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# Suicide in The United States Military and Other Nations' Militaries: A Comparison

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# Suicide in The United States Military and Other Nations' Militaries: A Comparison

## **Abstract**

The completion of suicide is permanent and tragic with long term repercussions affecting everyone who knew the victim. Suicidal ideations and behaviors can occur across all genders, ages, ethnicities, and nationalities. A recent increase in the suicide rates of active duty United States military personnel has raised alarm. A comprehensive review of the literature published between 1990 to present was conducted and a comparison of the United States military and other nations' militaries was done in three main areas: suicide rates, risk and resiliency factors, and suicide prevention protocols. An evaluation of these three areas across militaries has provided a multicultural discussion on the topic of suicide and prevention among military populations. Future research implications are also discussed.

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Running Head: COMPARISON OF SUICIDE ACROSS MILITARIES

SUICIDE IN THE UNITED STATES MILITARY AND OTHER NATIONS'  
MILITARIES: A COMPARISON

A THESIS

SUBMITTED TO THE FACULTY

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APPROVED:

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# COMPARISON OF SUICIDE ACROSS MILITARIES

## ABSTRACT

The completion of suicide is permanent and tragic with long term repercussions affecting everyone who knew the victim. Suicidal ideations and behaviors can occur across all genders, ages, ethnicities, and nationalities. A recent increase in the suicide rates of active duty United States military personnel has raised alarm. A comprehensive review of the literature published between 1990 to present was conducted and a comparison of the United States military and other nations' militaries was done in three main areas: suicide rates, risk and resiliency factors, and suicide prevention protocols. An evaluation of these three areas across militaries has provided a multicultural discussion on the topic of suicide and prevention among military populations. Future research implications are also discussed.

Key words: military suicide, armed forces suicide, military suicide rates, military suicide risk factors, military suicide resiliency factors, military suicide prevention, and suicide treatment.

# COMPARISON OF SUICIDE ACROSS MILITARIES

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### Suicide in the United States Military and Other Nations' Militaries: A Comparison

For the first time in the history of the United States, Army suicide rates have surpassed those of the civilian population (Claassen & Knox, 2010). At the initiation of Operation Enduring Freedom (OEF) in 2001 and Operation Iraqi Freedom (OIF) in 2003, the suicide rates in the United States Army averaged around 12 deaths per 100,000 (ARMY HP/RR/SP Report, 2010). This number has risen to 22 deaths per 100,000 in the United States Army in 2008, and 24 per 100,000 in the United States Marine Corps. In contrast, the civilian population yielded suicide rates of 18 per 100,000 deaths recorded in 2008 (Zoroya, 2011).

This alarming increase in military suicide has drawn the attention of the United States Army and the National Institute of Mental Health (NIMH). These organizations have begun a study titled: Army Study to Assess Risk and Resilience in Service members (Army STARRS, 2011). The study will evaluate risk factors that affect soldiers' mental health, specifically in the areas of self harm and suicide, and will span over five years with results reported consistently to provide suicide prevention methods both to the military and civilian populations.

Until the 1980's, suicide related deaths in the United States military were not recorded. Little empirical research on this topic had been conducted until records were kept, with even less exploration into the suicide deaths of military members in other countries. An investigation into other nations' militaries and their current experience with suicide will be conducted to evaluate overlaps and potential prevention measures used in other militaries.

This literature review will examine the existing research comparing the United States military with other national militaries across three main areas: suicide rates, risk and resiliency factors, and prevention protocols. This paper will evaluate the current knowledge and strategy of the US military in suicide prevention and explore ways in which other national military members

may have developed prevention programs or fostered resilience factors that could be applied to the United States military population.

### **Procedure and Outline**

This literature review will cover book chapters, books, empirical articles, and articles found in the media (e.g. online newspapers, presentations, government reports) primarily from 1990 to present. The empirical articles utilized were found on PsychInfo and PubMed databases using the keywords “military suicide,” “armed forces suicide,” “military suicide rates,” “suicide risk factors,” “suicide resiliency factors,” “suicide prevention,” and “suicide treatment.” In addition, popular media articles were found using the search engine Google using the same keywords stated previously. The focus of this literature review will be on active duty military personnel. However, since this increase in military suicides is a recent phenomenon there will be some overlap with literature that has been conducted on the increase in suicides among the veteran population in comparison to the civilian population. In order to focus the scope of this literature review, studies conducted prior to 1990 will not be included.

A review of all of the countries that participated in OIF and OEF were collected consisting of 56 countries (Gerleman, Stevens, & Hildreth, 2001). To be considered a good comparison to the United States military, other nation’s militaries had to meet the following criteria: they must have served in either one or both of the OIF and OEF conflicts, have predominant western cultural ideals and values, and have a fully established military. This resulted in a list of 32 countries that meet the previously stated criteria. A search of each country was conducted in PsychInfo, PubMed, and Google for empirical research or articles published in the popular media. This created a final list of 16 countries that had published literature on suicide in the military or armed forces. These countries are Australia, Belgium, Canada,

Denmark, Estonia, France, Hungary, Ireland, Italy, Montenegro, Norway, Poland, Russia, Turkey, Ukraine, and the United Kingdom.

This literature review will be divided into three sections discussing suicide rates, risk and resiliency factors, and prevention protocols for the US military and available comparable militaries of other countries listed above. Following the review will be a discussion section in which themes and major issues will be highlighted based on the literature presented. In addition, directions for clinical application and for future research will be presented.

### **Suicide Rates**

#### **United States Military**

The United States Military was formed in 1775, consisting of the Army, Navy, and Marine Corps at the time of the American Revolution (Department of Defense, n.d.). As the United States grew as a nation, all of the military branches were unified under one department originally called the National Military Establishment formed in 1947. This organization later went on to include the Coast Guard, U.S. Air Force, National Guard and Reserved forces, and today is known as the Department of Defense (DoD). With over 2.5 million men and women in both active duty and as members of the reserves the DoD is the nation's largest employer (Department of Defense, n.d.).

This national organization has faced many challenges and obstacles in the past two hundred years, from world wars, involvement in conflicts with other nations, and terrorism. However, the most recent threat is not observed in the eyes of the United States enemies but lies within the organization itself, the risk of suicide in the military. In 2009, 160 active duty soldiers committed suicide, making it the third leading cause of death in the United States Army (ARMY HP/RR/SP Report, 2010).

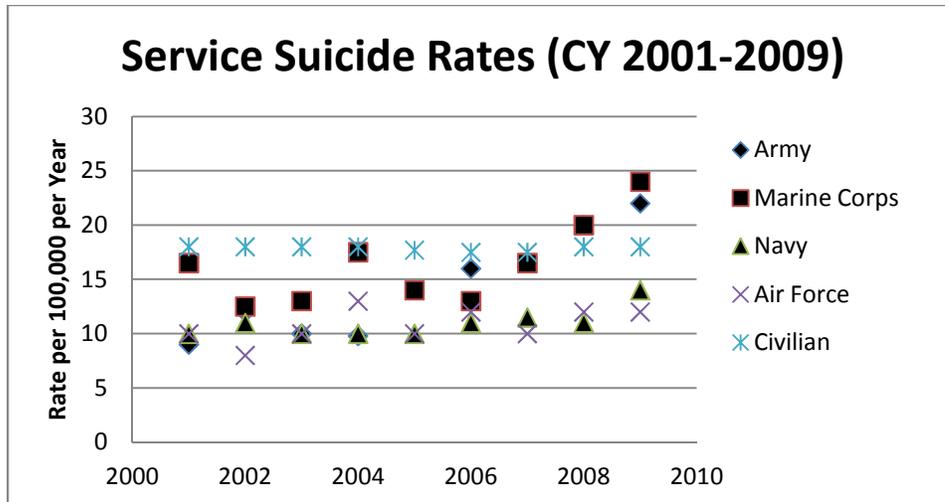


Figure 1. United States Military suicide rates over the past nine years (CY 2001-2009). Shows significant increase in Army and Marines over the past five years. (Armed Forces Medical Examiner System, March, 2010).

The above Figure 1 shows suicide rates over the past nine years for four branches of the military (Army, Marine Corps, Navy, and Air Force) with age and gender adjusted for purposes of comparison with the civilian population (Armed Forces Medical Examiner System, March, 2010). Studies have consistently shown that the Marine Corps has had higher suicide rates, 13.65 per 100,000 in comparison to other branches of the military between 1980 and 1992, with individuals between the ages of 17 to 24 accounting for 48% of this rate (Sentell, Lacroix, Sentell & Finstuen, 1997). In addition, recent longitudinal research has shown that male and female veterans are at increased risk of committing suicide in comparison to the general population (Kaplan, Huguét, McFarland, & Newsom, 2007).

A study conducted by Eaton, Messer, Garvey Wilson, and Hoge (2006) compared suicide rates across the United States military and the United States civilian populations over an 11 year period. The overall goal of this study was to generate exact estimates of suicide rates in the military population in comparison to the U.S. civilian population while controlling for alternate variables such as demographics and military rank. Calculating the suicide rates with these variables in mind, the authors hoped to reduce random error and to find a significant difference

in the suicide rates between the military population and the civilian population. The authors found that the direct adjustment method titled the Poisson-based method provided the most accurate rates for comparing the military and civilian populations. At the time of this study in 2006, the civilian suicide rate was 12.31 per 100,000 and the pre adjusted total military suicide rate was 11.82 (for more information on the statistical adjustments used in this study please see Eaton et al., 2006). The statistical adjustment of the military suicide rate decreased the total rate to 9.61 per 100,000, thus purposing that the increase in military suicide may not be as large as reported by the general media. The authors noted that over the 11 years of data collected for this study, suicide rates amongst the military fluctuated 30-40% and fluctuations between 20-40% were found when comparing the military suicide rate to the U.S. civilian suicide rate. This fluctuation was also due to the variance over time and the completion of suicides being reported were relatively rare resulting in low numbers. Due to such variability in suicide rates it may prove difficult for individuals to conclude that any observed changes in suicide rates are directly due to prevention protocols. In addition the researchers state that a more cohesive way of analyzing and calculating suicide rates across the military and U.S. civilian population should be reviewed (Eaton et al., 2006).

Variability in suicide rates amongst the military population can also be captured based on the regional location in which the soldiers reside in the United States. Data collected from the National Violent Death Reporting System (comprised of 16 states; Alaska, Colorado, Georgia, Kentucky, Maryland, Massachusetts, New Jersey, New Mexico, North Carolina, Oklahoma, Oregon, Rhode Island, South Carolina, Utah, Virginia, Wisconsin) reported that male veterans ages 18-29 had a suicide rate of 44.99 per 100,000 in 2005 compared with 20.36 per 100,000 for general population males in that age group (NVDRS, n.d.). Current data has shown that states

across the Midwest such as Missouri and Wisconsin were reported as having the top rates of military or veteran suicide, with military personnel representing 24% of suicides committed (Zoroya, 2011).

### **Other Nations' Militaries**

Since the autumn of 2001, thousands of international military personnel have been deployed to Iraq and Afghanistan. When OIF started in March 2003, around 300,000 soldiers were deployed with 255,000 from the United States, 45,000 from the United Kingdom, 2,000 from Australian, 200 from Poland, and an additional 52 countries representing the remainder (Fact Sheet: Iraqi War, 2005). The official OIF conflict resolved in May of 2003, and some countries removed their troops at that point, while others remained to aid the United States in peace keeping missions. The OEF conflict, which started in 2001, is still continuing today but with most international troops withdrawing in 2006 (Fact Sheet: Iraqi War, 2005). As of April 2011, all other countries have withdrawn their troops except for the United States. Casualties of this conflict are highest among U.S military personal, reporting at around 4,400, with the United Kingdom second with 179, and over 200 casualties representative of the remaining countries (White, 2011).

