

Psychological Effects of Deployments on Military Families

Christopher H. Warner, MD, MAJ, MC, U.S. Army; George N. Appenzeller, MD, LTC, MC, USA;Carolynn M. Warner, MD; and Thomas Grieger, MD, CAPT (Ret), MC, U.S. Navy
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CME EDUCATIONAL OBJECTIVES

1. Identify barriers to access to care for returning veterans.
2. Identify non-traditional remedies used to improve access to financial and healthcare benefits.
3. Identify the benefits of a class action approach to resolving access-to-care issues.

ABOUT THE AUTHOR

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EDUCATIONAL OBJECTIVES OVERVIEW

Veterans who serve their country and return from duty face formidable challenges upon re-entry. Most return and are able to resume their lives, but too many bear the burden of psychological and psychiatric disorders, and many have problems exacerbated by a complex system to obtain services and benefits. The goal of this CME activity is to inform the participants about the specific mental health issues and challenges faced by returning veterans.

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The continued operations in Iraq and Afghanistan have brought the mental health effects of military conflict to public attention. Most studies of deployment-related stress during the current conflicts in Afghanistan and Iraq have focused on the post-deployment symptoms experienced by military members following their return from deployment.¹⁻⁵ These studies have shown rates of posttraumatic stress disorder (PTSD) and depression in the range of 10% to 20% following deployment. Studies have also shown that many veterans do not seek care despite endorsing high levels on symptoms. Commonly endorsed reasons for not seeking care include practical issues, such as getting time off of work for

CME EDUCATIONAL OBJECTIVES

1. Identify stressors that occur among spouses of about-to-be deployed service members.
2. Identify perceived barriers, among spouses, to mental healthcare.
3. Identify the levels of depression and stress that occur among spouses of about-to-be deployed service members.

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appointments, but also are because of the perception that seeking care could interfere with their careers or various aspects of their relationships with peers and supervisors.¹ Stress experienced by spouses and other family members has been less studied in relationship to the current conflicts, but has a potential impact on general health status and a potential secondary impact on deployed or returning service members. A recent 1-year analysis of a deployed Division Mental Health unit showed that the top stressor came from the home-front.⁶

Most studies examining the effects of deployment on soldiers' families have focused on the secondary effects of living with a returned service member with deployment-related PTSD, other psychiatric conditions, or changed interpersonal behavior.⁷⁻¹² Among help-seeking Vietnam

veterans diagnosed with PTSD, veterans and spouses rated anger as a high priority for treatment, while spouses also nominated interpersonal difficulties and avoidance by their spouses as areas of concern.⁸ Partners of Vietnam veterans with PTSD were also more likely to experience caregiver burden and have poorer adjustment than partners of veterans without PTSD.⁹ Similarly, partners of peacekeeping soldiers with PTSD experience more troubles with sleep, physical symptoms, and perceived negative social support.¹⁰ A recent study of soldiers returning from Iraq or Afghanistan showed that increasing levels of trauma symptoms among the soldiers predicted lower marital and relationship satisfaction for both soldiers and their partners.¹¹ In a comprehensive study following the first Gulf War, veterans who had deployed to war demonstrated

a higher prevalence of several medical conditions than veterans who had not deployed. Their spouses, however, had no increase in medical problems, compared with spouses of veterans who had not deployed.¹² In contrast, when compared with a control sample, adult family members of deployed National Guard soldiers had poorer general health, more health related problems, and greater healthcare utilization, while their children had poorer general health and engaged in more health risk behaviors.¹³

Although the theoretical aspects of family stress during and following deployment are often commented upon, few studies have directly measured the effects on the family prior to and during the deployment.¹⁴ Historically, from the period before World War II to following the Vietnam War, examination of military

TABLE 1.

