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## ORIGINAL ARTICLES

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## Work Stress in the Military: Prevalence, Causes, and Relationship to Emotional Health

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**Objective:** This study examined the prevalence and sources of occupational stress for military personnel and the relationship between work stress and emotional health in the military population. **Methods:** Four hundred seventy-two active duty military personnel stationed at F. E. Warren Air Force Base completed a 65-item survey that included items involving reported life events, perceptions about occupational stress, and perceptions about the relationship between work stress and emotional health. **Results:** These military personnel were significantly more likely to report suffering from job stress than civilian workers ( $p < 0.001$ ). One-quarter (26%) reported suffering from significant work stress, 15% reported that work stress was causing them significant emotional distress, and 8% reported experiencing work stress that was severe enough to be damaging their emotional health. Generic work stressors were endorsed more frequently than military-specific stressors. **Conclusions:** More than one-quarter of this sample of military personnel reported suffering from significant work stress and a significant number of these individuals suffered serious emotional distress. These results support previous research suggesting that work stress may be a significant occupational health hazard in the U.S. military.

### Introduction

Work stress exacts a tremendous toll on the U.S. working population. Approximately one-quarter of U.S. workers suffer from mental illness, a significant fraction of the total work force.<sup>1-4</sup> Work stress costs industry roughly \$150 billion per year in lost productivity and disability claims.<sup>5</sup> Emotionally distressed workers exhibit decreased productivity, increased work-force turnover, higher rates of absenteeism, more accidents, lower morale, and greater interpersonal conflict with colleagues, supervisors, and customers.<sup>1</sup> This article is an examination of the sources of job stress and the prevalence of reported work stress in one specific professional environment: the military.

In the military, much attention has been paid to the relationship between combat and the emotional health of military personnel. Indeed, current textbooks on military psychiatry focus primarily on the effects of combat stress and the prevention of post-traumatic stress disorder.<sup>6,7</sup> The more dramatic aspects of wartime activities have been clearly established as precipitants of psychological stress. Recent research has established that combat, exposure to heavy casualties, deployment of units in a war zone, and unexpected mobilizations of reserve units are all correlated with higher levels of psychological distress.<sup>8-10</sup> More recently, as the role of military personnel in humanitarian and disaster relief missions has increased, so has the focus on the stressful nature of these missions. For example, military health care workers exposed to severe burn injuries and navy divers recovering bodies from the ocean depths, both after civilian airline accidents, experienced significant emotional distress.<sup>11,12</sup>

Research studies that examine the impact of combat and disasters on the emotional health of military personnel are clearly important. However, the vast majority of U.S. military personnel over the past 25 years have not been exposed to combat or participated in the response to a major disaster, civilian or military. Furthermore, mental health professionals throughout the military routinely deal with military patients complaining that job stress is causing them emotional distress.

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Unfortunately, very little research exists regarding the impact of the stress of routine military work on the mental health of military personnel.<sup>1,13</sup> It seems to be assumed that the stress of military life is attributable solely to such things as deployments overseas, exposure to combat, and the threat of bodily harm. The periodic permanent change of station, stationing of personnel overseas, and lack of control over duty assignments are just a few examples of the more mundane aspects of military life that may affect the mental health of its members.

Several studies have found work stress to be a significant source of distress for military personnel during routine peacetime assignments. Manning et al.<sup>14</sup> found that military mental health patients identified work-related problems as the primary contributor to their emotional problems at three military mental health clinics in peacetime Europe. These workers complained of problems with job satisfaction and relations with supervisors and co-workers. McCarroll et al.<sup>15</sup> reported that 23% of military mental health patients in a stateside military mental health clinic were given the sole diagnosis of occupational problem. However, in a study of mental health evaluations onboard an aircraft carrier, Bohnker et al.<sup>16</sup> found that less than 2% of the diagnoses made were occupational problem. For comparison, in a sample of correction officers working in a prison who sought mental health care, approximately 4% were given a diagnosis of occupational problems.<sup>17</sup>

A more recent study examined the prevalence of reported job stress in military mental health patients.<sup>13</sup> A majority (60%) felt that they were suffering from significant work stress, and more than one-half (52%) reported that work stress was causing them significant emotional distress. Most importantly, nearly one-half (43%) of these military mental health patients believed that work stress was a significant contributor to the onset of their mental illness. Interestingly, these military mental health patients did not report experiencing military-specific stressors (e.g., deployments overseas or recent permanent change of station) with any degree of frequency. No job stressor unique to the military was reported by more than 9% of this population. The most common work stressors reported were change in work responsibilities, change in work hours, and trouble with supervisors. This suggests that job stress in the military may have little to do with the fact that military personnel deal with the difficult business of war and may stem from more subtle aspects of military culture that foster work stress.