The stress and potential negative consequences associated with military service in the US is well documented and similar deleterious effects have started to rise in other countries. For example, Canada has seen an increase in the number of soldiers receiving disability pensions from just 2,137 in 2002 to 11,888 in 2009 (Elliot, 2009). In addition, Canada like the United States has seen an increase in their military's suicide rate with 16.1 per 100,000 individuals committing suicide in 2003 and that number almost tripling to 41.4 per 100,000 individuals committing suicide in 2007 (Hildebrandt, 2008). Other countries such as Hungary documented

an increase of 21.05% in the average military suicide rate in comparison to the civilian population between 2002 and 2004. This, however, has decreased by 8.22% between 2004 and 2007 due to the abolition of obligatory army service and the installation of a prevention program titled Mentalhygienic Service (Kalmar, 2009). The Turkish military has also seen an increase in suicide rates among their armed forces, with 408 suicides being reported over the past 5 years (Milliyet, 2011).

A study conducted by Fear and Williamson (2003) reviewed and compared suicide rates among males in the United Kingdom armed forces, males in the United Kingdom civilian population and the United States military. The authors found that the United Kingdom civilian population (20 per 100,000) was higher than the United Kingdom armed forces population (9.4 per 100,000). When comparing the United Kingdom armed forces to the United States military (13.8 per 100,000) four more individuals per 100,000 died by suicide in the United States military than in the United Kingdom armed forces. While the authors recognized that this difference did exist they did not propose a hypothesis or theories as to why this increase occurred within the United States military and stated instead that a further analysis should be conducted (Fear & Williamson, 2003).

In contrast to the United States military, recent studies conducted in the United Kingdom (9.4 per 100,000), Australia (12 per 100,000), Ukraine (16.7 per 100,000) France (18.2 per 100,000) have reported that the suicide rate in their armed forces has not surpassed the suicide rate of the civilian populations of those countries (Belik, Stein, Asmundson & Sareen, 2010; Desjeux, Labarere, Galois-Guibal, & Ecochard, 2004; Fear et al., 2008; Hadfield & Sheffield, 2007; Rozanov, Mokhovikov, & Stiliha, 2002). As stated previously, a search of 16 countries involved in OIF or OEF were reviewed for military suicide rates. The remaining countries

reviewed, Belgium, Denmark, Estonia, Hungary, Ireland, Italy, Montenegro, Norway, Poland, Russia, Turkey, and Ukraine have not reported their armed forces suicide rates but have conducted other research on the topic that will be included in later sections.

### **Comparison of Suicide Rates**

The United States currently has the fourth highest suicide rate in comparison to other nations' militaries, with Ukraine, Canada and Turkey having the highest. The United States has seen increases in suicide rates among both military and civilian populations from 2006 to 2008, with a reported civilian rate of 12.31 per 100,000 in 2006, rising to 18 per 100,000 in 2008, and a reported military rate of 11.82 per 100,000 in 2006 rising to 22 per 100,000 in 2008 (Eaton et al., 2006; Zoroya, 2011). In studies reviewing suicide rates, the authors generally choose to focus their discussion on the statistical implication of the differences in the suicide rates, rather than hypothesize about reasons why the increases and continued discrepancy may have occurred (Eaton et al., 2006). These limited explanations or, in some cases, no explanation as to why differences in suicide rates occurred was consistent across studies. When directly compared to the United Kingdom armed forces the United States military has on average a consistent rate of 4.8 more suicide deaths per year than the United Kingdom armed forces (Fear & Williamson, 2003). No theories were presented as to why this had occurred; the authors stated that a more in-depth analysis would need to be conducted to ensure that this rate difference was "real" as opposed to a procedural error (Fear & Williamson, 2003).

There was difficulty in collecting suicide rates of other nations' militaries due to some countries reporting deaths per year while others reporting rates based on 100,000 of the population. These inconsistencies made it difficult to accurately compare rates across different nations. When differences did occur researchers were reluctant to offer theories or hypothesize

as to why suicide rates in militaries differ across nations. Even within the United States there are discrepancies as to the most effective way to calculate the military suicide rate, producing a number that is representative of the sample with the least amount of error. The high suicide rate among military personnel in the United States was surprising to researchers due to the guarantee of full-time employment, access to general health care, and the implementation of suicide prevention programs over the last decade (Eaton et al., 2006). Even with these protective factors, suicide continued to be the third leading cause of death among active United States military personnel (Eaton et al., 2006). By reviewing the literature in areas of risk and resiliency factors both within the United States and across other nations' militaries one might be able to develop hypotheses as to why large variability occurs among suicide rates. The next section will aim at addressing this issue reviewing demographic factors, mental health problems and traumatic brain injuries, and combat experience/exposure that may affect suicide rates.

### **Risk and Resiliency Factors**

#### **United States Military**

Currently around two-thirds of suicides are completed while in a military environment (e.g., military base) and tend to be carried out by the use of a firearm (Allen, Cross, & Swanner, 2005). The remaining one-third of suicides are completed by hanging or jumping and tend to be carried out outside of the military environment. Individuals who engage in suicidal behaviors, distinguished from suicide attempt, often engage in self cutting or poisoning. The first six months after enlisting into the military often yield the highest risk of suicide, and around 40.7% of all attempted suicides occur within the first month of military service or deployment (Allen, Cross, & Swanner, 2005). The following section discusses risk and resiliency factors for suicidal behavior among the United States Military personnel.

**Demographics.**

Due to the recent increase in suicide among the military population, the DoD has developed a surveillance tool entitled the “Department of Defense Suicide Event Report” (DoDSER) that has been used to gather both risk and protective factors on individuals who engage in suicidal ideation, behaviors, and self-harm events. One of the areas the DoDSER reviews is demographic variables (gender, age, marital status, religious preference, children, place of residence, ethnicity, etc.) and whether or not this has an effect on an individual’s level of risk for suicide attempts (ARMY HP/RR/SP Report, 2010). Currently DoDSER reports that a “typical” suicide victim in the army would be a Caucasian male, in his early 20’s, married, currently enlisted as active duty, with a history of one or more deployments (Allen, Cross, & Swanner, 2005). Around 80% of Army suicides completed between 2005 and 2009 occurred in the United States and 62% were carried out using a fire arm (Allen, Cross, & Swanner, 2005). However, there are some limitations of the DoDSER reports such as exclusion of data collected on soldiers who are not on active duty, such as reservists and National Guard members (ARMY HP/RR/SP Report, 2010).

Recent research developed by McFarland, Kaplan, and Huguet (2010) stated that females who serve in the military are also at an increased risk for suicide. The researchers reviewed data of 5,948 female suicides across 16 states between 2004 and 2007. Individuals were between the ages of 18 to 34, with 56 suicides among 418,132 female veterans and 1,461 suicides among 33,257,362 non veterans. This resulted in a suicide rate of one out of every 7,465 female veterans compared to one out of every 22,763 female civilians. This places female veterans at a rate of being almost three times more likely to commit suicide in comparison to the female civilian population. However, as the authors pointed out, there were many limitations of this

study. The data were gathered historically on veteran participants and the researchers were limited by the lack of available, potentially pertinent data, such as reason for discharge, participation in active duty, history of military sexual trauma, and any general information on possible confounding variables (McFarland, Kaplan, & Huguet, 2010).

A study conducted by Kaplan, Huguet, McFarland, and Newsom (2007) researched suicides among male veterans. Using the National Health Interview Survey over 320,000 males were reviewed between the years of 1986-1994, with around one third of the total participants sampled being veterans. The authors found that male veterans were at an increased risk of committing suicide than non veterans. However, one resiliency factor was found among the veteran population, in that individuals who were overweight had a decreased risk of committing suicide. As an individual's body mass index (BMI) increased their chance of committing suicide decreased. This finding is consistent with recent research indicating that individuals who are overweight have higher levels of insulin which in turn increases the level of serotonin in the brain (Golomb, Tenkanen, & Alikoski et al., 2002). It is reported that often a deficiency in serotonin may lead to individuals engaging in suicidal ideation or behavior. However, there is some discrepancy in the literature, in that obesity is often linked to depression and suicidal ideation (Stunkard, Faith, & Allison, 2003).

Another resiliency factor found to decrease active military personnel rate of suicide is not smoking cigarettes. A study conducted by Miller, Hemenway, Bell, Yore, and Amoroso (2000) found that individuals who smoked 20 or more cigarettes a day were twice as likely to commit suicide in comparison to individuals who had never smoked. Over 300,000 activity duty military personnel were studied over a ten year period (1986-1996) and a multivariable- adjusted analysis found that as the number cigarettes smoked per day increased so did the rate of suicide among

the cohort. The researchers controlled for other variables such as race, amount of exercise, education level, and other substances used and still found the relationship between smoking and suicide to be significant. Limitations of this study were the young age of the cohort with over half of the participants being under 25 years of age making it difficult to generalize to the population and a lack of control for mental illness. A hypothesis as to the cause of this relationship is the level of mental illness may be increased among smokers versus non-smokers; however, this was not reviewed in this study (Miller, Hemenway, Bell, Yore, & Amoroso, 2000).

Data collected by the Center for Health Promotion and Preventive Medicine (CHPPM Report, 2010) stated that 82% of Active Duty suicide deaths were associated with at least one significant stressor. The four main stressors reported, along with the percentage of suicide deaths being associated with each stressor, were 58% relationship problems, 50% work stress, 48% behavioral health diagnosis, and 34% legal problems or history of legal problems. These percentages add up to more than 100%, in that multiple stressors were often reported. Relationship problems were identified as the largest stressor; however, this construct was not well defined and may reflect additional pressures such as financial strain, substance abuse, lack of social support, and taking care of sick parents or a spouse. Accurate descriptions and observable behavioral patterns are starting to be developed in order to target specific training and educational information to aid in reducing suicidal behaviors amongst the military population (CHPPM Report, 2010).

### **Mental health disorders and traumatic brain injuries.**

The development of a major mental illness or behavioral health diagnosis is one of the most well documented risk factors in the occurrence of suicidal ideation or behavior. To date, 50% to 60% of all suicidal injuries occur in the presence of a diagnosable mental health disorder

(ARMY HP/RR/SP, 2010). In Figure 2 presented below, the CHPPM reported drastic increases in suicide rates among individuals diagnosed with a behavioral health disorder in comparison to soldiers with no history of mental health diagnosis (ARMY HP/RR/SP, 2010).

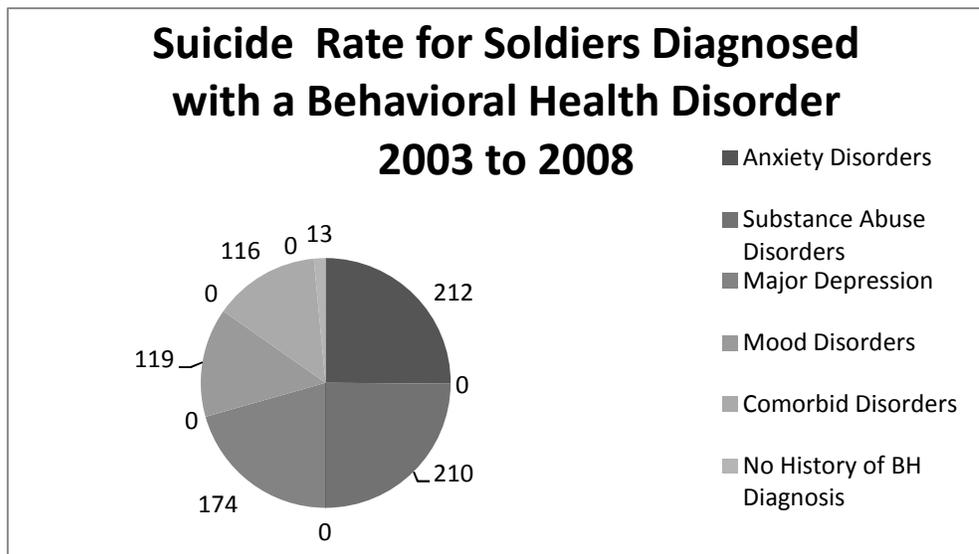


Figure 2.

