnicity, and marital status. The smoking measure of comparison consists of personnel who smoked in the past 30 days. No other current smoking criteria used in the HRB survey was included.

In 2008, the rate of past 30-day cigarette use for all Services and the civilian population was very similar, 30% and 29% respectively. A look at the age group 36-45 shows the military population had a slightly lower 30-day smoking rate than its civilian counterpart at 17% for all Services and 20% for civilians. The largest difference is in the 46-64 year age group where the military depicts a 7% difference for the 30-day smoking rate, when compared to its civilian counterpart--11% for all Services and 18% for civilians. A slight increase in the 18-25 and 26-35 age groups show the military has a higher 30-day smoking rate than its civilian counterpart at 38% and 29% for all services and 34% and 26% for civilians. Finally, soldiers in the 18-35 age group smoke more cigarettes than any other age group. Figure 2 contains this data.

Lastly, when comparing the rate of any past month smoking of any Service to the civilian population, the Marine Corps rate is higher than the civilian population, 37% and 29% respectively. In addition, the Marine Corps has a higher 30-day smoking rate (37%) when compared to the Army (33%), Navy (31%), the Coast Guard (28%), and the Air Force (23%). Of the five Services, the Air Force has the lowest 30-day cigarette use.

Cigarette Use by Pay Grade

Figure 3 illustrates the prevalence of any past 30-day smoking by pay grade for all services. Consistently across the Services, cigarette use was highest for enlisted pay grades E1 to E3 (40%) and E4 to E6 (36%), when compared to other pay grades. Conversely, for pay grades O1 to O3 and O4 to O10, current smoking rates were lower, perhaps at 10% and 5% respectively.

Current smoking rates were lower for females when compared to males, other racial/ethnic groups when compared to non-Hispanic whites, also for those who attended college versus those who did not attend college, and married couples compared to unmarried couples.

Rates of Cigarette Use Among Combat Deployed Personnel

As depicted in Figure 4 for all Services, rates of cigarette use were higher among personnel who had been combat deployed to any operational environment since 9/11. Those who had not been combat deployed since 9/11 (32% among those deployed to Operation Iraqi (OIF)/ Operation Enduring Freedom (OEF)) or other operational theaters equated to 28% of those members not combat deployed).

The pattern among Air Force personnel was similar to the pattern for all Services, with higher rates among those deployed to any operational environment compared with those who had not been combat deployed. Among Navy personnel, those who deployed to OIF/OEF had a higher rate of cigarette use than those who had not been combat deployed. Finally, there was no noticeable statistically significant difference by combat theater for the other services.

Family Stress Experienced During Combat Deployment

For all Services, the rate of experiencing high family stress in the past 12 months was higher among personnel who had been combat deployed since 9/11 (18%) than those who had not been combat deployed since 9/11 (17%). Rates of experiencing high family stress in the past 12 months were higher for Army, Marine Corps, and Coast Guard personnel who had been combat deployed since 9/11 rather than for those who had not been deployed.

Figure 6 presents rates of high stress experienced at work by combat deployment status and Service reported for 2008. High stress includes reporting “a lot” of stress at work during the

past 12 months. Unadjusted (observed) rates do not adjust for any differences in the demographic composition of the Services.

Work Stress Experienced

For all Services, the rate of personnel experiencing significant work stress in the past 12 months was higher among personnel who had been combat deployed since 9/11 (28%) than those who had not been combat deployed since 9/11 (25%). This pattern is also consistent for the Army, but differences between the combat employed and noncombat employed were not statistically significant for the other services.

Cigarette Use by Combat Deployment Status

Figure 7 presents rates of cigarette use (any use in the past 30 days) by combat deployment status and Service reported for 2008. Unadjusted (observed) rates shown are not adjusted for any differences in the demographic composition of the Services.

For all Services, rates of cigarette use were significantly higher among personnel combat-deployed since 9/11 than those who had not been combat deployed since 9/11 (31% vs. 29%). This pattern was also consistent for Air Force personnel. There were no statistically significant differences between those who had been combat deployed, and those who had not been combat deployed in the Army, Navy, Marine Corps, or Coast Guard.

Heavy Cigarette Use

Figure 8 presents rates of heavy cigarette use (i.e., one or more packs of cigarettes a day during the past 30 days) by past year deployment status and service reported for 2008.
Due to the differences in the demographic composition of the Services, the rates shown were standardized.

For all Services, rates of heavy cigarette use were higher among combat deployed personnel during the past year (11%) or non-combat deployed in the past year (10%) than for those deployed in the past year (9%). Navy and Air Force personnel who deployed in support of combat operations during the past year had higher rates of heavy cigarette use than personnel did in those Services not deployed in the past year.

Reasons for Smoking

Figure 9 presents rates of cigarette use (any use in the past 30 days) and reasons for smoking among personnel with high levels of lifetime combat exposure by Service reported for 2008. Unadjusted (observed) rates shown do not represent any differences in the demographic composition of the Services.

Among personnel with high combat exposure, rates of past month cigarette use was higher among Coast Guard personnel (39%) than among Navy personnel (33%) or Air Force personnel (28%). In the Air Force, this rate was also lower than the rate for the Army (36%) or Marine Corps (37%). Military personnel with high combat exposure were about equally likely to report the following as "very important" or "somewhat important" reasons for smoking: to relieve stress, to help relax or calm down, and to relieve boredom. Marine Corps personnel with high combat exposure were more likely to smoke to relieve stress, smoke to help relax, or smoke to relieve boredom compared with Air Force personnel with high combat exposure.

Trends in Sources of Stress and Coping Behaviors

The HRB Survey recognized the top sources of stress as reported by the participants of the survey. Sources of stress included being away from family, deployment, increases in workload, conflict between military and family, having a permanent change of station (PCS), problems with co-workers, problems with supervisors, and problems with money.

With many deployments to the Middle East, families across all Services reported being away from family as the most frequently reported source of stress. In 2008, an estimated 23% of DoD personnel experienced "a lot" of stress due to being away from family. This resulted in a 6% difference and a significant increase from 17% in 2002 and 2005. Deployment was the second highest reported source of stress at 16.2% out of eight identified sources.

Eight behaviors for coping with stress, depression, or anxiety are included in the survey. These are thinking of a plan to solve a problem, talking to friend/family member, exercising or playing sports, engaging in a hobby, saying a prayer, having a drink, getting something to eat, and last but not least, lighting up a cigarette. The first five of the eight behaviors are problem-solving coping strategies while the following three suggest avoidance strategies.[80] When coping with stress, 28.4% males lit up a cigarette, while only 20.0% females did the same. In addition, 34.4% men drank to cope with stress and only 25.3% women drank to cope with stress.

DISCUSSION

Findings

The research confirms there is a direct association between smoking predictors and any smoking to include smoking initiation, an increase in smoking, smoking relapse, and military deployment. Active duty military members on deployment, encounter boredom, anxiety, and stress. Thus, when soldiers encounter the aforementioned symptoms, it is likely these symptoms could lead to smoking initiation or smoking re-initiation. In addition, soldiers that deploy multiple times and separate from their families are also likely to smoke a cigarette or restart smoking. Given the increased stressors associated with a deployed environment, soldiers are more likely to smoke a cigarette to cope. These findings are consistent with suggestions of former research [and reports] on cigarette smoking and deployment stressors.

Cigarette Smoking Research

Numerous data, reports, and studies exist that identify the dangers and reasons people smoke. Because of the operations tempo over the last 30 years, there have been opportunities to collect large amounts of data over time. Several studies conducted show correlation between cigarette smoking and other forms of mental disorders. A study conducted by Miller, Hemenway, Bell, Yore, and Amoroso found that the risk of suicide increased significantly with the number of cigarettes smoked.[81] A report published in 2010 found that deployment with combat exposure pose unique and often stressful situations and is a risk factor for new-onset depression among US service members.[82] Another study conducted in 2003 by Smith, Ryan, Wingard, Patterson, Slymen, and Macera for the Millenium Cohort, smoking initiation and recidivism were associated with military deployment.[83] A more recent study conducted by Dr. Eric Schroeder found personnel needing counseling, medication or evaluation for anxiety, depression, or mental health counseling are more likely to smoke at least one cigarette in the last 30 days.[84] Though 3 of the 4 aforementioned report and studies are not directly associated with identifying if military deployment directly influences smoking initiation or re-initiation, they introduce the stressors and mental health conditions experienced in a pre- or post-deployment environment that may lead to smoking initiation or re-initiation

Study Limitations and Strengths

The HRB Survey relies on self-reporting data. When self-reporting data is used, there is the potential for bias particularly when the self-report is about behaviors, exposures or symptoms. In addition, if the questions contained in the survey are not clearly defined, self-reports may interpret the same question differently, thus invalidate results. Lastly, the survey relies on the participants to be truthful about their experiences. However, if personnel believe

the responses they provide to any survey are not in confidence or could jeopardize their career, they may give socially desirable responses rather than truthful responses.[85]

This study has three main strengths. The first strength is its sample size. The survey consists of a very large sample size from all Services, both men and women, in all age groups, and all ranks. Thus, this study is a representative sample of the US military population. The second strength is over the past few years, past HRB surveys have validated the questions and responses. Third and last, this study compared results over time, which permitted assessment of trends over time.

Future Research

There are several areas for future research concerning cigarette smoking in a deployed or combat environment using the DoD HRB Survey and/or the Millenium Cohort Study. The research should investigate whether including smoking prevention and education training prior to deployment could be instrumental in minimizing the desire to smoke in a combat environment. In addition, future research can include whether cigarette smoking was germane to generating a positive outcome on the battlefield. Lastly, a study could evaluate whether cigarette smoking among members on the battlefield might differ to those deployed, but not on the battlefield.