Endorsement of Family Deployment Stressors

Stressor	Proportion (N) Endorsing Item (N = 295)
Feeling lonely	89.8% (265)
Having problems communicating with my spouse	61.4% (181)
Experiencing the death of a close friend or relative	33.2% (98)
Managing and maintaining family/personal finances	46.4% (137)
Personal/family health issues	43.1% (127)
Being pregnant during the deployment	27.1% (80)
Raising a young child while my spouse is not present	63.1% (186)
Childcare	39.7% (117)
Managing and maintaining the upkeep of my home	48.5% (143)
Having reliable transportation	19.7% (58)
Caring/raising/disciplining children with my spouse absent	56.3% (166)
Balancing between work and family obligations/responsibilities	52.9% (156)
The safety of my deployed spouse	96.3% (284)

family demographic data found that birth rates dropped during war time but that divorce rates were unaffected, suggesting that deployment had not increased the likelihood of marital problems on a broad scale.¹⁵ Short deployments during prior conflicts appear to have minimal impact on marital satisfaction, while loneliness, being pregnant during the deployment, fear of soldier safety, difficulty communicating with their spouse, and ignorance of the conflict situation were common themes contributing to stress.^{16,17}

Measures of spousal symptoms of anxiety and depression during Operation Desert Storm (ODS) revealed that more than 70% were experiencing high levels of symptoms during the deployment; but that of these, the majority were no longer symptomatic 9 to 10 months after the soldiers returned.^{18,19} Two higher risk groups of spouses have been studied: those who were pregnant during deployment, and those with school-age children. Among a sample of pregnant spouses, those with deployed service members and with more than one child already at home reported higher stress levels than those whose spouses were not deployed or had one or no children at home.²⁰ Mothers of school-

age children experienced temporary disruptions in the ability to maintain supportive relationships, less nurturance, and less family cohesiveness.²¹

Deployments on which these prior studies were based were generally for shorter time periods; during operations where there were far fewer casualties, and where most soldiers were not being required to make multiple deployments. Although some of the studies examined the number of specific stress items reported by spouses, another potential contributing factor to stress and resulting psychiatric symptoms was the manner in which an individual controls challenging events in light of personal and contextual factors and available coping mechanisms.²² When combined with an objective scale of stress events, scales of assessing global perceptions of stress can be used to determine whether appraised stress mediates the relationship between objective stress and illness.²²

In this article, we report on the stresses experienced at the time of departure for deployment. We surveyed the spouses of one Army Brigade Combat Team (BCT) as their service members prepared and left for deployment. This BCT had previ-

ously deployed to Iraq on three occasions. We examined the role of demographic factors, prior deployments, number of specific potentially stressful experiences (objective stress), and patterns of perceiving and handling stressful events (global perceptions) on the magnitude of depressive symptoms. These findings are part of a larger ongoing study, the “Psychological Effects of Deployment on Military Families,” which is examining the stress of spouses and deployed service members across the deployment cycle.

METHODS

After approval was obtained from the unit commanders as well as the Institutional Review Board, an invitation to participate in the study was sent via e-mail to all of the 872 spouse members of one deploying Brigade Combat Team’s Family Readiness Group (FRG). This group was chosen as a convenience sample, because an e-mail distribution list was already available for them. The invitation outlined the survey, the importance of participation, and a link to a Website where the participants could complete the survey. The survey was voluntary and anonymous, and the survey Website could not link responses to the originating computer or e-mail address. A reminder was sent out one week later asking the spouses to participate if they had not already.

Demographic Information

Respondents were asked to provide basic demographic information including age, sex, race, highest level of education, length of marriage, number of children, history of prior mental health treatment, spouse’s current rank, and number of times spouse has previously deployed to Operation Iraqi Freedom/Operation Enduring Freedom (OIF/OEF). Choices for the history of prior mental health treatment included “No”; “Yes, within the past year”; “Yes, greater than one year ago”; “Yes, during one of my spouse’s prior deployments.”

TABLE 2.