CHPPM, *Epidemiological Report (2010). Behavioral Health Diagnosis and Suicide Rates, 2003-2008.* (ARMY HP/RR/SP Report, 2010).

Current studies report that an estimated 14% of returning OEF and OIF service members will develop posttraumatic stress disorder (PTSD), with a reported equal number of military personal experiencing depressive symptoms. Additional mental health disorders such as substance abuse and individuals presenting with comorbid mental health disorders have also resulted in an increase of suicidal ideation and suicidal behaviors amongst OEF and OIF service members (ARMY HP/RR/SP Report, 2010).

Alcohol and drug abuse is a significant health concern within the United States Military. Specifically, the Army has had the highest rate of Alcohol Abuse and Alcohol Dependence diagnoses from 2006-2008 with 22.7 diagnoses per 1,000 individuals per year (Army/HP/RR/SP, 2010). Around 30% of the Army's suicide deaths from 2003 to 2009 had some form of alcohol

or drug use involved in the death (CHPPM, 2010). There has also been an increase in the use of prescribed antidepressants and psychiatric and narcotic pain medications being provided to military personnel. There are some discrepancies in the literature as to whether or not the use of some antidepressant medications such as selective serotonin reuptake inhibitors (SSRIs) is linked to suicidal behavior (Army/HP/RR/SP, 2010). Additional medications such as paroxetine have been shown to increase suicidal behavior among Army soldiers between the ages of 18 to 29 years old (Army/HP/RR/SP, 2010). However, additional research is needed to better determine which medications will treat individuals with anxiety and depression without increasing suicidal behavior and ideation.

The diagnosis of posttraumatic stress disorder (PTSD) was primarily associated with combat-related trauma originating from the recognition of emotional and cognitive symptoms following a traumatic event of war veterans. In the first edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM, American Psychiatric Association, 1952) the diagnosis was titled “gross stress reaction” and primarily focused on combat-related trauma. Today, PTSD is a complex condition in which individuals may experience a wide variety of symptoms after experiencing a traumatic event. In accordance with criterion set by the American Psychiatric Association (APA) in the current edition of the Diagnostic and Statistical Manual (DSM-IV-TR; APA, 2000) individuals must experience, witness, or be confronted with an event that involved a threat of death or serious injury to themselves or others in which the individual’s response is of intense fear, helplessness, or horror.

In recent years, large studies have been conducted into both risk factors and resiliency factors in the development of PTSD (Boscarino, 1995; Brewin, Andrew, & Valentine, 2000). A meta-analysis conducted by Brewin, Andrews, and Valentine (2000) found that pre-trauma

factors such as psychiatric history, reported childhood abuse, and family psychiatric history were implicated in the development of PTSD. However, the authors also stated that factors occurring during or after the traumatic event such as trauma severity, additional life stress, and lack of social support had a stronger effect on subsequent development of PTSD than did the identified pre-trauma factors (Brewin, Andrews, & Valentine, 2000).

The link between PTSD and suicidal behaviors among military service members was first studied in Vietnam Veterans. A study conducted by Farberow, Kang, and Bullman (1990) reviewed files of 175 Vietnam Veterans and non-Vietnam Veterans who had committed suicide or had died in a car accident. The authors found similar suicide profiles of both Vietnam Veterans and non-Vietnam Veterans, with PTSD symptoms observed more frequently among suicide cases than among accident cases. There was no difference between groups of those who served in Vietnam versus the non-Vietnam population in relation to suicide. However, the research did find that depressive symptoms (e.g., hopelessness, problems with concentration) reported six months prior to their death were seen in more suicide cases than car accident cases, and in more Vietnam Veterans than non-Vietnam Veterans. One limitation of this study is that all of the data was collected within the Los Angeles, CA region based on convenience sampling of the researchers (Farberow, Kang, & Bullman, 1990).

Further investigation into the relationship of PTSD symptoms and suicidal ideation and behaviors among Vietnam Veterans was conducted by Hendin and Haas (1991). A survey of 100 Vietnam Veterans found nineteen individuals that had attempted suicide since returning from the war with an additional fifteen veterans reporting chronic suicidal ideation. Five factors were found to be significantly related to suicide attempts and ideation: guilt about combat actions, survivor guilt, depression, anxiety, and PTSD symptoms. A logistic regression analysis

found that guilt about combat actions was the most significant indicator of suicidal behavior and ideation. The authors concluded that treatments specifically addressing the guilt felt by service members may aid in decreasing suicidal tendencies (Hendin & Haas, 1991).

PTSD often requires either medical or psychiatric interventions, and when not treated can increase the risk of suicidal behavior (Army/HP/RR/SP, 2010). PTSD has been positively related to suicidal ideation and has been a predictor of individuals who eventually transition to suicidal behaviors (Kessler, 2000; Nock et al., 2008). The Office of the Surgeon General in 2010 reported that a substantial increase has occurred amongst diagnosed cases of PTSD for deployed soldiers, from 2,931 in 2004 to over 10,137 in 2008 (Army/HP/RR/SP, 2010). The direct relationship between individuals diagnosed with PTSD and suicidal deaths has also seen a steady increase. In 2005, 4.6% of military personnel who committed suicide also had a diagnosis of PTSD, this number has increased to 14.1% in 2009 (Army/HP/RR/SP, 2010). With 71% of the Army having been deployed at least one time, the numbers of individuals with PTSD is expected to rise (Army/HP/RR/SP, 2010).

Individuals with PTSD may also be experiencing additional mental health diagnosis resulting in comorbidity. Comorbidity is defined as having more than one medical diagnosis that can be either physical and/or psychological existing simultaneously with another condition. This creates difficulty in the treatment of individuals due to overlapping symptoms and challenges in identifying the root cause of a symptom. Currently there are no studies that review comorbid problems such as sleep disturbances and PTSD and the effect these may have on individuals that are currently deployed and returning home (Army/HP/RR/SP, 2010).

A traumatic brain injury or TBI is when an individual's head is jolted or penetrated by an object which results in the disruption of functioning in areas of the brain (Traumatic Brain Injury

Fact Sheet, n.d.). This disruption can be temporary, semi-permanent, or permanent. A TBI can also vary in level of severity ranging from a mild TBI (a brief change in cognitive functioning or consciousness) to a severe TBI (resulting in amnesia from the event or complete loss of consciousness for an extended period of time). Common symptoms often experienced by individuals with a TBI are dizziness, irritability, headaches, problems related to sleep, ringing in the ears, balance problems, and changes in vision (Traumatic Brain Injury Fact Sheet, n.d.). While TBIs do occur in the civilian population, an increasing number of military personnel returning from combat are being diagnosed with TBIs. Around 12 to 20% of returning military personnel are estimated as having a TBI (Hoge, McGurk, Thomas, Cox, Engel, & Castro, 2008; Schneiderman, Braver, & Kang, 2008; Tanielian & Jaycox, 2008). Researchers generally agree the increased rate of TBI is due to individuals being more likely to come in contact with road side blasts from improvised explosive devices (IEDs). Studies conducted in this area have found TBIs to be associated with higher risk for other mental health disorders and suicide.

One study by Carlson, Nelson, Orazem, Nugent, Cifu, and Sayer (2010) reviewed TBIs in relation to psychiatric diagnoses among Iraq and Afghanistan veterans. A total of 13,201 United States military veterans' administrative records were reviewed specifically looking for both psychiatric and TBI diagnosis and screenings. This study was conducted across all branches of the military between the ages of 19 to 64 years old. The authors found around 80% of the veterans with a positive TBI screen also had been diagnosed with a mental health condition. The most common psychiatric disorders found were PTSD, depression, anxiety, and adjustment disorder. Of veterans who had both a psychiatric and TBI condition, 79% received their first psychiatric diagnosis before their TBI diagnosis (Carlson et al., 2010).

Another study looking at comorbidity amongst different levels of TBI (mild, moderate, and severe) and PTSD was conducted by Belanger, Kretzmer, Vanderploeg, and French (2010). Participants were military veterans classified into two groups: mild TBI (n=134) and moderate-to-severe TBI (n=91). Individuals were given a PTSD checklist, a self report measure of current PTSD symptoms, and the Neurobehavioral Symptoms Inventory (NSI) which is a post concussive symptom questionnaire where symptoms are rated on a five point Likert scale. The authors found that TBI severity was related to postconcussion complaints on the NSI, with mild TBI participants reporting more postconcussive symptom completes than the moderate-to-severe TBI group. However, when controlling for age, time since injury, type of injury, and PTSD symptom complaints, no differences were found between the mild to moderate-severe TBI groups. This means that the participants with a mild TBI did not endorse more physiological complaints than the moderate-to-severe TBI group. The authors concluded that individuals with mild TBIs may report symptom complaints that may be due to emotional distress as opposed to physiological distress (Belanger, Kretzmer, Vanderploeg, & French, 2010).

Only recently have TBIs directly been related to veteran suicidal tendencies. A study conducted by Brenner, Homaifar, Adler, Wolfman, and Kemp (2009) looked at TBIs and their relationship to suicidal ideation and behaviors, reviewing specific precipitating events, protective factors, and prevention strategies. This qualitative study sampled 13 veterans with a history of TBI and suicidal ideation or behaviors. The authors found three fundamental precipitants for suicidal ideation or behaviors within this group, including loss of sense of self post-injury, cognitive deficits, and psychiatric and emotional disturbance. Four protective factors were also identified within the sample, including social support, having a sense of purpose and hopefulness regarding the future, religion/spirituality, and mental health treatment. While this study was

limited due to the few participants interviewed, it did provide a foundation for future research to be conducted in the areas listed above (Brenner et al., 2009).

**Combat experience/exposure.**

Combat experiences among military personnel have recently been related to increases in suicide mortality rates. While there is controversy as to whether or not combat exposure is directly linked to suicidal ideation or behaviors, studies have consistently shown that combat exposure is linked to increases in psychopathology (Selby et al., 2009). Recent studies have shown that combat exposure increases symptoms of depression (Lapierre, Schwegler, & LaBauve, 2007), PTSD (Hoge, Castro, Messer, McGurk, Cotting, & Koffman, 2004; Bullman & Kang, 1994; Hoge, Terhakopain, Castro, Messer, & Engel, 2007; Kessler, 2000) and substance abuse problems (Hooper, Rona, Jones, Fear, Hull, & Wessely, 2008; Jacobson, Ryan, Hooper, Smith, Amoroso, & Boyko et al., 2008). These symptoms often directly affect individuals' relationships causing increased problems with family members, coworkers, and daily social interactions.