CONCLUSION

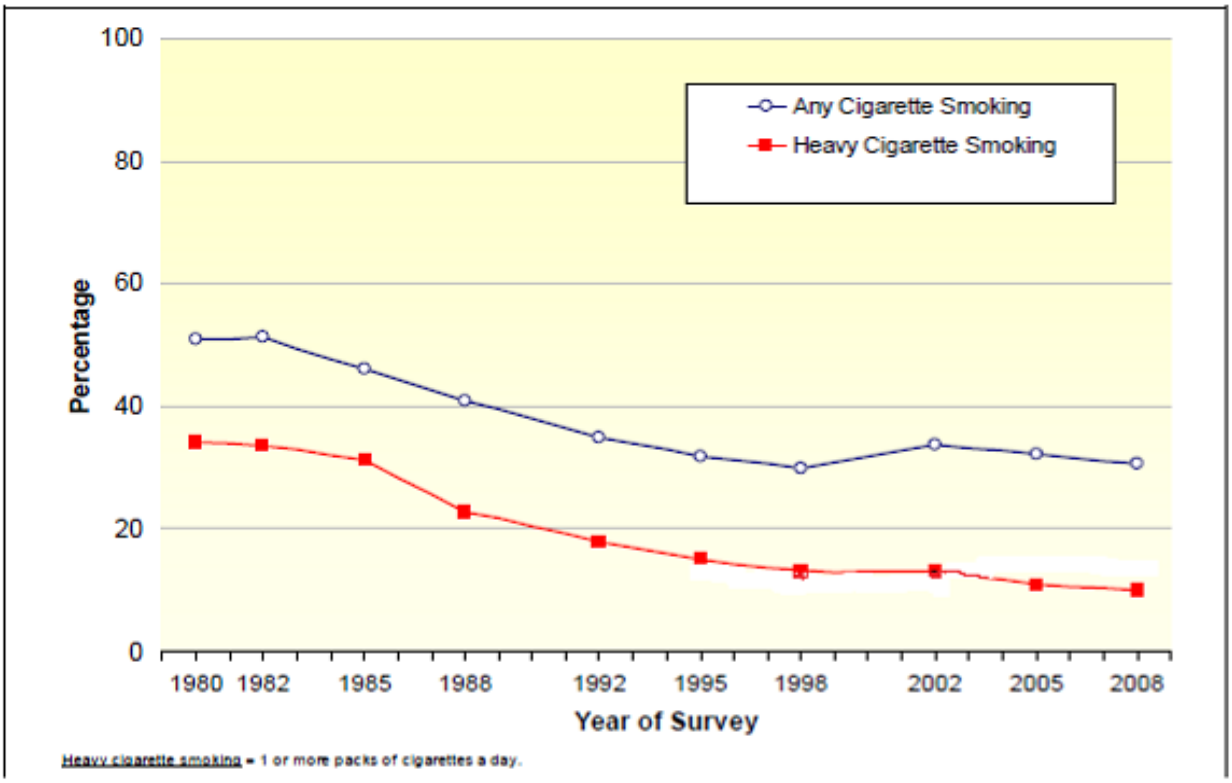
Smoking in the military continues to be a challenge for DoD and the VA as both seek ways to reduce the burden of long-term health care costs. This research confirms there is a direct association between smoking predictors and any smoking to include smoking initiation, increase in smoking, smoking relapse, and military deployment in active duty members. It also confirms military members encounter many stressors when deployed. These findings are consistent with

former research on cigarette smoking and stressors. These findings can apply to the development of smoking prevention or cessation programs to reduce long-term morbidity associated with smoking, thereby reducing overall health care costs.

Future research could include more specific deployment factors and stressors to examine that might influence cigarette smoking. Additionally, future research might examine whether soldiers participating in actual combat are more likely to initiate, re-initiate, or smoke more frequently than those deployed to the environment but have not participated in actual combat.

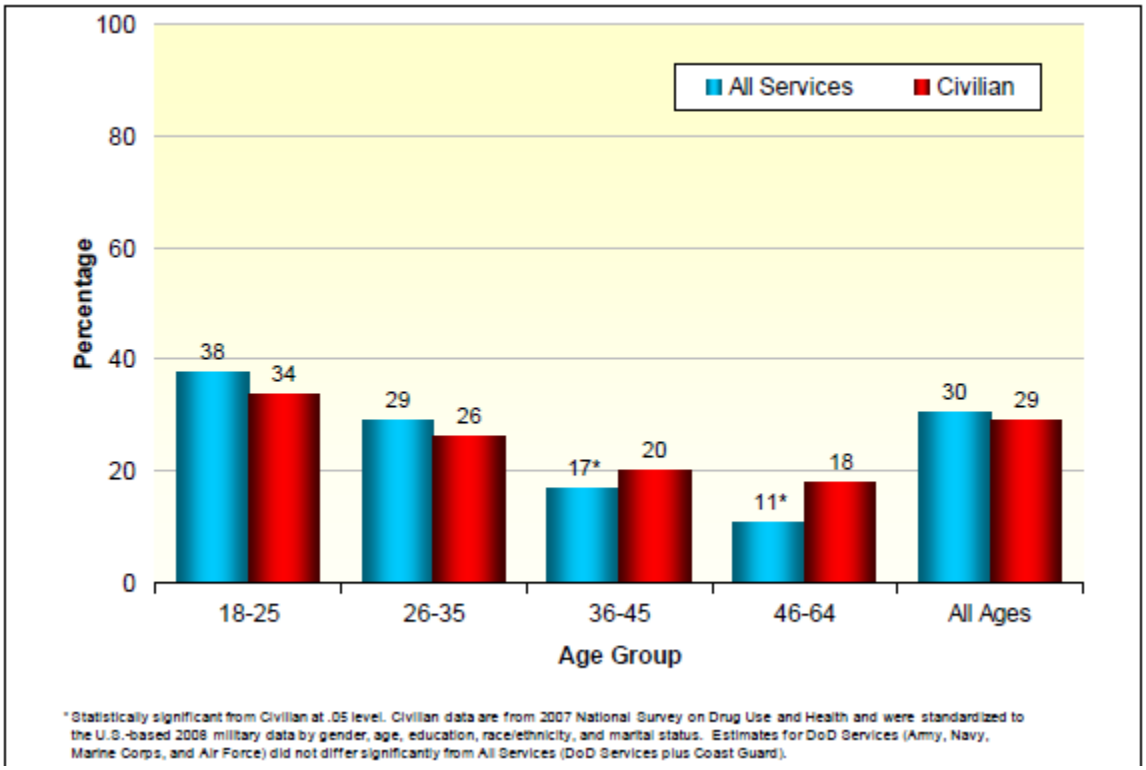
Appendix A

Figure 1. Tobacco Use and Trends for DoD Services, Past 30 days, 1980-2008



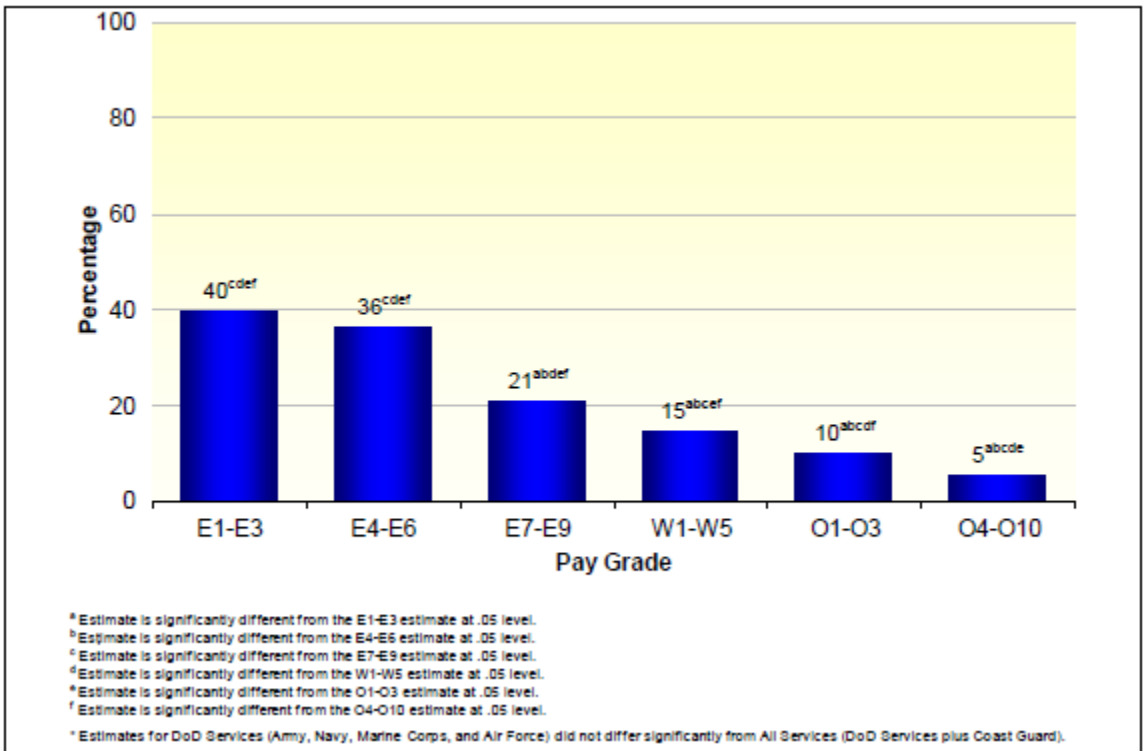
Adapted from DoD Health Behavior Survey 2008

Figure 2. Standardized Comparisons of Civilians and all Services, Past 30-Day Cigarette Use, by Age Group, 2008



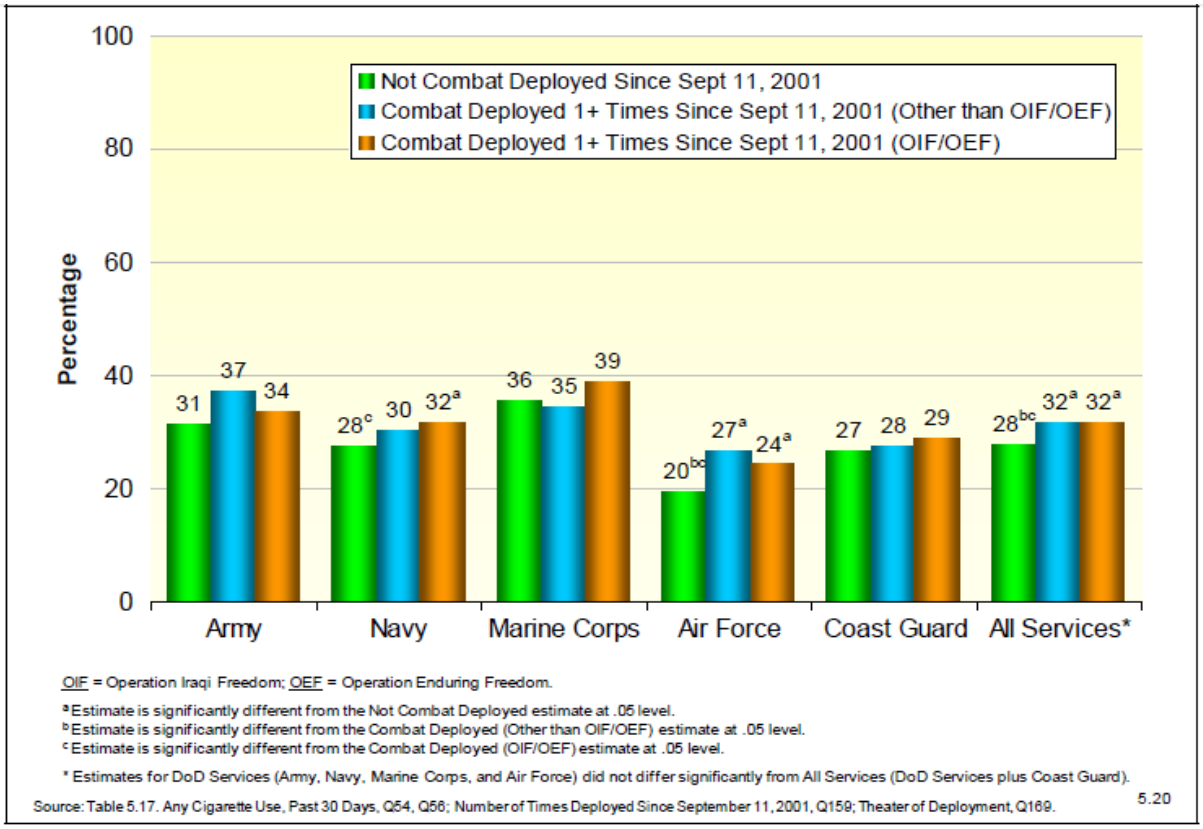
Reprinted from DoD Health Behavior Survey, 2008