Clearly, conclusions about work stress in the military based solely upon mental health patient populations are not adequate. Given that 10% of U.S. workers report exposure to mental stress at work and 5% believe that their experience of work stress could be deleterious to their mental health,<sup>18</sup> an examination of the prevalence of work stress in nonpatient military populations seems warranted. As the contribution of occupational stress to mental illness in military personnel is studied, researchers can examine whether or not work stress is more frequently a contributing factor to psychiatric illness in the military than in the civilian population. Equally important, aspects of the military work environment that cause emotional distress need to be elucidated. The primary goals of this study were to identify the prevalence of reported occupational stress among military personnel, to examine the relationship between work stress and

emotional health in this population, and to identify the most common kinds of occupational stressors endorsed by these individuals.

## Methods

This study was cross-sectional in design and used survey methodology. The participants were active duty U.S. Air Force personnel stationed at F. E. Warren Air Force Base in Cheyenne, Wyoming (a nuclear intercontinental ballistic missile base). The survey was offered to the first 581 consecutive attendees to suicide prevention training, which is required annually for all U.S. Air Force personnel. Participants completed the survey in the base theater while awaiting the training to begin. Participation in the study was anonymous and voluntary. Of the 1,257 military personnel who attended the training, 581 (46%) were offered the survey. Of the 581 military personnel offered the survey, 472 (81%) completed it. The study participants represented roughly 14% of the 3,320 military personnel stationed at F. E. Warren Air Force Base at the time of the study.

The study used a 65-item survey developed by the investigators that included items on demographics (two items), perception of occupational stress (one item), perception of relationship of occupational stress to mental health (two items), and an inventory of life events (60 items). Occupational stress was defined for participants as "stress or tension produced by conditions in your work environment that have a negative impact on your psychological or emotional well-being."

The inventory of life events is a list of 60 items that respondents checked whether or not they had experienced during the previous 6 months. Examples include marriage, divorce, personal illness, starting school, or changing job hours. Each of these events can be experienced as positive or negative, depending on the individual. Regardless of how the individual interprets the event, each life change is assumed to require the individual to make adjustments in his or her life. Because of these adjustments, it is assumed that these life events introduce stress into the life of the individual, regardless of whether the event is experienced as positive or negative. The amount of adjustment required and stress caused by each life event varies, depending on the significance of the life event to the individual. The 60 life events used in this study include the 43-item schedule of recent experiences (SRE) and 17 items felt to be particularly relevant to the military lifestyle.

The SRE was developed by Navy researchers in 1967.<sup>19</sup> The SRE contains a list of 43 life events that have been assigned a weighted value, based on a normed assessment of how difficult it would be to adjust to that particular life event. By adding the weighted numerical values assigned to each of the 43 items experienced by the respondent, each respondent was given an SRE score, which is a measure of overall stress. The reliability (0.87–0.90) and validity (0.50–0.75) of this scale have been established.<sup>20</sup> The SRE score has been shown to be predictive of the frequency and severity of future illnesses.<sup>21–29</sup> As the SRE score rises, both the number and severity of illnesses experienced during the next year increases. The accumulation of life changes, which the SRE measures, has been shown to precede the onset of mental illness.<sup>23,30–33</sup> Furthermore, stressful life events are significantly correlated with psychiatric symptomatology in deployed military personnel.<sup>34,35</sup>

**TABLE I**  
DEMOGRAPHIC CHARACTERISTICS OF THE STUDY SAMPLE AND THE USAF

Demographic Variable	Study Sample	USAF (2000)
Sex	84% Male (n = 395) 16% Female (n = 77)	81% Male 19% Female
Average age (years)	29.9	30.2
Rank	71% Enlisted (n = 335) 29% Officers (n = 135)	80% Enlisted 20% Officers
Average time in service (years)	9.2	9.4
Average education (years)	14.59	14.03
Marital status	61.5% Married (n = 289) 27.7% Single (n = 130) 8.9% Divorced (n = 42) 1.9% Separated (n = 9)	63% Married
Mental health patient	5.5% (n = 26)	5.4%

The final 17 items on the survey represent life events that may be of particular relevance to military personnel but were not included in the original SRE. They were developed from previous attempts by the authors and others to adapt the SRE to the military.<sup>13,21</sup>

The data were analyzed with SPSS personal computer software (version 9.0), using the  $\chi^2$  test for categorical variables and the *t* test and one-way analysis of variance for continuous variables. The data were examined to identify the prevalence of occupational stress, the relationship of various demographic variables to the reporting of work stress, and the differences between military personnel who reported job stress and those who did not.