Studies conducted on Vietnam Veterans in theater who had experienced combat indicated this group had higher rates of suicide mortality and development of PTSD relative to non-theater Vietnam Veterans who had not experienced combat (Boehmer et al., 2004; Koenen, Stellman, Stellman, & Sommer, 2003). A study conducted by Bryan, Cukrowicz, West, and Morrow (2010) hypothesized that veterans who experience combat are at a higher risk for suicide. A total of 522 service members who were deployed in Iraq were administered a series of questionnaires reviewing suicidal ideation, behavioral health information, and combat experiences. Results indicated that individuals who scored higher on the combat experiences scale also had higher scores on both the suicidal ideation and behavioral health scales. More research is needed to

clarify the relationship between combat exposure and suicidal ideation and behavior among the military population.

### **Other National Militaries**

The area of prevalence and risk factors attributed to suicidal ideation and behavior has been studied internationally among military populations. Not unlike the United States military, other nations have also found that military personnel often use firearms as the primary method of committing suicide, which often occurs within the first six months of enlisting (Desjeux, Labarere, Galois-Guibal, & Ecochard, 2004; Fear & Williamson, 2003; Mancinelli et al., 2003; Mehlum, 1990). The following section will discuss risk and resiliency factors for suicidal behavior among other nations' militaries focusing on the areas of demographics, mental health disorders and traumatic brain injuries, and combat experience/exposure.

#### **Demographics.**

Suicidal ideation and behaviors affect all ethnicities, nationalities, and genders. Among other nations' militaries or armed forces several demographic variables such as age, ethnicity, and socioeconomic status have been found to relate to suicidal ideation and behaviors. Studies conducted in Australia, the United Kingdom and Italy have consistently found the following demographic variables to contribute to high risk of suicide attempts: males, between the ages of 19 to 25, living in a rural area, divorced or with relationship conflict, low socioeconomic status, low education level, and substance abuse or addiction (Fear & Williamson, 2003; Hadfield & Sheffield, 2007[PowerPoint slides]; Mancinelli et al., 2003).

In contrast, a study conducted in France by Desjeux, Labarere, Galois-Guibal, and Ecochard (2004) found individuals from 40 to 45 years old to have almost twice as high a rate of suicide than individuals under 25 years old. This longitudinal study collected data across all

French Army active-duty individuals for a four year period from 1997 to 2000. One hypothesis purposed by the authors as to why older military individuals were more prone to suicide is due to new screening procedures put in place by the French military. Screening out individuals that may have been at higher risk for suicidal behaviors could account for the lower proportion of risk for younger military service members (Desjeux, Labarere, Galois-Guibal, & Ecochard, 2004).

A retrospective study conducted by Mehlum (1990) reviewed 112 male Norwegian military personnel to provide specific characteristics of suicide attempters among service members. Participants must have attempted suicide while actively enlisted in the military during either 1968-1972 or 1985-1989 and it had to have been reported to the Joint Norwegian Medical Services (JNMS). The JNMS would provide treatment for these individuals and would administer a series of assessments collecting data on biographical information, physical health, educational background, psychological IQ test results, and circumstances of the suicidal event. Results indicated that participants who attempted suicide were single (85%), had a low level of education (47%), reported a history of untreated nervous disorder (34%), or had a diagnosis of adjustment disorder (55%). A clear limitation of this study is that it did not include females or higher ranking officials within the Norwegian military, so it is unclear whether or not these trends would have been observed for the entire military population. The data found in this study has been consistent with that of other militaries in Europe (Mancinelli et al., 2003; Fear & Williamson, 2003) showing that individuals with the above stated characteristics have a potential increased risk of attempting suicide within the military.

Military personnel often have access to more lethal means of ending their lives such as firearms and explosives. A study conducted by Mahon, Tobin, Cusack, Kelleher, and Maone (2005) reviewed the role of occupation specific risk factors among individuals in the Irish

Defense Forces. This retrospective study reviewed regular duty military personnel between 1970 and 2002. A total of 732 deaths were reviewed and around 8.5%, or 63, were described as suicides. This percentage is lower than the national average for Ireland, which is currently at 18.7% respectively. Of the individuals who committed suicide 56% were single, 81% were of urban origin, 75% had been employed before they enlisted, 60% had a medical assessment within the last 3 months before their death, 51% died on a military site, and 73% died during the morning hours. In addition, around 57% of individuals who died had significant life events such as loss of relationships or financial difficulties, among others, recorded prior to their death (Mahon et al., 2005).

#### **Mental health disorders and traumatic brain injuries.**

A predominant risk factor associated with suicide attempts and completion among military personnel are mental health disorders such as Post-Traumatic Stress Disorder (PTSD), Major Depressive Disorder (MDD), anxiety disorders, adjustment disorders, substance use or abuse, and other psychological disorders (Mahon et al., 2005). Factors such as lack of trust in the leadership of officers, negative post deployment briefs about their service, and lack of support for the military amongst both media and family outlets can lead to increases in psychopathology (King's College Report, September 2010). The Mehlum (1990) study of Norwegian military personnel previously discussed also reviewed mental health diagnoses. The predominant psychiatric condition found amongst individuals that attempted suicide were adjustment disorders with depressed mood. Substance abuse was also high among the sample, with 21% classified as having a problem, and current substance abuse was positively correlated with having a substance abuse problem prior to joining the armed forces ( $r=.84$ ,  $p<0.01$ ). In addition, around one third of suicides completed were under the influence of alcohol.

In the King's College Center for Military Health Research report (September, 2010), multiple studies conducted both in the United States and in the United Kingdom were reviewed in relation to their rates of PTSD reported among the armed forces. Consistently, the United States had around 15% higher levels of PTSD prevalence rates reported in comparison to the United Kingdom armed forces. The authors stated that, while they do not know a clear answer to this discrepancy, they proposed a number of hypotheses. First, the United Kingdom personnel were older than the United States personnel, proposing that amount of military experience may play an active role in decreasing development of PTSD. Second, the United States had higher rates of reservists deployed in comparison to the United Kingdom, and reservists are known to develop higher rates of mental health concerns (see Browne et al., 2007; Dandeker et al., 2010, for more information on reservists in other nations' militaries). The largest discrepancy presented between the two nations' militaries was tour length. The United States deploys soldiers for a tour length minimum of one year, while the United Kingdom's tour of duty does not exceed 6 months. The authors propose that future research be conducted in this area, but describe significant limitations in making any conclusions, due to discrepancies and variations on data reported among United States researchers in relation to military personnel and reported mental health concerns (King's College Report, September, 2010).

A Danish study conducted by Hansen-Schwartz, Jessen, Andersen, and Jorgensen (2002) reviewed a cohort of 4000 Danish UN soldiers that had been on peace keeping missions that resulted in unexpected heavy combat. When the participants returned from the mission they were administered a series of assessments which revealed signs of psychological distress in 16% of individuals. A total of 1.5% of soldiers described themselves as "often" to "very often" having suicidal thoughts. A total of four individuals from this unit committed suicide which was

around the typical rate within the Denmark armed forces (Hansen-Schwartz, Jessen, Andersen, & Jorgensen, 2002).

Florkowski, Gruszczynski, and Wawrzyniak (2001) reviewed psychopathological factors of suicides among military personnel in the Polish armed forces. A retrospective study was conducted during 1989 to 1998 reviewing all suicides committed among the armed forces. A total of 437 suicides were committed during this time. Mental health diagnosis and psychosocial factors were reported as the most common reasons for suicide. The most common psychiatric diagnostic category was personality disorders (42.3%), with depressive disorders also associated with a high rate of suicide (27.9%). The most common psychosocial factors associated with suicide completion were adaptive difficulties (19.0%) and unfulfilled love (16.5%). While the authors understand the importance of identifying key risk factors that may lead to suicide they stress researchers should not concentrate on a single factor because often several factors occur simultaneously that may lead to an attempt or completion of suicide (Florkowski, Gruszczynski, & Wawrzyniak, 2001).

#### **Combat experience/exposure.**

Rank within the military (e.g., soldier, officer) has been shown to have an effect on suicide rates. In the Italian military, individuals within the lowest rank of a military troop consisted of 77.8% of suicides completed in a sample of 122 participants (Mancinelli et al., 2003). The Russian army reported a total of 341 military suicides over 2007, with around half of those reported to be a result of low ranking soldiers being bullied or hazed. The term *dedovshchina*, meaning “rule of the elders,” is a common practice in the Russian military where more experienced officers or soldiers bully incoming soldiers. This has been reported as a common trigger for young soldiers ending their lives (BBC News May, 2008). While lower rank

within the military may be a risk factor for suicide, the amount of experience a soldier has may be a resiliency factor. Increased experience and age have been found to have a negative effect on the development of mental health concerns which may lead to suicidal ideation or behavior (King's College Report, 2010). However, further research on this area would be needed in order for a causal relationship to be developed.

A report produced by the King's College Center for Military Health Research (September, 2010) in the United Kingdom compared their Regular Forces or "active duty" military personnel to their Reserve Forces population who have also seen combat. While suicidality was not specifically addressed, an increase in mental health concerns such as depression and anxiety were twice as likely to occur amongst the Reserve Forces than the Regular Forces population. Based on studies counted by Browne et al. (2007) and Dandeker et al. (2010) it is hypothesized that this difference may be due to experiences that occur before and after deployment. When Reserve Forces return from deployment they return to civilian life where there may be limited understanding by family, friends, and employers as to what they are experiencing. At the time this study was published, reservists also did not have access to military medical services and had to be provided medical care through the National Health Service (NHS), whose medical personnel may have had limited experience working with the military population (King's College Report, 2010).

A study conducted by Kapur, While, Blatchely, Bray, and Harrison (2009) examined an increased risk of suicide among individuals who left the United Kingdom Armed forces. The study reviewed over 233,000 individuals who had left the armed forces with a total of 224 individuals committing suicide. Individuals who had left the armed forces under 24 years of age were two to three times more likely to commit suicide in comparison to their civilian or currently

enlisted same aged peers. One hypothesis for this increase in suicide is due to this age group also having the lowest contact with mental health specialists. Additional risk factors also are consistent with previously found demographics such as male, short length of service, and lower rank (Kapur et al., 2009).

In the King's College Center for Military Health Research report (September, 2010) the authors discuss how an increase in mental health problems can occur when individuals are deployed to forward areas in combat. These areas typically involve being exposed to enemy fire, seeing or handling the dead and wounded, and often-reported difficulty being able to rest or relax while not on duty. A recent study conducted in the United Kingdom by Rona et al. (2009) reviewed the relationships between psychological symptoms before deployment, combat exposure, unit support, and the development of PTSD and psychological distress after returning from deployment in Iraq and/or Afghanistan conflicts. Participants consisted of 1,885 military personnel from the Royal Navy, Royal Marines, Army, and Royal Air Force. Each individual was given a series of assessments; the PTSD Checklist, the General Healthcare Questionnaire 12, and the SF-36 (a general physical health and mental health assessment that measures the burden of a disease on an individual). The authors found that combat exposure and group cohesion did have an effect on mental health outcomes regardless of previous mental health status before deployment. The authors propose that it may be ineffective to screen for mental health concerns prior to deployment, since increases of mental health concerns were related to combat exposure and not prior mental health state.