Figure 3. Any Past 30-Day Cigarette Use by Pay Grade for All Services*, 2008



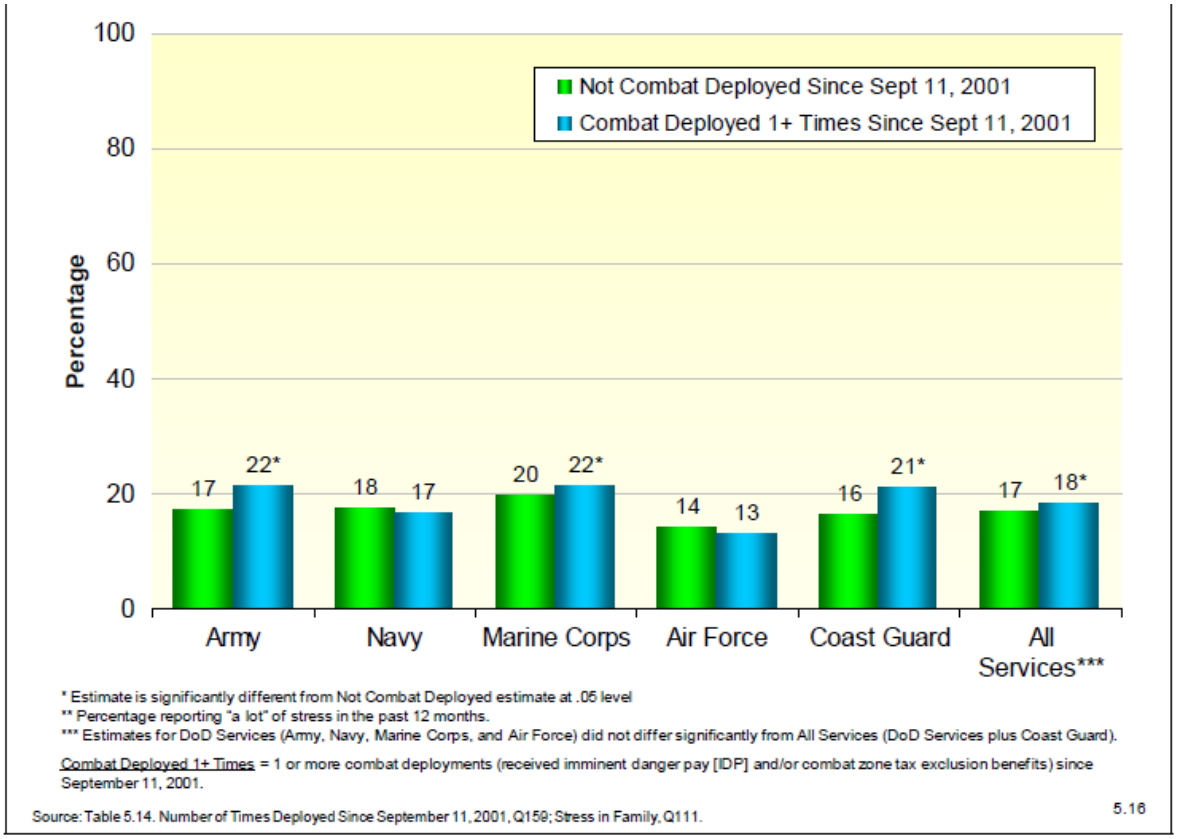
Reprinted from DoD Health Behavior Survey, 2008

Figure 4. Any Cigarette Use, Past 30 Days, by Combat Deployment Status, Theater, and Service, 2008



Reprinted from DoD, Health Related Behaviors Among Active Duty Military Personnel, 2008

Figure 5. High Stress in Family** by Combat Deployment Status and Service, 2008



* Estimate is significantly different from Not Combat Deployed estimate at .05 level
** Percentage reporting "a lot" of stress in the past 12 months.
*** Estimates for DoD Services (Army, Navy, Marine Corps, and Air Force) did not differ significantly from All Services (DoD Services plus Coast Guard).

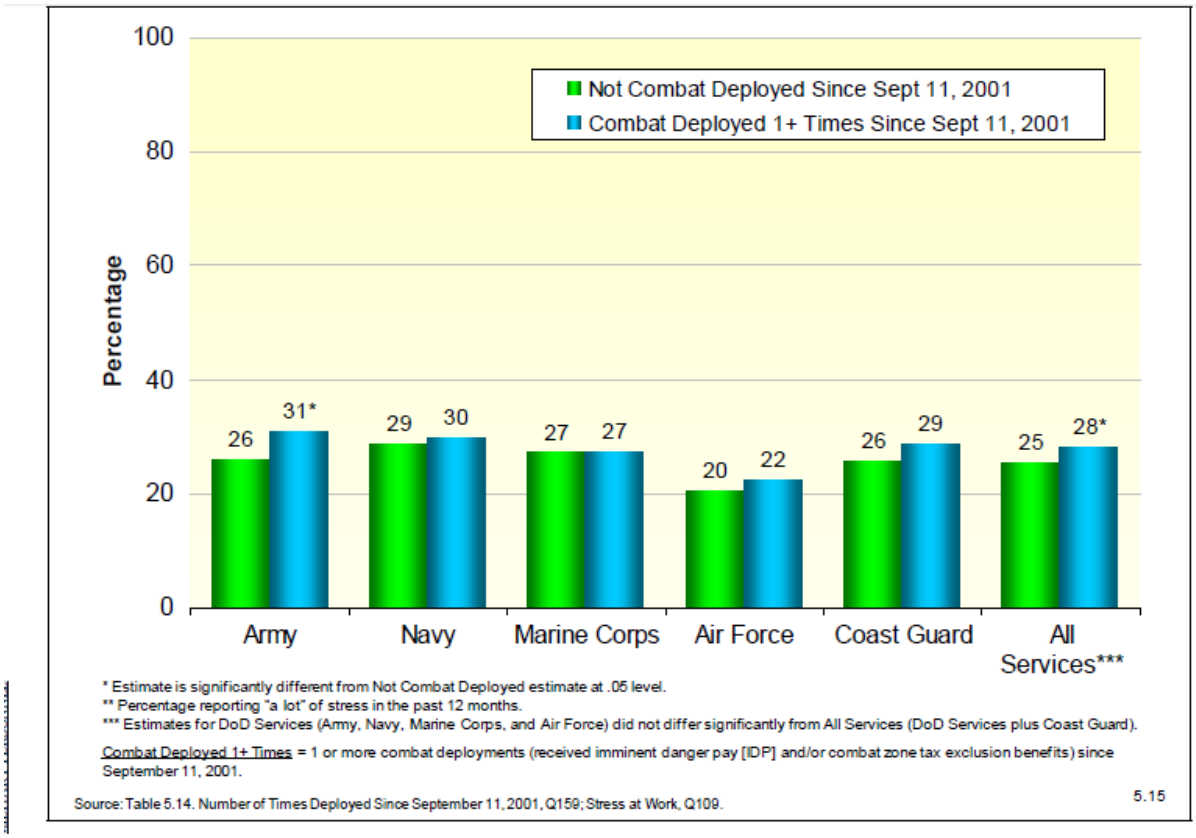
Combat Deployed 1+ Times = 1 or more combat deployments (received imminent danger pay [IDP] and/or combat zone tax exclusion benefits) since September 11, 2001.

Source: Table 5.14. Number of Times Deployed Since September 11, 2001, Q159; Stress in Family, Q111.

5.16

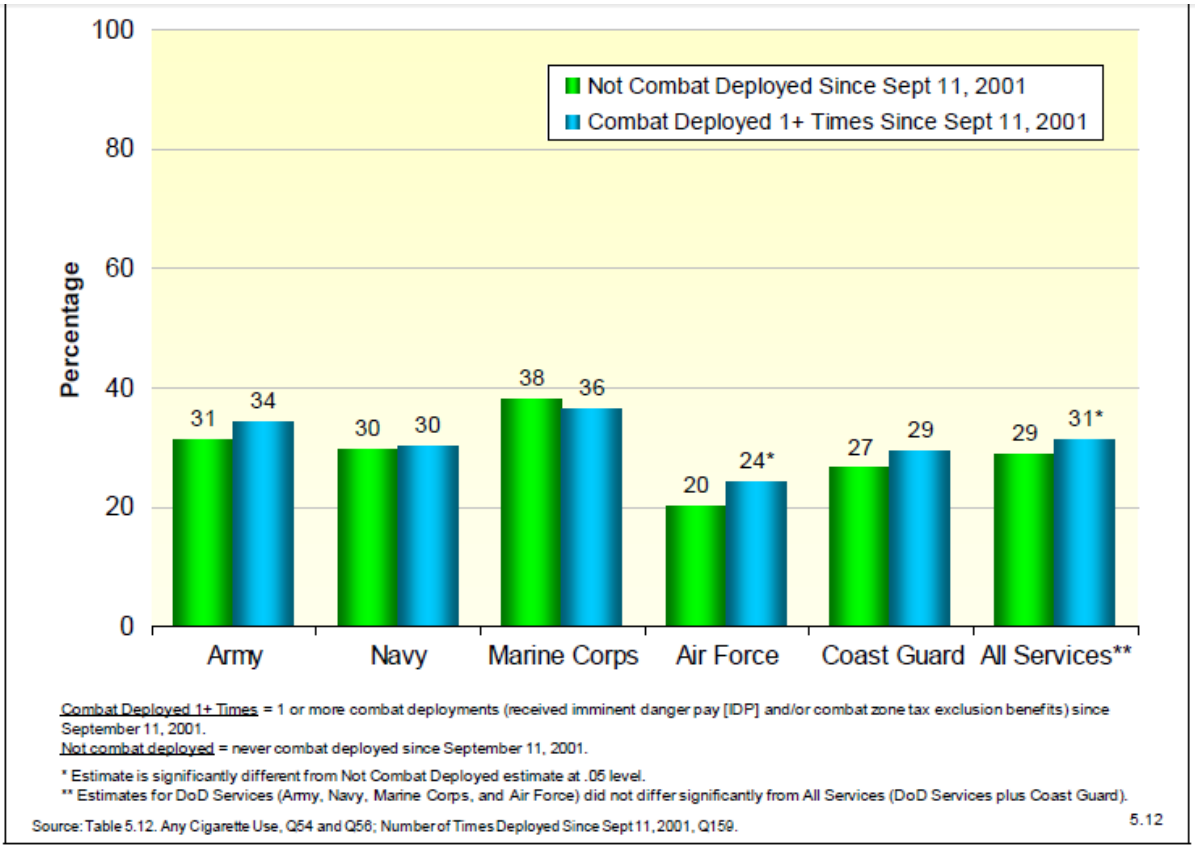
Reprinted from DoD, Health Related Behaviors Among Active Duty Military Personnel, 2008