**Results**

Four hundred seventy-two military personnel agreed to participate in this study and completed the survey. Table I lists the demographic characteristics of the sample and the U.S. Air Force overall.<sup>36</sup> On most demographic parameters, the sample population was not significantly different than the general U.S. Air Force population. The only exceptions were that there were significantly more officers [ $\chi^2$  (1, N = 472) = 24.44, *p* < 0.001] and the sample had more years of education [ $t^{454}$  = 5.25, *p* < 0.001]. Approximately 7.5% of the local military population had received mental health care over the preceding 6 months, which was not statistically different from the 5.5% of the study sample that reported having received mental health care in the past 6 months. The percentage of study participants receiving mental

health care was not significantly different than recently published statistics for the entire U.S. Air Force (5.4%).<sup>37</sup>

It must be noted that all respondents did not answer every question. In a few instances, between two and five respondents did not answer a particular question. Thus, the sample sizes discussed in the following tables do not always equal 472 (e.g., rank, N = 470; marital status, N = 470; Table II, N = 469; Table III, N = 468; Table IV, N = 467).

Table II shows the responses to the question, "Do you feel that you are suffering from significant work stress?" One-quarter (26%) of study participants responded yes to this question. These military personnel were significantly more likely to report experiencing work stress than the general population of U.S. workers [ $\chi^2$  (1, N = 469) = 136.58, *p* < 0.001].<sup>18</sup> The average SRE score of those who responded yes to this question was significantly higher than those who said no ( $F_{1,468}$  = 24.78, mean square error = 5.63, *p* < 0.001). The average number of work stressors endorsed by those who responded yes to this question was significantly higher than those who said no ( $F_{1,468}$  = 23.94, mean square error = 0.08, *p* < 0.001). The average SRE score for the entire sample was 160.

Table III shows the responses to the question, "Is work stress causing you significant emotional distress?" Seventy-one respondents (15%) answered yes to this question. The average SRE score of those who responded yes to this question was significantly higher than those who said no ( $F_{1,467}$  = 27.60, MSE = 5.64, *p* < 0.001). The average number of work stressors endorsed by those who responded yes to this question was significantly higher than those who said no ( $F_{1,467}$  = 15.05, MSE = 0.08, *p* < 0.001).

Table IV shows the responses to the question, "Do you feel that you are suffering from work stress that is severe enough to be damaging to your emotional health?" Thirty-six participants (8%) answered yes to this question. The average SRE score of those who responded yes to this question was significantly higher than those who said no ( $F_{1,466}$  = 15.64, MSE = 5.65, *p* < 0.001). The average number of work stressors endorsed by those who responded yes to this question was significantly higher than those who said no ( $F_{1,466}$  = 10.58, MSE = 0.08, *p* < 0.001).

Table V reports the frequency of military and occupational stressors by percentage of respondents endorsing the stressor. The most commonly reported stressors were generic work stressors that are not specific to the military. Only 1 of the top 5 and 4 of the top 10 stressors by frequency were military specific. Only one military-specific stressor was endorsed by more than 10% of respondents (permanent change of station, 15%).

Study participants who had received mental health care in the preceding 6 months were significantly more likely to report

**TABLE II**  
DO YOU FEEL THAT YOU ARE SUFFERING FROM SIGNIFICANT WORK STRESS?

Response	Percentage	Average SRE Score: (Difference Significant, <i>p</i> < 0.001)	Average Number of Work Stressors: (Difference Significant, <i>p</i> < 0.001)
Yes	26 (n = 123)	205	2.5
No	74 (n = 346)	143	1.6

The percentage and number of study participants who responded yes or no to this question with their average SRE scores and average number of worker stressors. The difference between the average SRE scores and the average number of worker stressors reported by those who responded yes or no to this question was statistically significant (*p* < 0.001).

**TABLE III**  
IS WORK STRESS CAUSING YOU SIGNIFICANT EMOTIONAL DISTRESS?

Response	Percentage	Average SRE Score: (Difference Significant, $p < 0.001$ )	Average Number of Work Stressors: (Difference Significant, $p < 0.001$ )
Yes	15 (n = 71)	227	2.6
No	85 (n = 397)	147	1.7

The percentage and number of study participants who responded yes or no to this question with their average SRE scores and average number of worker stressors. The difference between the average SRE scores and the average number of worker stressors reported by those who responded yes or no to this question was statistically significant ( $p < 0.001$ ).