A longitudinal study conducted by Hooper, Rona, Jones, Fear, Hull, and Wessely (2008) studied the relationship between combat exposure and cigarette and alcohol use in the UK Armed Forces. Over a three year period around 1,000 military personnel were surveyed in

relation to amount of alcohol consumed, cigarette use, and combat exposure and deployments. An increase in alcohol use and binge-drinking was seen in individuals who had been deployed, specifically, individuals who thought they may have been killed ( $p=.10$ ) or who had experienced hostile interactions with civilians of the countries to which they were deployed in ( $p=.10$ ). As stated previously, alcohol use is a risk factor in the development of suicidal ideation and behavior among international military personnel. Interestingly, the authors found cigarette smoking actually declined among military personal over the three year period. One potential reason for this was the high rate of attrition in this study, with potentially heavy cigarette users more likely to drop out due to lower socioeconomic status or increased mobility. This still would not explain the decrease in cigarette use among individuals studied, and future research into why this trend occurred should be reviewed (Hooper et al., 2008).

### **Comparison of Risk and Resiliency Factors**

A comprehensive review of the literature was conducted on risk and resiliency factors in the development of suicidal ideation and behaviors across the United States military and other nation's militaries. Areas of overlap that occurred within the literature consisted of some demographic variables and mental health disorders presenting consistently across militaries. The profile of an individual at risk for suicidal behavior across most militaries is: male, between the ages of 19 to 25, living in a rural area, divorced or with relationship conflict, low socioeconomic status, low education level, and substance abuse or addiction (Fear and Williamson, 2003; Hadfield & Sheffield, 2007[PowerPoint slides]; Mancinelli et al., 2003). Consistent mental health disorders such as PTSD, depression, and substance use were found to increase an individual's risk in committing suicide or engaging in suicidal behavior across militaries (Army/HP/RR/SP, 2010; Mahon, Tobin, Cusack, Kelleher, & Malone, 2005).

Discrepancies were observed in both demographic and mental health disorders and traumatic brain injuries sections. For example, the United States is beginning to see a trend in females being at higher risk for suicide which is something not currently reported among other militaries (McFarland, Kaplan, & Huguet, 2010). This increase in females being at risk of suicide in the United States military but not other nations' militaries may be a product of not enough females joining the armed forces of other nations to see an increase in this area. Another area of discrepancy among demographic variables was found in France which reported older individuals 40 to 45 years old to have almost twice as high a rate of suicide of their younger service members (Desjeux, Labarere, Galois-Guibal, & Ecochard, 2004). Theories into this shift may be due to a stricter screening protocol being implemented among individuals entering France's armed forces. This could imply that the United States is seeing an increase in suicides due to relaxed standards for entering into the military.

Mental health disorders, specifically PTSD, were reported more often in the United States military in comparison to other militaries (King's College Report, 2010). In other nations, mental health disorders such as adjustment disorder or a personality disorder often correlated with higher rates of suicide or attempted suicide (Florkowski, Gruszczynski, & Wawrzyniak, 2001; Mehlum, 1990). This may be due to cultural differences between the United States and other nations' militaries in which it is more accepted to have a more severe medical or diagnosable disorder than a milder one. Information about TBIs was not found in the other nations' military research and while the United States military has found this to be a risk factor in suicide it is unknown if this could be generalized to other militaries.

The studies discussed in the sections on combat experiences/exposure across both the United States military and other nations' militaries generally involved the relationship between

combat experiences/exposure and the role that this has in increased risk for mental health disorders. While mental health disorders do cause an increase in suicidal behaviors, currently only one study was found that reviewed the relationship between combat experiences/exposure and increases in suicides. The study was conducted in the United States reviewing OIF/OEF soldiers and found that individuals who scored higher on the combat experiences scale also scored higher on both the suicidal ideation and behavior health scale (Bryan, Cukrowicz, West, & Morrow, 2010). This is an area that is in need of more research by both other nations' militaries and the United States military. In addition, there is limited research conducted on the level of experience and rank of military personnel and how this may be related to resiliency factors. The United Kingdom compared mental health disorder rates across both the United States and United Kingdom armed forces finding high rates among the United States military. A series of factors such as more experienced soldiers and shorter deployments were observed by the researchers as resiliency factors reducing the development mental health disorders (King's College Report, 2010). Further investigation into the relationship between experience of the military personnel, combat exposure, and combat experience and how this relates to suicidal ideation or behaviors across militaries is needed.

In addition, a large gap within the literature was found on the topic of comorbidity and suicide. Neither the United States military nor other nations' militaries addressed the fact that individuals in a state of crisis often present with more than one diagnosable mental health problem or personal concern. In addition, resiliency factors an individual may acquire, as opposed to inborn resiliency traits, was not often discussed. Further study into areas such as social support, financial stability, and education as potential areas of resiliency to suicidal ideation or behavior could be evaluated. One resiliency factor discussed in the literature was that

not smoking decreased suicide rates among individuals (Hooper et al., 2008; Miller, Hemenway, Bell, Yore, & Amoroso, 2000). However, these findings were inconclusive across researchers due to limitations of confounding variables in which individuals who do smoke may have high rates of mental illness resulting in an increase in suicidal behavior. As further research is reviewed in the following section on suicide prevention, the area of resiliency and protective factors will be covered more in depth.

### **Suicide Prevention Protocol**

#### **United States Military**

As of 2010, a total of 1.9 million United States military personnel have been deployed as part of the OIF and OEF conflicts according to the Department of Defense Task Force on the Prevention of Suicide (DoD/TFPS) report titled *The Challenge and the Promise* (DoD/TFPS, 2010) which reviewed the prevention of suicide amongst the US Armed Forces. During their time deployed, military personnel often face numerous physical and psychological stressors that not only affect themselves but also their families and friends. Over a 5 year period from 2005 to 2009, over 1,100 individuals of the United States armed forces took their own lives (DoD/TFPS, 2010). This has sparked recent speculation among the media about the potential contributing role of the lack of available services for the growing number of service members in need. The overall response among researchers and the DoD was to understand risk factors (discussed in the previous section) that may cause individuals to engage in suicidal behavior and then to develop new prevention programs targeting those risk factors. This section will discuss programs such as Comprehensive Soldier Fitness, recently implemented by the Army to prevent suicide, and review studies that focus on suicide prevention in the United States Military population.

The United States military is one of the few known employers to have focused extensive resources on the topic of suicide prevention in direct response to an increase in suicide rates. In 2010, the DoD developed a Task Force on the Prevention of Suicide by Members of the Armed Forces (Dod/TFPS, 2010). The 233 page report that emerged from this task force evaluates all of the suicide prevention programs that have been developed by the different branches of the military and then provides recommendations to improve these programs. The task force on suicide prevention is an independent group created by a Congressional mandate to gain information on suicide prevention programs, policies, procedures, and regulations. The following six principles were developed by the task force as guidelines for evaluating existing programs:

- 1) Suicide and suicidal behaviors are preventable.
- 2) Suicide prevention begins with leadership and requires engagement from all facets of the military community.
- 3) Suicide prevention requires long-term, sustained commitment using a comprehensive public health approach.
- 4) Service members' wellness and fitness (mind, body, and spirit) is essential to mission accomplishment (and suicide prevention).
- 5) Recommendations of the Task Force should reflect the best available practices and scientific evidence, as well as expert consensus.
- 6) The recommendations should be consistent with the culture of the Armed Forces and capitalize on the strengths of the Armed forces. (Dod/TFPS, 2010, pp. 5)

The report concluded with a total of 76 recommendations which were placed into the following four categories; Organization and Leadership; Wellness Enhancement and Training;

Access to, and Delivery of, Quality Care; and Surveillance, Investigations, and Research (Dod/TFPS, 2010). The first category, Organization and Leadership, discusses the lack of adequate staffing and resources available to current military personnel. Inconsistencies in leadership about mental health concerns were addressed stating that, “Messages from some leaders regarding suicide, suicide prevention, resilience, health and warrior readiness frequently do not sufficiently support suicide prevention efforts” (Dod/TFPS, 2010, p.ES-4). The second category, Wellness Enhancement and Training, addresses the stressful life style placed on military personnel both while deployed and during readjustment to civilian life. One concern specifically addressed was the current standard of multiple redeployments with an inadequate amount of down time provided in between tours. The military has started to make efforts in this area by developing resiliency training, operational stress control, and comprehensive fitness programs. However, there is a lack of consistent training provided to family members on suicide prevention, when these individuals are often the first line of defense, best situated to detect unusual behavior.

The third category, Access to, and Delivery of, Quality Care, discusses the overall lack of accesses military individuals have to behavioral health providers (Dod/TFPS, 2010). Access to health care providers in the rural civilian population is limited, affecting both the civilian and military population. In addition, there is often a lack of communication to service members and their families as to the resources available to them for suicide-related problems. The final category, Surveillance, Investigations, and Research, addresses the concept that in order for prevention programs to be effective continual assessment of their effectiveness must be performed. This must be conducted through a standardized approach in which data about the program would be reported consistently. To date, the DoD does not have an effective approach

that evaluates suicide prevention programs in a standardized way, often failing entirely to develop evaluation methods that review the effectiveness of the suicide prevention programs implemented.

Among the 76 recommendations, multiple strategic initiatives were described in each of the four focus areas described previously (Dod/TFPS, 2010). A strategic initiative is identified as more of a theme or general statement about suicide prevention, whereas a recommendation is a specific skill or behavior that could be implemented. For example, a strategic initiative that will be discussed later in this section is, “Reduce stigma and overcome military cultural and leadership barriers to seeking help” (Dod/TFPS, 2010, p. ES-12). A recommendation that would relate to this strategic initiative is having leaders discourage individuals from using the term “malingering” in relation to suicide-related behaviors and to not use this type of terminology in published materials on suicide prevention. Out of the total 76 recommendations, the Task Force outlined 13 “Foundational Recommendations” (listed in Figure 3.) which the Task Force believes will be the quickest to implement and will also have the greatest impact on reversing the current increase in armed forces suicide rates (DOD/TFPS, 2010).

Consistent with the information provided by the Task Force, Army psychologist Col. Bradley described specific areas in which suicide prevention is being addressed by the military (Lowry, 2010). The army psychologist addresses the unique operational tempo (number of times a military individual is deployed) of this conflict in comparison to wars past. In World War II individuals were deployed until the end of the war, staying in the same location for years at a time. In Vietnam this changed, and most soldiers only served for one year total, in comparison to the current OIF/OEF conflict in which individuals are sent for multiple deployments with limited rest in between tours. However, only one third of military personnel who committed

suicide had been engaged in multiple deployments. Col. Bradley states that while length and number of deployments may play a role in risk for developing mental health concerns, it is also only one factor and he believes that decreasing the stigma of mental health will provide the strongest prevention efforts in reducing suicidal tendencies among military personnel.

1. Create a "Suicide Prevention (SP) Policy Division" in the office of the Undersecretary of Defense for Personnel and Readiness to achieve unity of effort through standardization.
2. Keep SP programs in the leaders' lane (with the Services) and create tools to assist leaders in preventing suicide
3. Reduce stress on the force; balance the supply and demand mismatch.
4. Focus efforts on Service Member (SM) well-being and total fitness (mind, body & spirit); develop SM life skills and resiliency.
5. Develop a comprehensive stigma reduction campaign plan to enhance "help seeking" behaviors
6. Strengthen strategic messaging to emphasize positive messages that influences behaviors
7. Develop skills-based training for SMs and their buddies, families, supervisors and leaders, clergy, and behavioral health personnel.
8. Incorporate program evaluation into all SP programs to assess effectiveness.
9. Coordinate & leverage "community" health services; both on and off our installations.
10. Ensure continuity and management quality behavioral health care and actively manage transitions.
11. Mature and expand the Department of Defense Suicide Event Report (DoDSER) to serve as the main surveillance tool to inform SP efforts.
12. Standardize suicide and attempted suicide investigations, to include the use of psychological autopsies; and pattern suicide investigations after aviation safety investigation processes and procedures.
13. Support and fund ongoing DoD suicide prevention research to close knowledge gaps, inform suicide prevention efforts, and enhance evidence-based practices and solutions.