Figure 6. High Stress at Work** by Combat Deployment Status and Service, 2008



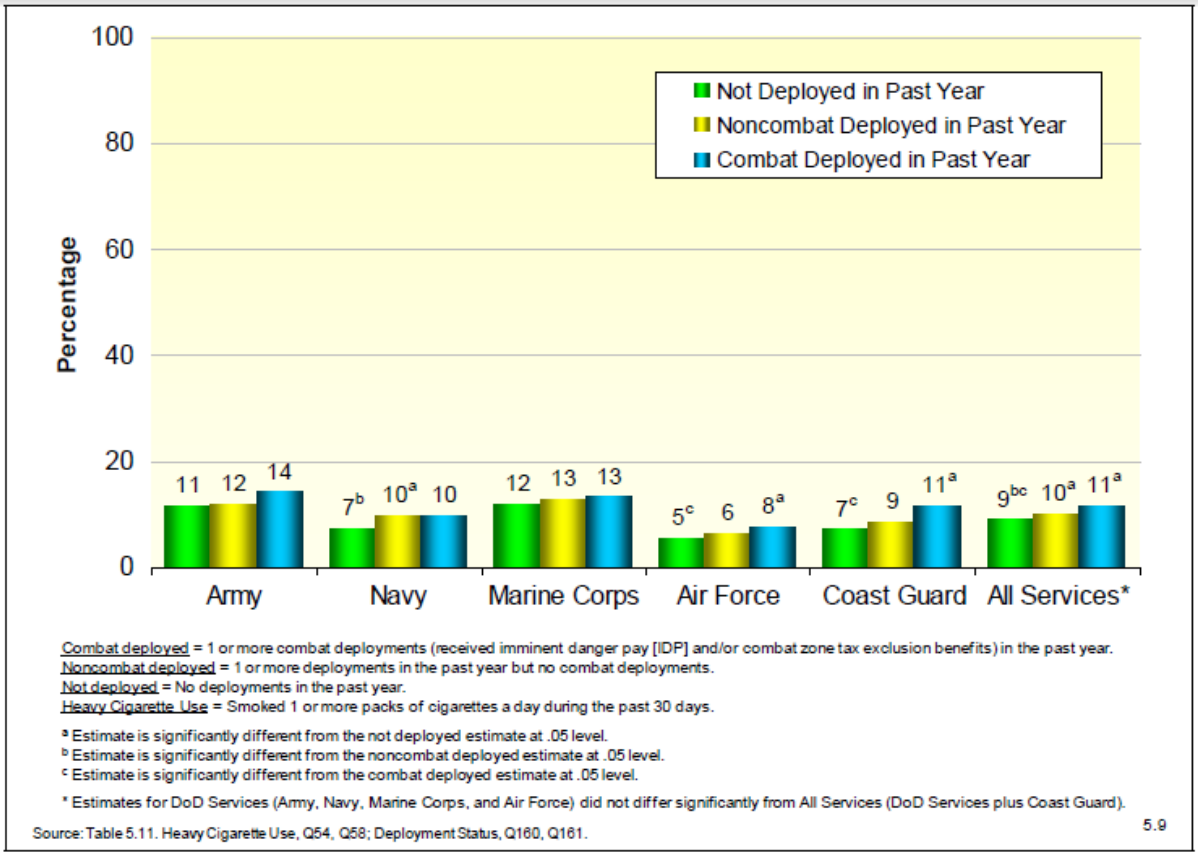
Reprinted from: DoD, Health Related Behaviors Among Active Duty Military Personnel, 2008

Figure 7. Cigarette Use by Combat Deployment Status and Service, 2008



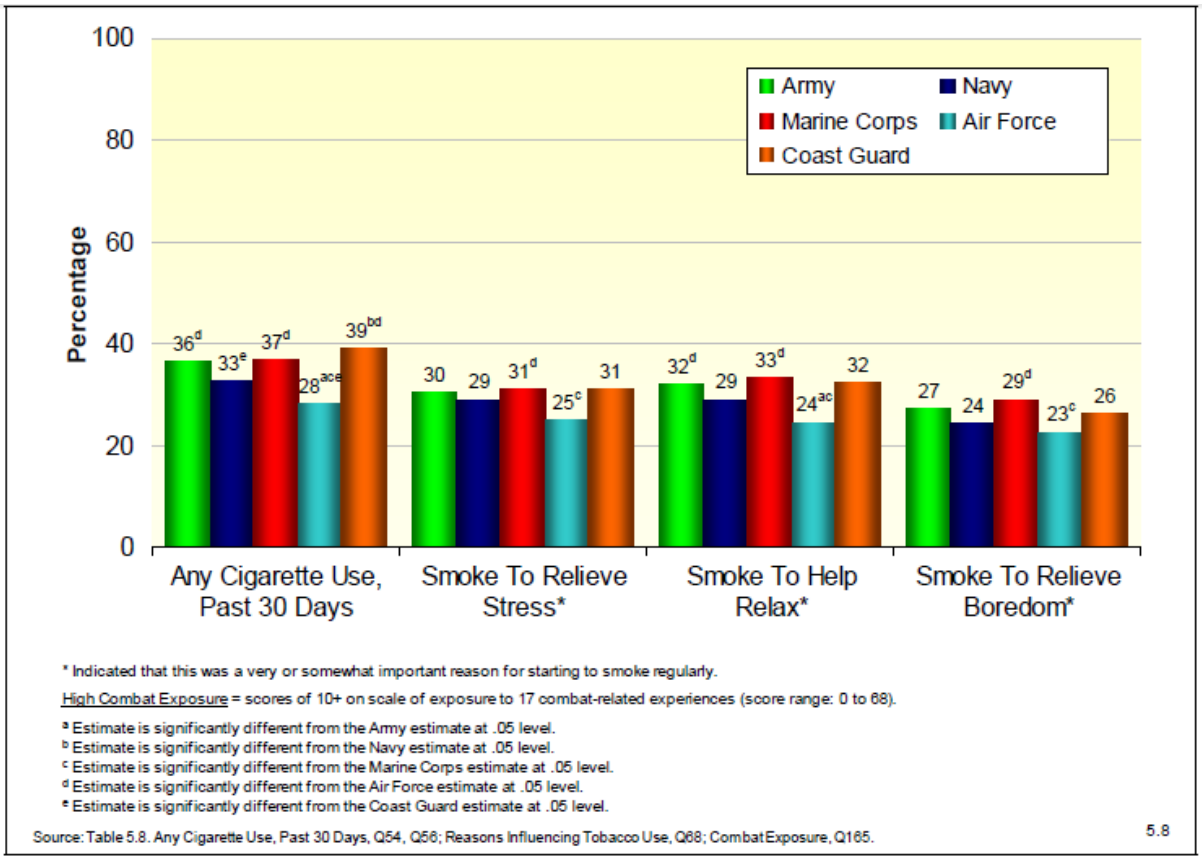
Reprinted from DoD, Health Related Behaviors Among Active Duty Military Personnel, 2008

Figure 8. Heavy Cigarette Use, Past 30 Days, by Past Year Deployment Status and Service, 2008



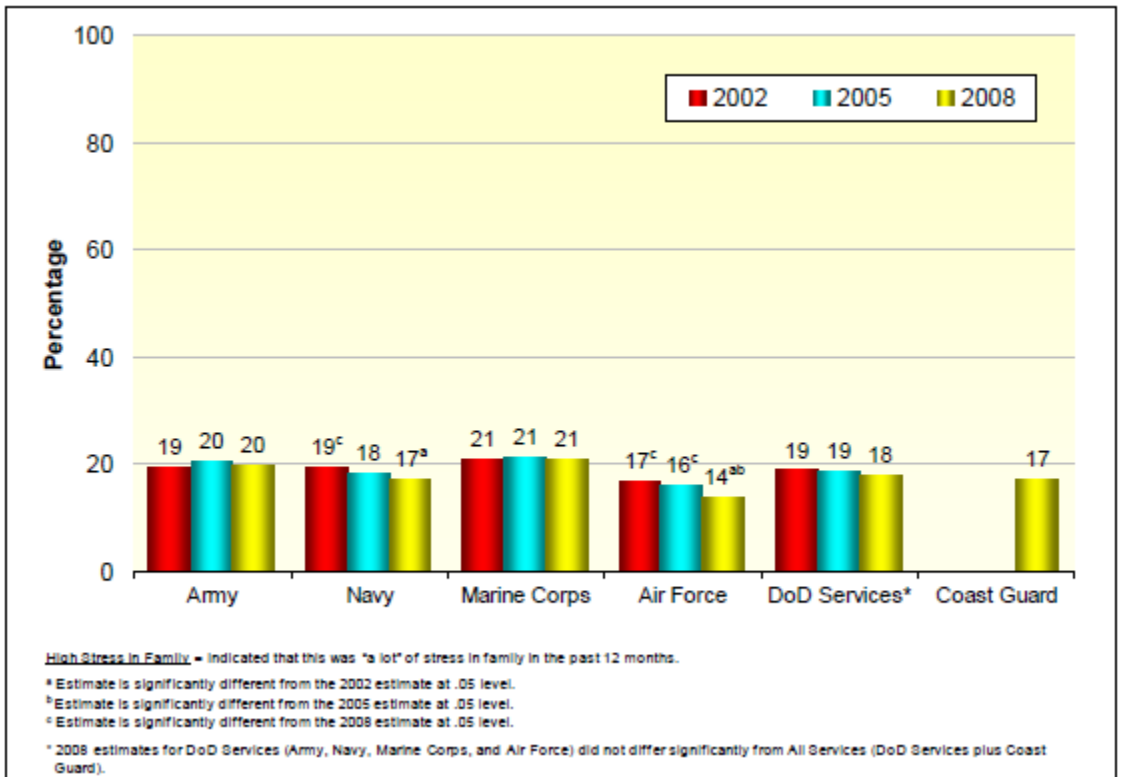
Reprinted from DoD, Health Related Behaviors Among Active Duty Military Personnel, 2008