Univariate Associations between Screening Positive for Depression and Endorsing Perceived Barriers to Care

Perceived Barrier to Care	Total Sample N = 295 [N (%)]	Depressed Group (PHQ >10) N = 128 (%)	Non-depressed Group N = 177 (%)	Chi-square	P
Coworkers or friends might view me differently	63 (21.4)	27.6	17.9	4.52	0.24
Spouse and family might view me differently	71 (24.1)	34.7	17.5	10.99	0.001
Difficult to get time off work to attend appointments	107 (36.3)	45.6	31.5	6.16	0.013
Difficult to get time away from family to attend appointments	114 (38.6)	43.1	37.7	.861	0.210
It would harm my career	47 (15.9)	21.4	12.3	4.28	0.039
It would be too embarrassing	71 (24.1)	36.0	16.0	15.31	< 0.0005
I would be seen as weak	83 (28.1)	40.5	19.6	15.08	< 0.0005
Evidence of behavioral mental healthcare in my medical record could harm my spouse's military career	84 (28.5)	38.9	21.5	10.46	0.001
I would not take any medications for behavioral healthcare	119 (40.3)	44.0	39.0	.725	0.039

Deployment Stressors

Respondents were asked to rate a series of statements about common stressors for a family during a deployment and perceived barriers to care. For both sets of statements, the spouse was asked to rate their level of agreement on a four-point Likert scale ranging from “strongly disagree” to “strongly agree.” The complete list of deployment stressors is provided in Table 1 (see page 58). This list included those stressors identified by Schumm et al in their marital satisfaction study¹⁶ as well as other commonly reported stressors based on the experiences of the authors.

Global Perception of Stress

The respondent's global level of perceived stress was determined via the Perceived Stress Scale (PSS). The PSS is a 14-item, self-administered test that measures the degree to which situations in one's life are found to be stressful rather than a scale tied

to specific life events.²² Respondents are asked to rate their experienced stress over the past month on a series of items that focus on the sense that one's life is unpredictable, uncontrollable, and overloaded.²² Respondents rate their perceived stress using a five-point scale ranging from 0 (“never”) to 4 (“very often”).¹⁰ All responses are tied to the past month. Example questions include: “How often have you felt that you were unable to control the important things in your life?” and “How often have you been angered because of things that happened that were outside of your control?” Scoring is accomplished by reversing the scores for the seven positive items 4-7, 9, 10, and 13, and then summing across all 14 items (range is 0-56). In validation studies of the PSS, the mean score was 19.62 with a standard deviation of 7.49 in general U.S. populations. Internal reliability of a PSS is excellent with Chronbach's alpha ranging from 0.75 to 0.86.^{22,23}

Depression

The current level of depression in the participants was determined using the Patient Health Questionnaire 9 (PHQ-9). The PHQ-9 is a nine-item, self-administered version of the depression module of the Primary Care Evaluation of Mental Disorders. This test assesses the nine diagnostic criteria for depression on a scale of 0 (“not at all”) to 3 (“nearly every day”).²⁴ When the test is used as a screening instrument, the individual responses are summed (scale range, 0-27). In validation studies, a score of ≥ 10 on the PHQ-9 had a sensitivity of 88% and a specificity of 89% for major depressive disorder. Scores of 5, 10, 15, and 20 were indicative of mild, moderate, moderate-severe, and severe depression respectively. Internal reliability of the PHQ-9 is excellent, with a reliability correlation-alpha of 0.89 for primary-care patients and 0.86 for obstetrics/gynecology patients.²⁴

Perceived Barriers to Care

Prior studies have reported several perceived barriers to soldiers seeking

TABLE 3.

Demographic Information

Gender	N	%
Female	284	96.3%
Male	6	2.0%
Age	N	%
17 to 24 years	98	33.2%
25 to 29 years	84	28.5%
30 to 34 years	44	14.9%
35 years or older	66	21.9%
Ethnicity	N	%
White	235	79.7%
Black	30	10.2%
Hispanic	23	7.8%
Asian	9	3.1%
Other	9	3.1%
Children	N	%
0	88	29.8%
1	71	24.1%
2	89	30.2%
3 or more	47	15.9%
Current Marriage Length	N	%
< 1 year	54	18.3%
1 to 5 years	140	47.5%
6 to 10 years	59	20.0%
> 10 years	40	13.6%
Education Level	N	%
Grade school/GED	18	6.1%
High school diploma	56	19.0%
Some college/college graduate	219	74.2%
Spouse Rank	N	%
E1-E4	121	41.0%
E5-E9	133	45.1%
O1-O3/Warrant	27	9.2%
O4 and above	10	3.4%
Prior Mental Health History	N	%
Currently undergoing treatment	20	6.8%
Within past year	25	8.5%
More than 1 year ago	38	12.9%
During my spouse's prior deployment	16	5.3%

Not all columns total 100% because some respondents chose not to answer all demographic questions.