**Figure 3. The 13 "Foundational Recommendations" provided by the Suicide Prevention Task Force (Dod/TFPS, 2010).**

Prior to increases in suicide rates in the military, research has consistently shown that there is a stigma within the military culture regarding seeking mental health services. Chandler (2010) discusses the resistance mental health care providers face in providing treatment. In 2006, around 89% of Air Force individuals who received treatment did not tell their chain of command officer. Lack of disclosure is likely largely due to fear of negative evaluation, in that

one out of every eight Air Force individuals believes that seeking mental health services will “definitely” hurt their career according to a 2008 Health Related Behaviors Survey. As discussed earlier Army Psychologist Col. Bradley (Lowry, 2010) believes this has been a major problem in preventative care. However, recently he reports that prevention programs are starting to promote military leaders in rewarding health seeking behaviors as opposed to stigmatizing these individuals.

Current ways in which mental health care providers are trying to reduce this stigma is through public campaigns, such as the Real Warriors and Operation Immersion. The Real Warriors campaign promotes the idea that “Real Warriors take care of themselves” and provides the soldiers with information such as 17% to 18% of military personnel meet criteria for a mental health disorders as a way of normalizing the experience of seeking mental health services (Lowry, 2010). Operation Immersion is similar in that it is a recent program developed to reduce the stigma of mental illness and substance abuse among military personnel (“For Behavioral Health Providers,” 2010). The program is a 2-day curriculum aimed at helping military personnel transition into post-deployment life and consists of presentations on PTSD, homelessness, substance use, and suicide prevention. This program commenced in 2009 and, although there are no published outcome data as of this writing, it is hopeful that it will help reduce the stigma of reaching out to mental health professionals.

#### **United States military prevention protocol and programs.**

Claassen & Knox (2010) discuss the current protocol that is implemented across all branches of the military in order to prevent the completion of a suicide once an individual is identified as suicidal. This consists of evaluating the individual’s current mental status, level of distress, and a decision as to whether involuntary treatment is necessary. In addition to this

evaluation, individuals are often placed on a “suicide watch.” This entails the use of escorts who must remain in direct eye contact with the individual at all times and are not allowed to come in contact with any items that may be used in an effort to produce self harm. While this is often the procedure used universally for imminent suicide prevention, prevention programs are tailored to each branch of the military (Claassen & Knox, 2010). The following section will discuss prevention programs developed and currently used across the four branches of the military.

The United States Army has been developing suicide prevention programs since the 1980’s. Over the course of this time they have identified five key areas that their prevention programs focus on; developing life-coping skills, encouraging help-seeking behaviors, raising awareness and vigilance to suicide prevention, integrating suicide prevention programs, and conducting suicide surveillance and analysis (Dod/TFPS, 2010). In 2006, the Army introduced Battlemind Training or Resilience Training which promotes the idea of army personnel taking care of themselves, others, and those they lead specifically when it comes to the mental challenge of combat, difficult operations, and transitioning to civilian life. Other recent programs implemented by the Army are the use of videos such as “Beyond the Front” and “Shoulder-to-Shoulder, No Soldier Stands Alone” which is shown to all army personnel. Whether or not these suicide prevention videos are effective will have to be studied and reviewed by the Army and researchers (Dod/TFPS, 2010).

A recent prevention program released in October of 2008 is the Army’s Comprehensive Solider Fitness (CSF) program (Dod/TFPS, 2010). The CSF program teaches soldiers and their family members the importance of the following five areas to ensure wellness in their life; physical, emotional, social, family, and spiritual. This program focuses on interventions,

training, and treatments that have shown to be effective among individuals with mental health disorders. All soldiers entering the Army are evaluated on the previously stated domains and are provided resources and skills in areas that they may have difficulty in. Reassessments are conducted throughout the soldier's career and in designing interventions, trainings and treatment programs as needed for the individual (Dod/TFPS, 2010).

In 2009 the Army developed its own Army Suicide Prevention Task Force (ASPTF) to identify areas in which current suicide prevention methods were beneficial and areas in which change needed to occur (ARMY HP/RR/SP Report, 2010). The comprehensive review produced by the ASPTF found that focusing specifically on suicide prevention programs was too narrow of a focus. The report found that it was not a problem in the programs themselves but the barriers faced by the Army in implementing, researching, and completing the programs. For example, the policies implemented in prevention of suicide were not consistent throughout the Army, with independent programs being run without any data on outcomes being reported. This means that individuals living in one area of the country would have data recorded but this would not be shared or made available to other areas of the country. In addition, access to mental health care professionals, counselors, chaplains, and prevention programming staff are limited. The ASPTF report also indicated that the Army is encountering greater numbers of individuals in high risk populations, such as increased rates of substance abuse and crime incidents. This resulted in the discovery of the relationship between risk-taking behavior and suicidal behavior that has increased among Army personnel, but went unnoticed due to the increase in operation tempo and rapid turnover. The conclusion provided by the ASPTF was to continue to work on developing research and assessment, implementation and effects of programs, training and education (to units, soldiers, and families), and communication and promotion. These new guidelines will be

evaluated based on biweekly measures, meetings, and reports that will be completed by leaders among army personnel (ARMY HP/RR/SP Report, 2010).

The United States Navy began developing suicide prevention programs in 1996 in response to increasing suicide rates in 1995 (Dod/TFPS, 2010). An official program entitled Navy Operational Stress Control (NOSC) was implemented November of 2009. NOSC is an integrated program that focuses on the promotion of positive health, family readiness, building resilience, and addressing problems early. In order to increase awareness about the program the Navy has used multiple media outlets such as print, posters, and video broadcasts to leaders and has provided multiple trainings on the program. The Navy also developed the Department of the Navy Suicide Incident Report (DONSIR) which collected data to be administered to military leadership, and the Department of Defense Suicide Event Report (DoDSER) in an effort to improve suicide prevention. The DONSIR reported data from 1999 to 2007 in which prior psychiatric history (29%), relationship problems (59%), and use of a fire arm (51%) were the most common risk factors reported. Thus, are currently focused on the NOCS (Dod/TFPS, 2010).

The United States Air Force has currently started to identify and track risk factors such as relationship problems, legal issues, financial problems, and history of mental illness both prior to enlistment and throughout the career of the Airman's service (Chandler, 2010). Further, the Air Force developed the Air Force Suicide Prevention Program (AFSPP) in 1996 which was designed to change the perception of suicide being a medical issue to a commander issue (Dod/TFPS, 2010). This program, like the DONSIR, provided data for the DoDSER to improve suicide prevention. The AFSPP identified protective factors among Air Force service members to be social support, individual coping skills, and individuals engaging in responsible help-

seeking behavior which the Air Force encouraged among their service members. The AFSP program was implemented through a series of publications which are distributed at multiple levels of the Air Force. In addition the same training manual, the “Clinicians Guide to Managing Suicidal Behavior,” was used to train all medical and mental health providers to treat individuals with suicidal ideation. By 2010, all officers or supervisors in identified high risk career fields were mandated to receive suicide prevention training with the goal of the program to target individuals with highest risk and to reduce stigma to seeking out the help of mental health professionals (Dod/TFPS, 2010).

The AFSP consists of 11 key elements (listed below) that are used in the trainings and were supported heavily by individuals in positions of leadership such as the Chief of Staff of the Air Force and the Surgeon General of the Air Force.

1. Leadership Involvement
2. Addressing Suicide Prevention Through Professional Military Education
3. Guidelines for Commanders
4. Community Preventive Services
5. Community Education Training
6. Investigative Interview Policy (When an individual is arrested or investigated this is noted to be a high risk time for suicidal behaviors to occur. To aid in prevention of this a specific protocol has been put in place to have the individual be placed in the supervision of a commanding officer.)
7. Traumatic Stress Response (formerly Critical Incident Stress Management)

8. Integrated Delivery System and Community Action Information Board (A review board that assess the quality of life for both Air Force members and their families prior to deployment.)
9. Limited Privilege Suicide Prevention Program
10. Integrated Delivery System Consultation Assessment Tool (formerly Behavioral Health Survey)
11. Department of Defense Suicide Event Report (Dod/TFPS, 2010, pp.24-25)

In 2008, the AFSPS started to enhance the original 11 elements by increasing evidence-based approaches used in training, reducing stigma related to receiving mental health care, and encouraging personnel to engage and support each other in help seeking behavior. The main component of this program is the clear protocol that is followed and the processes that are initiated when an individual is at risk or may be at risk for suicidal ideation or behaviors. Currently, the AFSPS has resulted in a decrease in suicides from 18 per 100,000 in 1994 to 8 per 100,000 in 2002 after the program's implementation. The program is cited as an effective and successful program by the American Journal of Public Health (May, 2010). The involvement of all commanding leaders in the AFSPS has also been used by the Marine Corps and the Army to improve their suicide prevention programs and protocols (Dod/TFPS, 2010).

Knox, Litts, Talcott, Feig, and Caine (2003) evaluated the US Air Force's suicide prevention program (discussed above) over a twelve year period. During this time over 5 million active duty US Air Force personnel were evaluated to determine rates of suicide, homicide/accidental deaths, and family violence. In 1996, under the direction of the Vice Chief of Staff, the US Air Force developed a suicide prevention program specifically aimed at reducing the stigma of contacting mental health professionals for help. The following areas were focused

on either as a way of intervention or assessment within the suicide prevention program: leadership involvement, dealing with suicide through professional military education, guidelines for commanders use of mental health services, community preventative services, community education and training, investigative interview policy, critical incident stress management, integrated delivery system for human services prevention, patient privilege communication, behavioral health survey, and suicide event surveillance system. The prevention program was implemented through a series of ongoing training programs supported by the senior ranks in the Air Force. These trainings heightened awareness of the risk factors associated with suicidal behaviors and all Air Force Service members and family members were provided with policy changes and given updated resources to medical and mental health providers (Knox et al., 2003).

Once this program was implemented across the cohort, a series of trend analysis rates continued to be collected in the previously mentioned areas of suicide and other related outcomes (Knox et al., 2003). The results showed an overall 33% risk reduction in suicide across the 12 year study specifically after the prevention program was implemented. Other areas that made this program a success were that it was aimed at enhancing social networks, increasing awareness of mental health disorders and resources in the community, and stimulating help seeking behaviors through policy changes within the organization that decreased individuals' feelings of stigmatization about seeking help (Knox et al., 2003).

The United States Marine Corp (USMC) is the branch most at risk for individuals to engage in suicidal behaviors and has the longest history of recording suicides, since 1970 (Dod/TFPS, 2010). The first form of suicide prevention was administered in 1992 by the Marine Corps Health Promotion which then later evolved into the Suicide Awareness and Prevention program with developed lesson plans on the subject. In 1997, the USMC mandated annual

training on suicide prevention which covers elements such as life skills training, crisis intervention and risk management, and leadership training. A 2009 evaluation of the USMC prevention program resulted in the development of the Operational Stress Control Program and Operation Stress Control and Readiness (OSCAR), which is a primary prevention tool to aid in the mitigation of stress and help seeking behavior. The USMC is in the process of developing a Marine Crisis Hotline, which was piloted in 2010, in which around the clock care is provided to marines, family members, and significant others to increase access to behavioral health care (Dod/TFPS, 2010).