Figure 9. Any Cigarette Use and Reasons for Starting to Smoke Among Those with High Combat Exposure by Service, 2008



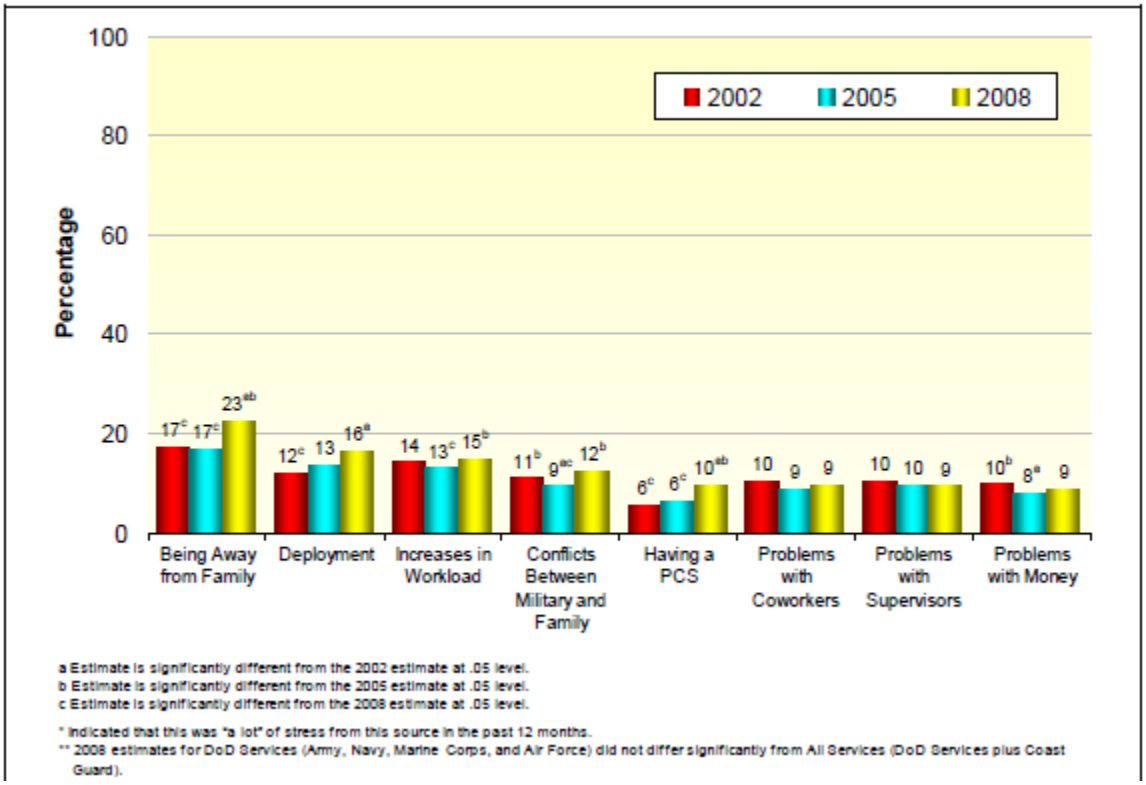
Reprinted from DoD, Health Related Behaviors Among Active Duty Military Personnel, 2008

Figure 10. Trends in High Stress in Family, by Service, 2002, 2005, and 2008



Reprinted from DoD Health Related Behaviors Survey, 2008

Figure 11. Trends in Sources of Stress



Reprinted from DoD Health Related Behaviors Survey, 2008

Figure 12. Sources of Stress in the Past Year of Service

Source of Stress	Army (%)	Navy (%)	Marine Corps (%)	Air Force (%)	Coast Guard (%)	All Services ** (%)
Being away from family	25.5[de]	26.2[de]	21.5[de]	14.5[abc]	16.2[abc]	22.3
Deployment	17.4[d]	22.2[cde]	15.4[bd]	9.6[abc]	11.0[b]	16.2
Increases in work load	13.9[b]	17.6[acde]	13.6[b]	14.4[b]	13.4[b]	14.8
Conflicts between military & family	14.1[de]	13.4[de]	13.2[de]	7.4[abce]	10.0[abcd]	12.1
Having a PCS	10.0	9.9	9.5	8.2[e]	11.0[d]	9.5
Problems with coworker	10.2[de]	10.6[de]	9.4[d]	7.0[abc]	7.8[ab]	9.4
Problems with supervisor	9.8[de]	10.9[de]	9.5[de]	6.2[abc]	7.3[abc]	9.1
Problems with money	9.9[de]	9.0[d]	11.1[de]	4.7[abce]	7.1[acd]	8.5

* Indicated that this was "a lot" of stress from this source in the past 12 months.
** Estimates for DoD Services (Army, Navy, Marine Corps, and Air Force) did not differ significantly from All Services (DoD Services plus Coast Guard).

[a] Estimate is significantly different from the Army estimate at .05 level.
[b] Estimate is significantly different from the Navy estimate at .05 level.
[c] Estimate is significantly different from the Marine Corps estimate at .05 level.
[d] Estimate is significantly different from the Air Force estimate at .05 level.
[e] Estimate is significantly different from the Coast Guard estimate at .05 level.

Reprinted from DoD Health Related Behaviors Survey, 2008

Bibliography

Acierno RA, Kilpatrick DG, Resnick HA, Saunders BE, Best CI, Violent assault, posttraumatic stress disorder, and depression. Risk factors for cigarette use among adult women. Behav Modif 1996; 20:363-84.

Air Force Medicine. Deployment and Operational Stressors.

American Lung Association. 2008. http://www.lungusa.org/stop-smoking/about-smoking/facts-figures/military-and-tobacco-use.html. (accessed 22 August 2011).

American Lung Association. Smoking. http://www.lungusa.org/stop-smoking/about-smoking/health-effects/smoking.html. (accessed 22 August 2011).

American Lung Association. Smoking and Older Adults. http://www.lungusa.org/stop-smoking/about-smoking/facts-figures/smoking-and-older-adults.html. (accessed 23 August 2011).

Bahrke, M.S., D.F. Poland, T.S. Baur, and D.F. Connors (1998). Tobacco Use and Performance on the US Army Physical Test. *Military Medicine*, 153, 229-235.

Beckham JC, Becker ME, Hamlett-Berry KQ, Drury PD, Kang HK, Wiley MT, Calhoun PS, Moore SD, Bright MA, McFall ME. Preliminary findings from a clinical demonstration project for veterans returning from Iraq or Afghanistan. *Military Medicine*. 2008 May; 173(5):448-451.

Besa Smith; Margaret A Ryan; Deborah L Wingard; Thomas L Patterson; Donald J Slymen; Caroline A Macera. (2007) Cigarette Smoking and Military Deployment: A Prospective Evaluation. Naval Health Research Center, San Diego, CA.

Biener, Lois, Anthony Biglan, Simon Chapman; Christine Cody, Crankshaw, Eric; Cruz, Tess; Davis, Kevin, et al Biener, Lois, et al. The Role of the Media in Promoting and Reducing Tobacco Use. Monograph. Bethesda: US Department of Health and Human Services, National Institutes of Health, 2008.

Blake, G.H. Smoking and the military. *New York State Journal of Medicine* (1985): 354-356.

Borrelli, Christina, Laura Nelson, Lorraine Babeu, and Kimberly Bellis, Post Deployment Stressors Among the US Active Duty Military Population: An Examination of Gender Differences. 6/21/2010. Altarum Institute. http://www.altarum.org/files/pub_resources/Post-

deployment_Stressors_Among_Active_Duty_Military_Population-FIN.pdf. (accessed 21 December 2011).

Bray, Robert M., J.A. Fairbank, ME Marsden. Stress and Substance Abuse Use Among Military Women and Men. American Journal Drug Alcohol Abuse. 1999:25-239-256.

Bray, Robert M., Laurel L. Hourani, Kristine L. Rae Olmsted, Michael Witt, Janice M. Brown, Michael R. Pemberton, Mary Ellen Marsden, Bernadette Marriott, Scott Scheffler, Russ Vandermaas-Peeler, BeLinda Weimer, Sara Calvin, Michael Bradshaw, Kelly Close, Douglas Hayden. (December 2006). 2005 Department of Defense Survey of Health Related Behaviors Among Active Duty Military Personnel. RTI International. http://handle.dtic.mil/100.2/ADA465678. (accessed 30 September 2011).

Bray, Robert M, Michael R. Pemberton, Laurel L Hourani, Michael Witt, Kristine L. Rae Olmsted, Janice M. Brown, BeLinda Weimer, Marian E. Lane, Mary Ellen Marsden, Scott Scheffler, russ Vandermass-Peeler, Kimberly R. Aspinwall, Erin Anderson, Kathryn Spagnola, Kelly, Jennifer L. Gratton, Sara Calvin, Michael Bradshaw. (September 2009). 2008 Department of Defense Survey of Health Related Behaviors Among Active Duty Military Personnel. RTI International. http://www.tricare.mil/2008HealthBehaviors.pdf. (accessed 20 September 2011).

Buller, D. B., R. Borland, W.G. Woodall, J.R. Hall, P. Burris-Woodall, J.H. Voeks, Understanding Factors that Influence Smoking Update. Tobacco Control 2003; 12 (Suppl IV):iv16-iv25. www.tobacocontrol.com. (accessed 20 December 2011).

Center for Disease Control (CDC) and Prevention. *Morbidity and Mortality Weekly Report* (MMWR) (September 9, 2011). Vital Signs: Current Cigarette Smoking Among Adults Aged >18 Years---United States, 2005--2010. http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6035a5.htm?s_cid=mm6035a5_w. (accessed 12 September 2011).

Centers for Disease Control and Prevention, Cigarette Smoking Among Adults—United States, 2000, *Morbidity and Mortality Weekly Report*, 51(29), 19 Jul 2002, pp. 642-645.

Centers for Disease Control and Prevention. Vital Signs: Current Cigarette Smoking Among Adults Aged ≥ 18 Years—United States, 2009. *Morbidity and Mortality Weekly Report* 2010;59(35):1135–40. (accessed 14 January 2011).

Center for Disease Control. Severe Acute Pneumonitis Among Deployed US Military Personnel: Southwest Asia--March - August 2003. Atlanta, 12 September 2003. http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5236a1.htm. (accessed 21 July 2011).

Center for Disease Control Health Disparities Fact Sheet, 2010. http://www.cdc.gov/tobacco/data_statistics/fact_sheets/fast_facts/. (accessed 30 September 2011).