**TABLE IV**  
DO YOU FEEL THAT YOU ARE SUFFERING FROM WORK STRESS THAT IS SEVERE ENOUGH TO BE DAMAGING TO YOUR EMOTIONAL HEALTH?

Response	Percentage	Average SRE Score: (Difference Significant, $p < 0.001$ )	Average Number of Work Stressors: (Difference Significant, $p < 0.001$ )
Yes	8 (n = 36)	236	2.7
No	92 (n = 431)	153	1.7

The percentage and number of study participants who responded yes or no to this question with their average SRE scores and average number of worker stressors. The difference between the average SRE scores and the average number of worker stressors reported by those who responded yes or no to this question was statistically significant ( $p < 0.001$ ).

**TABLE V**  
FREQUENCY OF MILITARY AND OCCUPATIONAL STRESSORS

Stressor	Percentage and No. of Participants Reporting Experiencing the Stressor
Change in responsibilities at work	46% (n = 221)
Change in work hours or conditions	34% (n = 160)
Change to a different line of work	17% (n = 81)
Permanent change of station	15% (n = 73)
Trouble with supervisors	11% (n = 54)
Bypassed for promotion	10% (n = 48)
Minor military disciplinary action	8% (n = 37)
Business readjustment	8% (n = 39)
Frequent temporary duty away from home	7% (n = 31)
Involuntary assignment	6% (n = 26)
Marital separation due to orders	5% (n = 22)
Deployment in a war zone	3% (n = 14)
Extended temporary duty away from home	2% (n = 10)
Overseas tour	2% (n = 9)
Major military disciplinary action	1% (n = 7)
Fired at work	1% (n = 6)
Reduction in rank	1% (n = 5)
Remote tour	1% (n = 6)
Retirement	1% (n = 5)
Voluntary separation from military	<1% (n = 3)
Dishonorable discharge	0% (n = 0)

The percentage and number of study participants who reported experiencing these military and occupational stressors during the previous 6 months. Because each respondent could report experiencing multiple stressors, the total number exceeds 472.

suffering from job stress [ $\chi^2 (1, N = 466) = 12.40, p < 0.001$ ]. Of the 22 study participants who had received mental health care, 14 (56%) reported suffering from significant work stress. These 14 individuals represented 11% of the 123 study participants who reported suffering from significant work stress. Consistent with previous research,<sup>13</sup> the mental health patients had significantly greater SRE scores ( $F_{1,468} = 7.09, MSE = 5.56, p < 0.01$ ). The average SRE score of those who had received mental health care was 219.

The report of work stress in this study was independent of age, sex, education, years of military service, rank, and marital status. As discussed previously, the report of work stress was positively and significantly related to the overall SRE score, the number of work stressors reported, and having received mental health care in the previous 6 months. These patterns were true as well for both the report of emotional distress secondary to work stress and the report that work stress was perceived to be damaging to the individual's emotional health.

## Discussion

The study achieved an excellent response rate (81%) and a reasonable sample size (14% of the total base military population). However, because the study was anonymous in nature, there are no data on the nonresponders and, therefore, no comparisons can be made between the responders and the nonresponders. Nonetheless, unknown factors that influence some individuals to participate in the study and lead others to decline might bias the results of this study.

The study was similar in most regards to the entire U.S. Air Force population. However, the sample contained significantly more officers and was significantly more educated than the overall U.S. Air Force. Given that officers are required to have at least a bachelor's degree, a sample with more officers would be expected to be more educated, as well. However, the report of work stress was found to be independent of rank and education, so the study results seem unlikely to have been biased by these differences from overall U.S. Air Force demographics. For the same reasons, these differences seem unlikely to significantly compromise the generalizability of these results to the U.S. Air Force as a whole.

The 90th Space Wing and the 20th Air Force are located at F. E. Warren Air Force Base. The 90th Space Wing's primary mission is maintaining and manning its intercontinental ballistic missile force, a critical component of the nation's nuclear deterrent capability. Many base personnel deploy routinely to the missile fields for several days at a time. The Wing also supports the U.S. Air Force presence in the Middle East with a small number of 90- and 180-day deployments. Furthermore, the personnel working at the 20th Air Force face the stress of working in a major military headquarters organization. These unique aspects of the local mission certainly affect the kinds of stressors experienced by base personnel. Because the mission varies greatly across bases, the reports of work stress may also vary considerably. The variability of mission and work stressors across military organizations certainly might affect the generalizability of these results to the rest of the U.S. Air Force.