### **Other Nations' Militaries**

Suicide prevention in other militaries does show some overlap in relation to the United States military. Both groups focus on presenting suicide as a preventable health problem, reducing stigma associated with mental health concerns, and improving the detection and treatment of mental health disorders associated with higher rates of suicide (Dod/TFPS, 2010). This section will review additional areas of prevention used by other militaries, such as intensive prescreening before enrollment, increased social support for military members, and limiting the amount of time spent deployed. In addition, studies evaluating existing suicide prevention programs will be reviewed.

#### **Other nations' militaries prevention protocol and programs.**

All militaries reviewed have some form of screening criteria that evaluate personnel before they are granted entry into the military. This prescreening process presents some variability across nations, but does have some consistencies. For example, individuals who enter into the Turkish Armed Forces are asked to complete a psychological risk factor survey (Milliyet, 2011). This form is used to identify those who may be emotionally at risk for suicidal

tendencies based on factors such as mental health concerns. Those individuals that are identified are then sent for treatment and are observed while placed in military facilities. Similar to the United States policy, soldiers who are identified as suicidal are not granted access to weapons, medicines or other materials that may assist them in the completion of a suicide if they have been identified as a potential harm to themselves (Milliyet, 2011). The Italian military claims their prescreening procedures automatically exclude any individuals with a mental health disorder from entering the military which has helped to result in their low rates of reported suicide (Mancinelli et al., 2003).

In addition to length of deployment and experience of the soldier, better access to health care and better quality of health care was another area reviewed in the King's Center for Military Health Research report (2010). The authors observed that in the UK a national health care system is implemented and therefore it would not matter if individuals sustained lifelong injuries; they would still receive guaranteed medical care. However, in the United States with a private health care system, access to quality care is not always guaranteed even amongst our veteran population. While this topic did not specifically address suicidal ideation or behaviors, as stated previously, mental health concerns are one of the predominant risk factors that relate to both suicidal behaviors and ideation.

In a number of studies, group cohesiveness or social support is discussed as being a preventative factor in suicidal behavior. A study conducted in Belgium by Manigart and Fils (2006) reviewed the role of social-psychological support provided by families for military personnel who were deployed in crisis response operations. Belgium has started to implement a military-wide protocol consisting of two phases; first the overall assessment of the social-psychological support available to personnel (reviewing areas such as the institutional actors,

their responsibilities and mission) and second the problems or challenges that will be faced during a deployment (Manigart & Fils, 2006). Research and review of the effects of social-psychological support protocol discussed still needs to be conducted.

In an evaluation of suicide rates of Italian military personnel in comparison to their civilian populations (Mancinelli et al., 2003), the authors not only found a lower rate of suicide in the military population but hypothesized that it was in part due to group cohesiveness that a lower rate of suicides was produced. One reason for this is that many of the military personnel studied were younger in age, 19-25, and developmentally were at an age of creating their own identity. The authors hypothesized that the military gives these youths the opportunity to grow emotionally and this allows for them to identify with a group of people who are currently having similar experiences as themselves, resulting in a higher ability to cope with stress. This theory was supported by the work of Fishman, Morris-Dycian, and Kotler (1990) who stated that a positive military environment may be a protective factor against suicide in young adults due to the structure and specific role prescribed to the individuals. This results in having a solid sense of self, identity, and most importantly, purpose that an individual may identify with.

Different suicide prevention programs for military personnel are starting to be studied across many European countries. Programs can be fairly simple; for example, Danish soldiers are administered routine questionnaires regarding current functioning six months after they return from deployment (Hansen-Schwartz, Jessen, Andersen, & Jorgensen, 2002). While ultimately it is the soldier's responsibility to maintain contact by responding to the questionnaire, the country has found that by maintaining a connection after discharge there is the possibility that services can be provided. A similar program is starting to develop in the country of Estonia, in which psychological services have been successful in monitoring mental health statuses of

deployed soldiers through a series of two routine evaluations. Soldiers are interviewed one month after homecoming and administered the PTSD-Questionnaire. In addition, six months after homecoming a follow up evaluation takes place to ensure the soldier is adjusting to post-deployment life (Meren & Tihaste, 2004).

In contrast to the informal programs mentioned above, which prevent suicide through evaluation, the Army of Serbia and Montenegro implemented a formal suicide prevention program in 2003 and evaluated it over a two year period (Gordana & Milivoje, 2007). The Suicide Prevention Program was developed based on the Model of Suicide Prevention created by the Department for Mental Health of the Military Medical Academy in Belgrade. This program consists of three main areas: selection (e.g., procedures to eliminate soldiers with mental health concerns), education (e.g., teaching military personnel about behaviors related to an increased risk of suicide), and motivation (e.g., working with both military personnel and their family members to increase the likelihood of pursuing mental health services). In relation to the Model of Suicide Prevention, an at risk individual would be the primary focus of concern in which the person's family is put in contact with the individual in addition to a series of interdisciplinary health teams (e.g., medical personnel, and mental health professionals). The authors found that the Suicide Prevention Program was effective over the two year period in which it was studied. In 2003, around 15 suicides occurred; this decreased to 9 in 2004, and decreased further to 7 in 2005. Previously, from 1999 to 2003, the suicide rate for their military was 13 per 100,000 service members and one year removed from the prevention program a drop to 5 per 100,000 service members occurred. A continuation of this Suicide Prevention Program is expected to occur with an expansion into other areas of mental health concern such as depression and anxiety which are known risk factors of suicidal behavior (Gordana & Milivoje, 2007).

Suicide prevention is also studied among eastern European countries such as the Ukraine that currently has one of the highest suicide rates among their civilian population (Rozanov, Mokhovikov, & Stiliha, 2002). A high suicide rate also occurred within the Ukrainian military with an average of 32.6 suicides per 100,000 service members yearly from 1988-1999. The program was implemented in 2000 and consisted of series of seminars lasting over a 5 day period. During this time the main topics covered were basic knowledge on suicide and skills in prevention, specific aspects of suicide with a focus on skills for suicide prevention, and the development of the specific suicide prevention strategy for the military. Additional activities (e.g., myths and facts about suicide, and specific things a soldier can do if he has identified another soldier at risk) were conducted over a 4 month period following the initial seminar. The results of this study indicated that a significant drop in suicides occurred within one year after implementation with no suicides being committed during this time. However, there was an increase in suicide the second year following the implementation of the prevention program with 16.7 suicides per 100,000 service members occurring. This increase was still significantly lower than the suicide rates reported prior to the implementation of the prevention program. The authors recommend prevention programs based on an educational strategy with the primary focus of the program to be on enhancing both knowledge and awareness of suicidal behaviors and recognizing these risk factors in fellow service members (Rozanov, Mokhovikov, & Stiliha, 2002).

### **Comparison of Suicide Prevention Programs**

Suicide prevention programs across the United States and other nations' militaries have found similar strategies to be effective in reducing the rates of suicide. Strategies such as providing individuals with psychoeducation on suicide, increasing access to health care, reducing

the stigma of seeking mental health treatment, and improving the detection and treatment of mental health disorders that are associated with higher rates of suicide have been used in a variety of prevention programs across militaries (Dod/TFPS, 2010). All of the prevention programs evaluated were developed with the core ideal that suicide is a preventable condition. The overall goal of these programs is to prevent individuals from turning to suicidal behaviors by providing individuals with education, resources, and support if they begin to experience distress.

An in-depth evaluation of the four branches of the United States military's suicide prevention protocols was conducted. An article published by the RAND Center for Military Health Policy Research (Sollinger, 2011) reviewed all branches of the military and the similar prevention programs that raise awareness, promote self-care, and identify individuals with high risk. The Air Force has the strongest program in comparison to others, in that the program instills the cooperation of leaders within the organization, facilitates access to high-quality care, and does engage in limited privilege in which high risk individuals have restricted accesses to lethal means. The Army, Navy, and Marines do not have policies on providing or facilitating access to quality care. This study also developed 14 recommendations (listed below) to aid in the development of prevention programs across all four branches of the military.

1. Track suicides and suicide attempts systematically and consistently.
2. Evaluate existing programs and ensure that new programs contain an evaluation component when implemented.
3. Include training in skill building, particularly help-seeking behavior, in programs and initiatives that raise awareness and promote self-care.
4. Define the scope of what is relevant to preventing suicide, and form partnerships with the agencies and organizations responsible for initiatives in other areas.

5. Identify those at high risk.
6. Develop prevention programs based on research and surveillance; selected and indicated programs should be based on clearly identified risk factors specific to military populations and to each service.
7. Ensure, in a way that respects service members' privacy and autonomy, that continuity of services and care is maintained when service members or their caregivers transition between installations.
8. Facilitate access to high-quality care by making service members aware of the benefits of accessing behavioral health care and of specific policies and repercussions for accessing such care, and conduct research to inform this communication.
9. Make service members aware of the different types of behavioral health caregivers available to them, including information on caregivers' credentials, their capabilities, and the confidentiality afforded by each.
10. Improve coordination and communication between caregivers and service providers.
11. Assess whether there is an adequate supply of behavioral health-care professionals and chaplains available to service members.
12. Provide high-quality care by training chaplains, health-care providers, and behavioral health-care professionals on evidence-based or state-of-the-art practices for behavioral health generally and in suicide risk assessment specifically.
13. Restrict access to lethal means among military service members indicated to be at risk of harming themselves.
14. Respond appropriately provide formal guidance to commanders about how to respond to suicides and suicide attempts. (Sollinger, 2011, pp. 3-4)

In review of the suicide prevention protocols of other nations' militaries, areas that were not addressed in the prevention protocols by the United States militaries were discussed. These additional areas were the use of social support, group cohesion, reduction in length of time deployed, and mental health prescreening prior to deployment (Mancinelli et al., 2003; Milliyet, 2011). Further research into these prevention protocols to see if they could be generalized to the United States may prove useful. Additional research on the effect of multiple redeployments with an inadequate amount of down time provided in between tours may also be beneficial to see if there are negative mental health effects inflicted on activity duty personnel. While the United States military has started to make efforts in this area by developing resiliency training, operational stress control, and comprehensive fitness programs, outcome studies have not been published as to their effectiveness. Research or evaluations of current suicide prevention programs within the United States military is limited due to no current standardized method implemented to evaluate the effectiveness of the prevention programs (Dod/TFPS, 2010). Consistent evaluations and outcome data are presented among other nations' military suicide prevention programs which may be a factor in their lower rates of military suicide (Gordana & Milivoje, 2007).

### **Discussion**

The literature discussed in this review evaluated suicidal ideation, behavior, and completion in the United States military and other nations' militaries across the domains of suicide rates, risk and resiliency factors, and preventative protocols. While the United States military does not hold the highest suicide rate found within the literature, a rare phenomenon has recently occurred in which the Army's suicide rate (22 per 100,000) has surpassed that of the civilian suicide rate (18 per 100,000) (Claassen & Knox, 2010). Suicide is currently the third

leading cause of death among active duty United States military personnel (Eaton et al., 2006). Past studies conducted on the military suicide rates of other nations has not found the civilian suicide rate to surpass that of the military (Belik, Stein, Asmundson & Sareen, 2010.; Desjeux, Labarere, Galois-Guibal, & Ecochard, 2004; Fear et al., 2008; Hadfield, 2008; Rozanov, Mokhovikov, & Stiliha, 2002). The United States military was directly compared to the United Kingdom armed forces and had on average a consistent rate of 4.8 more suicide deaths per year than the United Kingdom armed forces (Fear & Williamson, 2003). Currently no hypotheses or theories have been developed as to why only the United States has seen the military suicide rate surpass that of the civilian rate, or why the United States military suicide rate is so much higher in comparison to other nations' militaries.