Center for Disease Control, Vital Signs, September 2011. Adult Smoking in the US. http://www.cdc.gov/vitalsigns/AdultSmoking/index.html. (accessed 9 January 2011)

Centers for Disease Control and Prevention. Smoking-attributable mortality, years of potential life lost, and productivity losses—United States, 2000–2004. *Morbidity and Mortality Weekly Report* 2008;57(45):1226–1228.

Coleman, Penny. Flashback*: Posttraumatic Stress Disorder, Suicide and the Lessons of War*. Boston, MA: Beacon Press, 2006.

Combat and Operational Stress Reaction Identification. Introduction and Historical Perspective. https://rdl.train.army.mil/soldierPortal/atia/adlsc/view/public/9509-1/fm/6-22.5/chap1.htm.

Conway, Terry L., T.A. Cronan. Smoking and Physical Fitness among Navy Shipboard men. Military Medicine 1988;153(11):589-594.

Conway, Terry L. T.A. Cronan. Smoking, Exercise, and Physical Fitness. Naval Health Research Center. Bethesda MD. 2 May 91.

Conway, Terry L. and T.A. Cronan, (1992). Smoking, Exercise, and Physical Fitness. Preventive Medicine, 21, 723-734. Report No. 90-43. Naval Health Research Center. http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA234658. (accessed 19 December 2011).

Conway, Terry L. Tobacco Use and the United States Military: A Longstanding Problem. Tobacco Control (1998). 7:219-221. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1763877/pdf/v007p00219.pdf.

Daddis, Maj. Gregory A. Understanding Fear's Effect on Unit Effectiveness. *Military Review*. July-August 2004: 22-27.

Davis, R.M. Current trends in cigarette advertising and marketing. *New England Journal of Medicine* (1987): 725-732.

Deardorff, William W. "Spine-Health." 2 April 2008. Spine-Health. 17 January 2011 <http://www.spine-health.com/wellness/stop-smoking/why-it-so-hard-quit-smoking>.

Department of Defense. Anti-Tobacco Campaign Invades Military Markets. Washington, 20 March 2008.

Department of Defense (DoD). 2005 DoD Survey of Health Related Behaviors Among Active Duty Personnel. Washington D.C.: Department of Defense, 2006. (accessed 30 November 2011).

Department of Defense (DoD). Department of Defense Anti-Tobacco Campaign Invades Military Markets. TRICARE News Release. March 20, 2008; 8(23). (accessed 28 September 2011).

Fulco, Carolyn. Gulf War and Health: Physiologic, psychologic, and Psychosocial Effects of Deployment-Related Stress. Institute of Medicine. Washington, DC: The National Academies Press.

Gibbons, Holly A., Operation Cessation: Curbing Military and Veteran Tobacco Use, National Cancer Institute, February 9, 2010, Volume 7/Number 3. http://www.cancer.gov/aboutnci/ncicancerbulletin/archive/2010/020910/page9. (accessed 22 December 2011).

Grossman, Lt Col Dave. Psychological Effects of Combat: The Psychological Cost of Learning to Kill in War and Society. 1996. 1st ed. Little, Brown and Co.

Physiology of Close Combat. Killology Research Group. http://www.killology.com/art_psych_conclusion.htm (accessed 2 November 2011).

Gwande A, 2004. Casualties of war: military care care for the wounded from Iraq and Afghanistan. *New England Journal of Medicine* 351: 2471-2475.

Haddock, C. Keith, Klesges, Robert C., Talcott, Gerald W., Lando, Harry, Stein, Risa J., Smoking Prevalence and Risk Factors for Smoking in a Population of United States Air Force Basic Trainees, *Tobacco Control* 1998;**7**:232–235 http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1763864/pdf/v007p00232.pdf. (accessed 30 December 2011).

Hoffman KM, Haddock CK, Poston WS, Taylor JE, Lando HA, Shelton S. A formative examination of messages that discourage tobacco use among junior enlisted members of the United States military. Nicotine Tob Res 2008;10(4):653-61.

Hourani L., Yuan H, Bray RM, Vincus AA. Psychological correlates of nicotine dependence among men and women in the US Naval services. Addictive Behavior 1999;24:521-36.

Institute of Medicine. *Combating Tobacco Use in Military and Veteran Populations*. Washington, DC: The National Academies Press, 2009.

Jonas, Wayne, Patricia Deuster, Francis O'Connor, Christian Macedonia. Total Force Fitness for the 21st Century: A New Paradigm (August 2010). Supplement to Military Medicine, Volume 175, No. 8. *Military Medicine International Journal of AMSUS*.

Joseph, Anne M., M.E. Muggli, K.C. Pearson, H. Lando. "The Cigarette Manufacturers Efforts to Promote Tobacco to the US Military." *Military Medicine* (2005): 874-880.

Kelton, Molly L, Cynthia A. LeardMann, Beta Smith, Edward J. Boyko, Tomoko I. Hooper, Gary D. Gacksetter, Paul D. Bliese, Charles W. Hoge, Tyler C. Smith, The Millennium Cohort Study Team. Exploratory Factor Analysis of Self-reported Symptoms in a Large, Population-based Military Cohort. BioMed Central. Medical Research Methodology.

Klaassen compact disc, Casarett & Doull's Toxicology: The Basic Science of Poisons, McGraw-Hill, New York, NY, 2008.

Klesges, Robert C., C. Haddock, Chang Keith, F. Cyril, Wayne G. Talcott, Harry A. Lando, The Association of Smoking and the Cost of Military Training. Tobacco Control. Vol. 10, No. 1 (Mar., 2001), pp. 43-47. http://www.jstor.org/stable/20207866. (accessed 19 December 2011).

Lasser, MD Karen; Wesley Boyd, MD, PhD; Steffie Woolhandler, MD, MPD; David U. Himmelstein, MD; Danny McCormick, MD, MPH; and David Bor, MD. Smoking and Mental Illness: A Population-Based Prevalence Study. *The Journal of the American Medical Association.* 29 November 2000; 284(20): 2657-2658. http://jama.ama-assn.org/content/284/20/2606.full. (accessed 28 October 2011).

Little, Hilary J., Behavioral Mechanisms Underlying the Link Between Smoking and Drinking. *Alcohol Research and Health*. Vol. 24, No.4, 2000:215-224. http://pubs.niaaa.nih.gov/publications/arh24-4/215-224.pdf. (accessed 20 August 2011).

Macera, Ph.D. Caroline A.; Hilary J. Aralis, M.S.; Andrew J. MacGregor, Ph.D.; Michell J. Rauh, Ph.D., P.T., M.P.H.; Peggy P. Han, M.P.H., and Michael R. Galarneau, M.S. Cigarette Smoking, Body Mass Index, and Physical Fitness Changes Among Male Navy Personnel. *Oxford Journals*. Nicotine and Tobacco Research. 30 May 2011.

Mayeux, Richard, Gertrude H. Sergievsky, Kathryn Karusaitis Basham, Evelyn J. Bromet, Gregory L. Burke, Dennis S. Charney, Anne and Joel Ehrenkranz, Michael Davis, Robert W. Woodruff, Douglas A. Drossman, Dwight L. Evans, Ruth Meltzer, Vincent J. Felitti, Janice L. Krupnick, William B. Marlarkey, Bruce S. McEwen, Alfred E. Mirsky Harold and Margaret Milliken, Thomas G. Pickering, Jerrold F. Rosenbaum, B. Timothy Walsh, William and Joy Ruane , Gulf War and Health, Volume 6. *Physiologic, Psychologic, and Psychosocial Effects of Deployment-Reated Stress* (2008). Committee on Gulf War and Health. Board on Population and Public Health Practice. National Academies on Health. http://www.nap.edu/openbook.php?record_id=11922&page. (accessed 2 September 2011).

Miller, Matthew, Davis Hemenway, Nicole Bell, Michelle Yore, and Paul J. Amoroso. Cigarette Smoking and Suicide: A Prospective Study of 300,000 Male Active-duty Army Soldiers. *American Journal of Epidemiology*. Vol. 151, No. 11, 2000. http://aje.oxfordjournals.org/content/151/11/1060.full.pdf. (accessed 10 October 2011).

National Cancer Institute. US National Institute of Health. Tobacco Control Monograph Series. Public Health Issues in Smoking and Tobacco Use Control. August 2008. Monograph 19. The Role of the Media in Promotions and Reducing Tobacco Use.

National Cancer Institute. "National Cancer Institute Fact Sheet." n.d. *National Cancer Institute*. 15 January 2012 <http://www.cancer.gov/cancertopics/factsheet/Tobacco/cessation> (accessed 22 August 2011).

RAND Centre for Military Health Policy Research (2008). *Invisible Wounds of War* (http://www.rand.org). (accessed 20 August 2011).

National Institutes of Health. National Institute on Drug Abuse. Tobacco Addiction (Nicotine). http://www.drugabuse.gov/drugs-abuse/tobacco-addiction-nicotine

Sanders John W., Shannon D. Putnam, Carla Frankart, Robert W. Frenck, Marshall R. Monteville, Mark S. Riddle, David M. Rockabrand, Trueman W. Sharp, and David R. Tribble, *Impact of Illness and Non-Combat Injury during Operations Iraqi Freedom and Enduring Freedom (Afghanistan).* US Naval Medical Research Unit No. 3, Cairo, Egypt; US Naval Medical Research No. 2, Jakarta, Indonesia; US Naval Medical Research Center, Silver Spring, Maryland. *The American Journal of Tropical Medicine and Hygiene*, 2005. 73(4), pp. 713–719

Schroeder, Maj. Erich W. The Association between Mental Health and Cigarette Smoking in Active Duty Military Members. February 2011. Air Force Research Laboratory. AFRL-SA-BR-SR-2011-0001. http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA536536. (accessed 10 August 2011).

Smith DR, Devine S, Leggat PA, Ishitake T. Alcohol and Tobacco Consumption Among Police Officers. *Kurume Medicine Journal*. 2005;52:63-5.

Smith, Elizabeth A., Virginia S. Blackman, and Ruth E. Malone, Death at a Discount: How the Tobacco Industry Thwarted Tobacco Control Policies in US Military Commissaries. *Tobacco Control* (2007): 38-46. www.tobaccocontrol.com. http://www.jstor.org/pss/20748101. (accessed 19 December 2011).

Smith B, Ryan MA, DL Wingard, TL Patterson, DJ Slymen, CA Macera. Cigarette Smoking and Military Deployment: A Prospective Evaluation. Am J Prev Med 2008;35(6):539-46.

Smith, Elizabeth and Ruth E. Malone. Tobacco Promotion to Military Personnel: "The Plums Are Here to Be Plucked". *Military Medicine* (2009): 797-806.

Stokes, James W., Harry Greer, and Paul S. Hammer, Combat Stress Control and Force Protection. Military Preventive Medicine: Mobilization and Deployment, Volume 1. Pgs. 301-315.