It must be recognized that this study is based on entirely on self-report data. The perceptions of the study participants certainly can influence their responses and affect the results of this research. Therefore, we must be careful about the conclusions made based on this data. Additional research at different bases with varying missions is necessary to replicate these results.

Even after considering these possibly limiting factors, the results of this study suggest that work stress may be a significant occupational health hazard in the military. This is the first study to report the prevalence of work stress in a nonmental health patient military population. These military personnel were significantly more likely to report suffering from work stress than the general U.S. population.<sup>18</sup> More than one-quarter of participants reported suffering from significant job stress, and nearly one in six believed work stress was causing them significant emotional distress. Nearly 1 in 10 believed that they were suffering from work stress that was severe enough to be damaging to their emotional health. Given that these military personnel were stationed in the United States during peacetime, the results suggest that the routine military work environment can sometimes be detrimental to the emotional health of military personnel.

The SRE scores of those who reported work stress indicate that their high levels of stress may be damaging their health. The average SRE score of those who reported work stress was significantly greater than the average SRE score of those who did not. This pattern of SRE scores suggests that individuals reporting work stress are at much greater risk for having a physical or emotional illness over the next year.

Consistent with previous research,<sup>13</sup> those participants who had received mental health care in the previous 6 months were more likely to report suffering from work stress. It may be that work stress causes emotional problems that require mental health care or that individuals suffering from emotional problems are more likely to perceive themselves as suffering from work stress. It is probably a combination of both of these factors that leads to the increased report of work stress among military mental health patients. Nonetheless, only 56% of the mental health patients in the sample reported work stress, and only 11% of those study participants who reported suffering from work stress were mental health patients. Thus, the report of work stress by the study population as a whole is not accounted for by the presence of mental health patients in the sample.

Interestingly, whereas 8% of the study sample reported suffering from work stress severe enough to damaging their emotional health, only 5.5% had sought mental health care in the previous 6 months. This is consistent with previous work indicating that many individuals with mental health problems do not seek professional help.<sup>38</sup> It also suggests that a significant fraction of emotionally distressed military personnel are not receiving the benefits of mental health care and are continuing to work in potentially sensitive positions despite their emotional problems. This could have serious implications for mission performance.

Similar to the previous studies in military mental health patients,<sup>13</sup> these military personnel did not commonly experience military unique stressors, such as deployments overseas, involuntary assignments, or military disciplinary action. Instead, they reported most commonly changes in work responsibilities, work hours, or type of work. These stressors are also common in the civilian work arena. Granted, other military units may face a greater likelihood of deployments and other military unique stressors. However, these results are consistent with previous research revealing that deployed personnel are no more likely to seek mental health care than the overall military population, suggesting that the stresses of deployment do not increase the risk for having mental health problems.<sup>37,39</sup> Consistently, research has demonstrated that the most unique aspects of the military job, such as deploying overseas in the face of danger, are not the major sources of distress in military personnel. Thus, work stress in the military cannot be simply dismissed by the fact that the business of war is stressful. It appears that something subtler about the military culture may account for much of the occupational stress reported by military members.

Given the results of this study, it is reasonable to consider which aspects of the routine military work environment could lead to job stress. Clearly, work climate influences health status, job satisfaction, and job stress.<sup>40</sup> Individuals working in occupations with low autonomy and little control over work appear to suffer from higher rates of mental illness.<sup>41,42</sup> Working long hours is significantly correlated with poorer physical and

psychological health.<sup>43</sup> Given these previous research findings, the military's emphasis on discipline, obeying orders, respecting the rank hierarchy, and working diligently without complaint until the mission is complete may not be entirely healthy. In addition, conflict between military supervisors and employees tends to be resolved in favor of the supervisor, but military personnel do not have the option to quit when confronted with a hostile supervisor. It is reasonable to speculate that these are some of the qualities of the military work environment that could foster emotional distress among certain subsets of the military population.

Why should the military care about work stress? Workers suffering from excessive job strain consistently manifest greater levels of psychiatric morbidity.<sup>44</sup> Emotionally distressed workers are more prone to making the mistakes and judgment errors that can cost lives or destroy expensive weaponry during military missions. If the results of this study truly reflect the levels of work stress across the entire U.S. military, then the ability of the United States to wage war to defend its national interests may be compromised. In the high technology, fast-paced warfare of the 21st century, the battlefield will leave little margin for error. Troops will need to function at peak efficiency and cannot afford the distractions imposed by work stress and its resulting emotional problems. This study is just the beginning of the exploration of this issue. The U.S. military needs to identify the sources of occupational stress in its personnel so that it can implement solutions that reduce the negative impact of work stress on the morale and emotional health of its fighting men and women.

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