Areas of overlap were found in the literature under both topics of risk and resiliency factors in the development of suicidal ideation and behaviors and existing preventative protocols. For example, the profile of an individual at risk for suicidal behavior across most militaries is: male, between the ages of 19 to 25, living in a rural area, divorced or with relationship conflict, of low socioeconomic status, low education level, and struggling with substance abuse or addiction (Fear & Williamson, 2003; Hadfield & Sheffield, 2007[PowerPoint slides]; Mancinelli et al., 2003). Mental health disorders in relation to suicidal ideation and behaviors presented consistently across militaries, with disorders such as PTSD, depression, and substance use found to increase an individual's risk in committing suicide or engaging in suicidal behavior across nations' militaries (Army/HP/RR/SP, 2010; Mahon, Tobin, Cusack, Kelleher, & Malone, 2005).

Further areas of overlap were observed when the prevention programs were evaluated and all had developed the core ideal that suicide is a preventable condition. The overall goal of these programs is to prevent individuals from turning to suicidal behaviors by providing

individuals with education, resources, and support if they begin to experience distress. The United States Air Force is currently believed to have the most effective suicide prevention program implemented, due to a core focus on reducing stigma around the issue of mental health and ensuring leaders engage in and consistently implement the program (Dod/TFPS, 2010; Knox, Litts, Talcott, Feig, & Caine, 2003; Sollinger, 2011). Key components found to be important in a suicide prevention program across militaries include a focus on reducing mental health stigma, access to mental/health care, providing mandatory trainings and educational material on suicide, and ensuring leaders of the organization support and communicate the importance of the prevention protocol (Dod/TFPS, 2010; Knox et al., 2003; Mancinelli et al., 2003; Milliyet, 2011).

Discrepancies within the literature also occurred in reviewing the areas of risk and resiliency factors and preventative protocols across all militaries. An area of discrepancy among demographic risk variables was found in research produced in France, which reported older individuals 40 to 45 years old to have almost twice as high a rate of suicide in comparison to their younger service members (Desjeux, Labarere, Galois-Guibal, & Ecochard, 2004). Theories into this shift stated that this maybe due to a stricture screening protocol being implemented among individuals entering Frances armed forces. This could imply that the United States is seeing an increase in suicides due to relaxed standards for entering into the military. However, another article published in the United Kingdom reviewed the relationship between psychological symptoms before deployment, combat exposure, unit support, and the development of PTSD and psychological distress after returning from deployment in Iraq and/or Afghanistan (Rona et al., 2009). The authors found that combat exposure and group cohesion did have an effect on mental health outcomes regardless of previous mental health status before

deployment, proposing that it may be ineffective to screen for mental health concerns prior to deployment, since increased rates of mental health concerns were related to combat exposure and not prior mental health state. With such large discrepancy in the literature, further research is needed to evaluate the potential role pre-screening may have on reducing mental health disorders and suicidal behaviors among United States military personnel.

Mental health disorders, specifically PTSD, were reported more often in the United States military in comparison to other nations' militaries, which could help explain the increased rate of suicide in the United States military (King's College Report, 2010). This may be due to cultural differences between the United States and other nations' militaries in which it may be more accepted to have a more severe medical or diagnosable disorder than a milder one. However, such a hypothesis would run counter to popular belief that mental health conditions are stigmatized within the US military culture. Further investigation into the role of culture across militaries will be discussed and reviewed later.

There were multiple areas in which the United States military could benefit from reviewing the research conducted by other nations' militaries on the topic of suicide prevention protocols and identifying and finding solutions to risk factors. As previously mentioned, a report by King's College Center for Military Health Research (September, 2010) found significant differences between PTSD rates for the UK and the US and hypothesized that one major potential contributing factor could be the difference in the nature of deployments between the two militaries. The authors of the report discussed possible solutions such as deploying individuals with more military experience, shortening the length of time deployed (no longer than 6 months), and providing quality mental/health care to both military and reservists could contribute to the lower rates of reported mental health disorders for UK military personnel. The

United States has actively used both National Guard and Reserve units in deployments to Iraq and Afghanistan, and both of these divisions are experiencing worse rates of PTSD post deployment, which may correspond to an increase in suicide. Research and implementation of suicide prevention programs is limited among military reservists and is in need of further exploration.

Another area addressed consistently throughout the literature was the positive impact that social support and group cohesiveness had on military personnel in other nations' militaries (Mancinelli et al., 2003; Manigart & Fils, 2006). Research within the US has addressed social support as being a resiliency factor in relation to mental health disorders such as PTSD among military personnel (Brewin, Andrews, & Valentine, 2000). However, no research has been conducted on this topic in direct relation to suicide within the United States military.

The King's College Center for Mental Health Research report (2010) addressed the difficulty in evaluating suicide and mental health rates reported from the United States literature on the military population. This is due to the inconsistencies reported across studies because there is currently not a standardized approach used within the United States across military personnel as a way of reporting suicide rates. The same difficulty exists in consistently implementing prevention protocols within the US. When reviewing other nations' military suicide prevention protocols, implementation of each program was direct and consistent, with effective evaluations conducted (Rožanov, Mokhovich, & Stiliha, 2002). The United States military has implemented different prevention programs across the four branches of the military, and might benefit from designing one program that could be implemented across all branches of the military with one database collecting information (Sollinger, 2011). One potential barrier to this is developing a program that would be culturally sensitive to all branches of the military.

The culture of the United States military is similar to other nations' militaries in that physical strength, resiliency, and motivation are positive characteristics to instill in a soldier. The United States also has a civilian culture of being independent, aggressive, and competitive, leaving little room for individuals to show weakness, vulnerability, or rely on others for help. Engaging in behaviors such as these could result in social shame or guilt of not living up to the socially appropriate role of a soldier, airman, sailor, or marine. Even within different branches of the military unique cultures exist concerning ways of communicating among ranks and carrying out operations. Within the United States there is a large stigma attached with seeking out mental health services, and this is only magnified among the current military culture. While prevention programs almost universally seek to reverse this stigma and encourage individuals to seek mental health care, nothing in the literature has specifically addressed these broader cultural conflicts that may play a part in the increased rates of suicide amongst military members that the United States is facing.

In review of the literature there were also areas from which other nations' militaries could benefit of the research that has been conducted in the United States military. Risk factors such as traumatic brain injuries (TBI) are cited within both within the United States and international literature as being linked to increased suicidal ideation and behaviors. However, other nations' militaries have not reviewed how TBIs may be affecting their service members and more research is needed to be done to see if a relationship exists. There was also an overall lack of published outcome data reported from both the United States military and other nations' militaries. The Air Force was the only prevention program that has published outcome data (Dod/TFPS, 2010) and few studies from the other nations published specific outcomes of the prevention programs administered.

The current research possesses limitations across the three main areas addressed. Overall, challenges were found in collecting suicide rates of other nation's militaries due to some countries reporting deaths per year while others reporting rates based on 100,000 of the population. These inconsistencies made it difficult to accurately compare rates across different nations. Further, no research exists concerning differences between suicide rates across countries or why these differences may have developed. While the majority of the research reviewed did reveal some consistencies in risk or resilience factors across countries, such as levels of combat exposure being associated with increasing mental health problems (Bryan, Cukrowicz, West, & Morrow, 2010), the existing research did not often make the connection between such factors and an increase in suicidal behaviors. Even within the United States there are discrepancies as to the most effective way to calculate the military's suicide rates and, until a consensus can be reached, it will be difficult to produce a figure that is universally agreed to be most representative of the sample with the least amount of error.

Another major limitation of the current review is that many of these studies did not include data from military personnel who served in OEF/OIF. Therefore, it is unknown whether or not this information can be generalized to the current situation. Limited research was conducted on comorbidity in the presentation of mental health disorders, and the effect this may have on suicide is not currently covered in the research across nations' militaries. Any research that was conducted was on past military personnel that have not served in the OEF or OIF conflicts. Neither the United States military nor other nations' militaries addressed the fact that individuals in a state of crisis often present with more than one diagnosable mental health problem or personal concern. In addition, there is limited research conducted on the level of experience and rank of military personnel and how this may be related to suicide resiliency

factors. Further investigation into the relationship between experience of the military personnel, combat exposure, and combat experience and how this relates to suicidal ideation or behaviors across militaries is needed.

Limitations of this current literature review consisted of only reviewing research on militaries from western cultural orientations. This was done purposefully in order to focus the scope of this study. However, it is unknown what rates, risk and resiliency factors, and preventative protocols may exist in eastern or non westernized nations that may be beneficial in preventing suicide among military personnel. Another limitation of this study is that the researcher could only read and evaluate articles in English, which may have reduced the number of articles available and, therefore, limited the incorporation of additional information that may have been pertinent to this review that was published in alternate languages. Also, since this literature review was conducted within the United States access to additional articles and journals not published in the United States may have been restricted.

Directions for future research within this topic could begin by addressing the limitations of this study. Additional reviews of the literature could be conducted in alternate countries. Reviewing militaries from eastern cultures may be beneficial and provide strategies for suicide prevention protocol not addressed by western militaries. One of the few resiliency factors discussed (not being a smoker) also revealed inconsistencies in the literature. Not smoking was found to be a resiliency factor in both the United States military and United Kingdom militaries in that it decreased suicide rates among individuals (Hooper et al., 2008; Miller, Hemenway, Bell, Yore, & Amoroso, 2000). However, these findings were inconclusive across the research due to limitations of confounding variables in which individuals who do smoke may also have high rates of mental illness, which could potentially result in an increase in suicidal behavior.

Future research should aim at separating out variables such as smoking and mental illness to see if relationships exist or if not smoking truly is a preventative factor to suicide.

Due to severe inconsistencies in how suicide rates are reported, discrepancies in the literature make it difficult for researchers to study this topic across nations. One way to resolve this conflict would be to conduct new research on developing a national data base that would collect and analyze data throughout the US to ensure accuracy and error reduction for suicide rates and also to provide some universal metric for evaluating how effective suicide prevention programs were. This would not only provide data for other nations to conduct research but also aid military personal in evaluating the effectiveness of the current prevention programs that are in place in the United States.

A hypothesis that developed as a result of this literature review could be tested in future research studies. Differences in suicidal rates may be due to developing prevention programs that do not tap into the personality traits of individuals. For example, individuals from the United States may rank higher on the personality trait of being independent in comparison to individuals from certain other countries. Once these personality traits were identified, then prevention programs could be developed that would interact with these traits. For example, a study conducted on sensation seeking with adolescents found that those high in sensation seeking trait responded to anti drug commercials that were more stimulating (Donohew, Lorch, & Palmgreen, 1991). In addition these individuals were also more likely to call the hotline when in a time of crisis due to interactions with drugs (Donohew, Lorch, & Palmgreen, 1991). There is no research currently conducted on military suicide prevention protocols and personality traits among either the United States or other countries. In addition, further study into areas of social

support, financial stability, and education as potential areas of resiliency to suicidal ideation or behavior could also be evaluated among military personnel within the United States.

### **Conclusion**

The United States is a proud nation that has overcome many obstacles in its short history as an independent country. Suicide is a permanent consequence to what at times can be solvable challenges. With the help of mental health professionals, counselors, chaplains, and family or social supports the warning signs of suicidal behaviors can be detected. Suicide is a tragedy that all human kind experiences and often it is easy to review this topic at a distance by evaluating numbers and reviewing prevention strategies implemented to the masses. However each number is a victim of a preventable epidemic that currently science does not have a cure for, but with the tireless efforts of trained professionals and support of loved ones there is hope for a solution.

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