Street, Amu E.; Vogt, Dawne; and Dutra, Lissa. A New Generation of Women Veterans: Stressors faced by Women Deployed to Iraq and Afghanistan. *Clinical Psychology*

Review, 29 (2009) pgs. 685-694. http://www.mendeley.com/research/a-new-generation-of-women-veterans-stressors-faced-by-women-deployed-to-iraq-and-afghanistan/#page-1. (accessed 30 December 2011).

Trust for America's Health, "Blueprint for a Healthier America," October 2008. http://healthyamericans.org/report/55/blueprint-for-healthier-america. (accessed 10 September 2011).

US Department of Health and Human Services. Health Consequences of Smoking: A Report of the Surgeon General, 2004. Atlanta: US Department of Health and Human Services, Centers for Disease Control and Prevention, 2004.

Wells, T.S., C.A. LeardMann, S.O. Fortuna, B. Smith, T.C. Smith, M.A.K. Ryan, E.J Boyko, and D. Blazer, A Prospective Study of Depression Following Combat Deployment in Support of the Wars in Iraq and Afghanistan. *American Journal of Public Health*. Vol. 100. No. 1 January 2010. Naval Health Research Center. Report No. 08-05. http://ajph.aphapublications.org/doi/full/10.2105/AJPH.2008.155432. (accessed 30 August 2011).

Williams, Cpt. Larry. The Impact of Tobacco Use on our Deployed Forces. DoD Alcohol and Tobacco Advisory Council. Powerpoint Slides. http://www.google.com/#sclient=psy-ab&hl=en&rlz=1R2TSNA_enUS370&source=hp&q=do+soldiers+smoke+to+deal+with+combat+stress&rlz=1R2TSNA_enUS370&pbx=1&oq=do+soldiers+smoke+to+deal+with+combat+stress&aq=f&aqi=&aql=&gs_sm=e&gs_upl=69870l84974l0l85266l89l48l6l8l8l5l467l7260l9.24.9.1.1l61l0&bav=on.2,or.r_gc.r_pw.,cf.osb&fp=39d4c75cd492ccc4&biw=682&bih=392

Woodruff, Susan L., Terry L. Conway Audrey M. Shillington, John D. Clapp, Hector Lemus, Dr.P.H., and Mark B. Reed. Cigarette Smoking and Subsequent Hospitilization in a Cohort of Young US Navy Female Recruits. Nicotine and Tobacco. 12 Jan 2010.

Zadoo, V., S. Fengler, and M. Catterson, The Effects of Alcohol and Tobacco Use on Troop Readiness, Department of General Surgery, Tripler Army Medical Center, Honolulu, HI, 1993 Jul; 158(7): 480-4. http://www.ncbi.nlm.nih.gov/pubmed/8351051. (accessed 22 December 2011).

Notes

[1] US Department of Health and Human Services. Health Consequences of Smoking: A Report of the Surgeon General, 2004. Atlanta: US Department of Health and Human Services, Centers for Disease Control and Prevention, 2004.

[2] Klesges, Robert C., C. Haddock, Chang Keith, F. Cyril, Wayne G. Talcott, Harry A. Lando, The Association of Smoking and the Cost of Military Training. Tobacco Control. Vol. 10, No. 1 (Mar., 2001), pp. 43-47, (Accessed: 19 December 2011). http://www.jstor.org/stable/20207866.

[3] Institute of Medicine. *Combating Tobacco Use in Military and Veteran Populations*. Washington, DC: The National Academies Press, 2009.

[4] Conway, Terry L. Tobacco Use and the United States Military: A Longstanding Problem. Tobacco Control (1998). 7:219-221. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1763877/pdf/v007p00219.pdf.

[5] Department of Defense (DoD). 2005 DoD Survey of Health Related Behaviors Among Active Duty Personnel. Washington D.C.: Department of Defense, 2006. Accessed November 30, 2011.

[6] Beckham JC, Becker ME, Hamlett-Berry KQ, Drury PD, Kang HK, Wiley MT, Calhoun PS, Moore SD, Bright MA, McFall ME. Preliminary findings from a clinical demonstration project for veterans returning from Iraq or Afghanistan. Military Medicine. 2008 May; 173(5):448-451.

[7] Acierno RA, Kilpatrick DG, Resnick HA, Saunders BE, Best CI, Violent assault, posttraumatic stress disorder, and depression. Risk factors for cigarette use among adult women. Behav Modif 1996;20:363-84.

[8] Smith DR, Devine S, Leggat PA, Ishitake T. Alcohol and Tobacco Consumption Among Police Officers. *Kurume Medicine Journal*. 2005;52:63-5.

[9] Hourani L., Yuan H, Bray RM, Vincus AA. Psychological correlates of nicotine dependence among men and women in the US Naval services. Addictive Behavior 1999;24:521-36.

[10] Smith B, Ryan MA, DL Wingard, TL Patterson, DJ Slymen, CA Macera. Cigarette smoking and military deployment: a prospective evaluation. Am J Prev Med 2008;35(6):539-46

[11] Institute of Medicine. *Combating Tobacco Use in Military and Veteran Populations*. Washington, DC: The National Academies Press, 2009.

[12] American Lung Association. Smoking. http://www.lungusa.org/stop-smoking/about-smoking/health-effects/smoking.html.

[13] Centers for Disease Control and Prevention, Cigarette Smoking Among Adults—United States, 2000, *Morbidity and Mortality Weekly Report*, 51(29), 19 Jul 2002, pp. 642-645.

[14] Center for Disease Control Health Disparities Fact Sheet, 2010. http://www.cdc.gov/tobacco/data_statistics/fact_sheets/fast_facts/. (accessed 30 September 2011).

[15] Department of Defense (DoD). Department of Defense Anti-Tobacco Campaign Invades Military Markets. TRICARE News Release. March 20, 2008; 8(23). (Accessed: September 28, 2011).

[16] Institute of Medicine. Combating Tobacco Use in Military and Veteran Populations. Washington, DC: The National Academies Press, 2009.

[17] Institute of Medicine. Combating Tobacco Use in Military and Veteran Populations. Washington, DC: The National Academies Press, 2009.

[18] Trust for America's Health, "Blueprint for a Healthier America," October 2008. (Accessed: 10 Sep 2011) http://healthyamericans.org/report/55/blueprint-for-healthier-america.

[19] Institute of Medicine. Combating Tobacco Use in Military and Veteran Populations. Washington, DC: The National Academies Press, 2009

[20] Centers for Disease Control and Prevention. Smoking-attributable mortality, years of potential life lost, and productivity losses—United States, 2000–2004. *Morbidity and Mortality Weekly Report* 2008;57(45):1226–1228.

[21]Center for Disease Control Health Disparities Fact Sheet, 2010.

[22] Centers for Disease Control and Prevention. Vital Signs: Current Cigarette Smoking Among Adults Aged ≥ 18 Years—United States, 2009. *Morbidity and Mortality Weekly Report* 2010;59(35):1135–40 [accessed 2011 Jan 14].

[23] Center for Disease Control Health Disparities Fact Sheet, 2010.

[24] Klaassen compact disc, Casarett & Doull's Toxicology: The Basic Science of Poisons, McGraw-Hill, New York, NY, 2008

[25] Centers for Disease Control and Prevention, Cigarette Smoking Among Adults—United States, 2000, *Morbidity and Mortality Weekly Report*, 51(29), 19 Jul 2002, pp. 642-645.

[26] Little, Hilary J., Behavioral Mechanisms Underlying the Link Between Smoking and Drinking. *Alcohol Research and Health*. Vol. 24, No.4, 2000:215-224. http://pubs.niaaa.nih.gov/publications/arh24-4/215-224.pdf

[27] Centers for Disease Control and Prevention. Vital Signs: Current Cigarette Smoking Among Adults Aged ≥ 18 Years—United States, 2009. *Morbidity and Mortality Weekly Report* 2010;59(35):1135–40 [accessed 2011 Jan 14].

[28] Centers for Disease Control and Prevention. Vital Signs: Current Cigarette Smoking Among Adults Aged ≥ 18 Years—United States, 2009. *Morbidity and Mortality Weekly Report* 2010;59(35):1135–40 [accessed 2011 Jan 14].

[29] Bray, Robert M, Michael R. Pemberton, Laurel L Hourani, et al. 2008 Department of Defense Survey of Health Related Behaviors Among Active Duty Military Personnel. (September 2009). RTI International. http://www.tricare.mil/2008HealthBehaviors.pdf. (accessed 20 September 2011).

[30] American Lung Association. Smoking and Older Adults. http://www.lungusa.org/stop-smoking/about-smoking/facts-figures/smoking-and-older-adults.html

[31] Center for Disease Control Health Disparities Fact Sheet, 2010.

[32] Joseph, Anne M., M.E. Muggli, K.C. Pearson, H. Lando. "The Cigarette Manufacturers Efforts to Promote Tobacco to the US Military." *Military Medicine* (2005): 874-880.

[33] Blake, G.H. Smoking and the military. *New York State Journal of Medicine* (1985): 354-356.

[34] Biener, Lois, Anthony Biglan, Simon Chapman; Christine Cody, Crankshaw, Eric; Cruz, Tess; Davis, Kevin, et al Biener, Lois, et al. The Role of the Media in Promoting and Reducing Tobacco Use. Monograph. Bethesda: US Department of Health and Human Services, National Institutes of Health, 2008.

[35] Joseph, Anne M., et al. "The Cigarette Manufacturers Efforts to Promote Tobacco to the US Military." *Military Medicine* (2005): 874-880.

[36] National Cancer Institute. US National Institute of Health. Tobacco Control Monograph Series. Public Health Issues in Smoking and Tobacco Use Control. August 2008. Monograph 19. The Role of the Media in Promotions and Reducing Tobacco Use.

[37] Smith, Elizabeth and Ruth E. Malone. Tobacco Promotion to Military Personnel: "The Plums Are Here to Be Plucked". *Military Medicine* (2009): 797-806.

[38] Smith, Elizabeth A., Virginia S. Blackman, and Ruth E. Malone, Death at a Discount: How the Tobacco Industry Thwarted Tobacco Control Policies in US Military Commissaries. *Tobacco Control* (2007): 38-46. www.tobaccocontrol.com. http://www.jstor.org/pss/20748101. (accessed 19 December 2011).

[39] Davis, R.M. Current trends in cigarette advertising and marketing. *New England Journal of Medicine* (1987): 725-732.

[40] Smith, Elizabeth A., Virginia S. Blackman, and Ruth E. Malone, Death at a Discount: How the Tobacco Industry Thwarted Tobacco Control Policies in US Military Commissaries. *Tobacco*

Control (2007): 38-46. www.tobaccocontrol.com. http://www.jstor.org/pss/20748101. (accessed 19 December 2011).

[41] Department of Defense (DoD). 2005 DoD Survey of Health Related Behaviors Among Active Duty Personnel. Washington D.C.: Department of Defense, 2006. (accessed November 30, 2011).

[42] Bray, R.M, Hourani, L., Olmsted, K. L. R., Witte, M., Brown, J.M., Pemberton, M.R., et al. (2006). 2005 Department of Defense survey of health related behaviors among active duty military personnel. http://handle.dtic.mil/100.2/ADA465678. (accessed 30 September 2011).

[43] Institute of Medicine. Combating Tobacco Use in Military and Veteran Populations. Washington, DC: The National Academies Press, 2009.

[44] US Department of Health and Human Services. Health Consequences of Smoking: A Report of the Surgeon General, 2004. Atlanta: US Department of Health and Human Services, Centers for Disease Control and Prevention, 2004.

[45] National Cancer Institute. "National Cancer Institute Fact Sheet." n.d. *National Cancer Institute*. 15 January 2012 <http://www.cancer.gov/cancertopics/factsheet/Tobacco/cessation>.

[46] Center for Disease Control. Severe Acute Pneumonitis Among Deployed US Military Personnel: Southwest Asia--March - August 2003. Atlanta, 12 September 2003. http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5236a1.htm

[47] Department of Defense (DoD). Department of Defense Anti-Tobacco Campaign Invades Military Markets. TRICARE News Release. March 20, 2008; 8(23). (accessed 28 September 2011).

[48]Institute of Medicine. Combating Tobacco Use in Military and Veteran Populations. Washington, DC: The National Academies Press, 2009.

[49] US Department of Health and Human Services. Health Consequences of Smoking: A Report of the Surgeon General, 2004. Atlanta: US Department of Health and Human Services, Centers for Disease Control and Prevention, 2004.

[50] Bray, R.M, Hourani, L., Olmsted, K. L. R., Witte, M., Brown, J.M., Pemberton, M.R., et al. (2006). 2005 Department of Defense survey of health related behaviors among active duty military personnel. http://handle.dtic.mil/100.2/ADA465678. (accessed 30 September 2011).

[51] Hoffman KM, Haddock CK, Poston WS, Taylor JE, Lando HA, Shelton S. A formative examination of messages that discourage tobacco use among junior enlisted members of the United States military. Nicotine Tob Res 2008;10(4):653-61.

[52] Besa Smith; Margaret A Ryan; Deborah L Wingard; Thomas L Patterson; Donald J Slymen; Caroline A Macera. (2007) Cigarette Smoking and Military Deployment: A Prospective Evaluation. Naval Health Research Center, San Diego, CA.

[53] Deardorff, William W. "Spine-Health." 2 April 2008. Spine-Health. 17 January 2011 <http://www.spine-health.com/wellness/stop-smoking/why-it-so-hard-quit-smoking>.

[54] Fulco, Carolyn. Gulf War and Health: Physiologic, psychologic, and Psychosocial Effects of Deployment-Related Stress. Institute of Medicine. Washington, DC: The National Academies Press.

[55] Fulco, Carolyn. Gulf War and Health: Physiologic, psychologic, and Psychosocial Effects of Deployment-Related Stress. Institute of Medicine. Washington, DC: The National Academies Press.

[56] Kelton, Molly L, Cynthia A. LeardMann, Beta Smith, Edward J. Boyko, Tomoko I. Hooper, Gary D. Gacksetter, Paul D. Bliese, Charles W. Hoge, Tyler C. Smith, The Millennium Cohort Study Team. Exploratory Factor Analysis of Self-reported Symptoms in a Large, Population-based Military Cohort. BioMed Central. Medical Research Methodology.

[57] Institute of Medicine. Combating Tobacco Use in Military and Veteran Populations. Washington, DC: The National Academies Press, 2009.

[58] Jonas, Wayne, Patricia Deuster, Francis O'Connor, Christian Macedonia. Total Force Fitness for the 21st Century: A New Paradigm (August 2010). Supplement to Military Medicine, Volume 175, No. 8. *Military Medicine International Journal of AMSUS*.

[59] Jonas, Wayne, Patricia Deuster, Francis O'Connor, Christian Macedonia. Total Force Fitness for the 21st Century: A New Paradigm (August 2010). Supplement to Military Medicine, Volume 175, No. 8. *Military Medicine International Journal of AMSUS*.

[60] Coleman, Penny. Flashback*: Posttraumatic Stress Disorder, Suicide and the Lessons of War*. Boston, MA: Beacon Press, 2006.

[61] Castro, C., & Adler, A. (1999). OPTEMPO: Effects on soldier and unit readiness. *Parameters, 29*,86–95.

[62] Bell, D. B., Bartone, J., Bartone, P. T., Schumm,W. R.,&Gade, P. A. (1997). *USAREUR family support during Operation Joint Endeavor: Summary report* (ARI Special Rep. No. 34). Alexandria,VA: US Army Research Institute for the Behavioral and Social Sciences. (DTIC No. AD-A339 016)

[63] Bartone, P. T. (2001, June). *Psychosocial stressors in future military operations.* Paper presented at the Cantigny Conference Series on Future of Armed Conflict, Wheaton, IL.

[64] Castro, C., & Adler, A. (1999). OPTEMPO: Effects on soldier and unit readiness. *Parameters, 29,*86–95.

[65] Grossman, Lt Col Dave. "Psychological Effects of Combat" The Physiology of Close Combat. Killology Research Group. http://www.killology.com/art_psych_conclusion.htm

[66] Combat and Operational Stress Reaction Identification. *Introduction and Historical Perspective*. https://rdl.train.army.mil/soldierPortal/atia/adlsc/view/public/9509-1/fm/6-22.5/chap1.htm

[67] Grossman, Lt Col Dave. *Psychological Effects of Combat: The Psychological Cost of Learning to Kill in War and Society*. 1st ed. 1995.

[68] Grossman, Lt Col Dave. Psychological Effects of Combat: The Psychological Cost of Learning to Kill in War and Society. 1st ed. 1995.

[69] Daddis, Maj. Gregory A. Understanding Fear's Effect on Unit Effectiveness. *Military Review*. July-August 2004: 22-27.

[70] Daddis, Maj. Gregory A. Understanding Fear's Effect on Unit Effectiveness. *Military Review*. July-August 2004: 22-27.

[71] Daddis, Maj. Gregory A. Understanding Fear's Effect on Unit Effectiveness. *Military Review*. July-August 2004: 22-27.

[72] Bahrke, M.S., D.F. Poland, T.S. Baur, and D.F. Connors (1998). Tobacco Use and Performance on the US Army Physical Test. *Military Medicine*, 153, 229-235.

[73] Conway, Terry L., T.A. Smoking and Physical Fitness among Navy Shipboard men. Military Medicine 1988;153(11):589-594.

[74] Conway, Terry L. T.A. Cronan. Smoking, Exercise, and Physical Fitness. Naval Health Research Center. Bethesda MD. 2 May 91.

[75] Acierno RA, Kilpatrick DG, Resnick HA, Saunders BE, Best CI, Violent assault, posttraumatic stress disorder, and depression. Risk factors for cigarette use among adult women. Behav Modif 1996;20:363-84.

[76] Bray, Robert M., J.A. Fairbank, ME Marsden. Stress and Substance Abuse Use Among Military Women and Men. American Journal Drug Alcohol Abuse. 1999:25-239-256.

[77] Smith B, Ryan MA, DL Wingard, TL Patterson, DJ Slymen, CA Macera. Cigarette Smoking and Military Deployment: A Prospective Evaluation. Am J Prev Med 2008;35(6):539-46.

[78] Sanders John W., Shannon D. Putnam, Carla Frankart, Robert W. Frenck, Marshall R. Monteville, Mark S. Riddle, David M. Rockabrand, Trueman W. Sharp, and David R. Tribble, *Impact of Illness and Non-Combat Injury during Operations Iraqi Freedom and Enduring Freedom (Afghanistan).* US Naval Medical Research Unit No. 3, Cairo, Egypt; US Naval Medical Research No. 2, Jakarta, Indonesia; US Naval Medical Research Center, Silver Spring, Maryland. *The American Journal of Tropical Medicine and Hygiene*, 2005. 73(4), pp. 713–719

[79] Bray, Robert M, Michael R. Pemberton, Laurel L Hourani, Michael Witt, Kristine L. Rae Olmsted, Janice M. Brown, BeLinda Weimer, Marian E. Lane, Mary Ellen Marsden, Scott Scheffler, russ Vandermass-Peeler, Kimberly R. Aspinwall, Erin Anderson, Kathryn Spagnola, Kelly Close, Jennifer L. Gratton, Sara Calvin, Michael Bradshaw. (September 2009). 2008 Department of Defense Survey of Health Related Behaviors Among Active Duty Military Personnel. RTI International. http://www.tricare.mil/2008HealthBehaviors.pdf. (accessed 28 December 2011).

[80] Department of Defense (DoD). 2005 DoD Survey of Health Related Behaviors Among Active Duty Personnel. Washington D.C.: Department of Defense, 2006. (accessed November 30, 2011).

[81] Miller, Matthew, Davis Hemenway, Nicole Bell, Michelle Yore, and Paul J. Amoroso. Cigarette Smoking and Suicide: A Prospective Study of 300,000 Male Active-duty Army Soldiers. *American Journal of Epidemiology*. Vol. 151, No. 11, 2000. http://aje.oxfordjournals.org/content/151/11/1060.full.pdf (accessed 10 October 2011).

[82] Wells, T.S., C.A. LeardMann, S.O. Fortuna, B. Smith, T.C. Smith, M.A.K. Ryan, E.J Boyko, and D. Blazer, A Prospective Study of Depression Following Combat Deployment in Support of the Wars in Iraq and Afghanistan. *American Journal of Public Health*. Vol. 100. No. 1 January 2010. Naval Health Research Center. Report No. 08-05. http://ajph.aphapublications.org/doi/full/10.2105/AJPH.2008.155432. (accessed 30 August 2011).

[83] Smith B, Ryan MA, DL Wingard, TL Patterson, DJ Slymen, CA Macera. Cigarette Smoking and Military Deployment: A Prospective Evaluation. Am J Prev Med 2008;35(6):539-46.

[84] Schroeder, Maj. Erich W. The Association between Mental Health and Cigarette Smoking in Active Duty Military Members. February 2011. Air Force Research Laboratory. AFRL-SA-BR-SR-2011-0001. http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA536536. (accessed 10 August 2011).

[85] Bray, Robert M, Michael R. Pemberton, Laurel L Hourani, et al. 2008 Department of Defense Survey of Health Related Behaviors Among Active Duty Military Personnel. (September 2009). RTI International. http://www.tricare.mil/2008HealthBehaviors.pdf. (accessed 20 September 2011).