E1-E4 are Enlisted Personnel. E5-E9 are Noncommissioned Officers. "Warrant" is Warrant Officers. O1-O10 are Commissioned Officers.

mental healthcare.^{1,25} These statements were adapted to be specific to military spouses. A complete list of the perceived barriers is provided in Table 2 (see page 59).

Additionally, the participants were asked to answer with either "Agree" or "Disagree," that if they "believe, or

family or friends tell me, that I have an ongoing behavioral health issues, I will seek treatment for those issues."

Analysis

The primary outcome variable of interest in the regression models was presence of moderate or more severe

depression and severity of depression. Secondary outcome measures were beliefs in the barriers to care and attitude toward acceptance of treatment encouragement strategies. Age, sex, number of children, number of stressors, length of marriage, spouse rank, number of prior OIF/OEF deployments completed and PSS score were entered into logistical regression models to determine association presence or absence of depression (PHQ9 score > 10). These variables were then entered into a linear regression model to determine their association with severity of depression. The above variables were then entered into a logistic regression analysis model to determine their relative associations with each of the leading reported barriers to care. Chi-square analysis was then used to compare depressed with non-depressed respondent endorsement of the perceived barriers to care questions. All analyses were performed using SPSS version 12.02.

RESULTS**Demographic Information**

Of the 872 military spouses at the onset of the Brigade Combat Team's 15-month deployment to Iraq, 33.8% ($N = 295$) voluntarily chose to participate. The population was predominantly female ($N = 284$, 96.3%), white ($N = 235$, 79.7%), married to an enlisted soldier ($N = 254$, 86.1%), and had attended some college or had a college degree ($N = 219$, 74.2%). Full demographic data are outlined in Table 3.

Nearly one-third ($N = 99$, 32.8%) of the spouses reported that they had received some form of mental health treatment, with 6.6% (20) receiving care at the time of the survey, 8.3% (25) within the past year, and 5.3% (16) during a prior deployment. Furthermore, 88.5% (261) cited that they were willing to seek treatment if they believed, or family or friends told them, that they had a behavioral health problem.

Specific Stresses and Global Perception of Stress and Rates of Depression

Table 1 (see page 58) summarizes the findings of the spouses' current identified stressors. Of note, six stressors were identified as a current source of stress by more than half of the spouses, with "feeling lonely" and "the safety of my deployed spouse" being endorsed by roughly 90% of the responding spouses. Table 2 (see page 59) outlines the identified barriers to military spouses seeking mental healthcare during deployment. Of note, the largest stressors were associated with having time for the appointments with either difficulty getting time off work or away from the family. Concern over the impact of seeking care on the spouse's career was also prominent.

The mean PSS score was 26.05 (SD 9.65), which was well above the established norm of 19.62 (SD 7.49). Nearly half of the spouses ($N = 129$, 43.7%) met criteria for depression (PHQ-9 score ≥ 10) with another 24.4% (75) endorsing mild depressive symptoms (PHQ-9 score 5-9). More than one out of every 10 (32, 10.8%) endorsed symptoms of severe depression (PHQ-9 score ≥ 20).

Analysis of Risk for Depression

When age, sex, number of children, number of stressors, length of marriage, spouse rank, number of prior spouse deployments, and the PSS were entered into a logistic regression model, each increased point on the PSS was associated with 1.21 times greater risk of meeting criteria for moderate or more severe depression (PHQ9 ≥ 10 , 95% CI = 1.15-1.27, Wald $X^2 = 55.50$, $df = 1$, $P < 0.0005$). None of the other demographic variables was associated with presence of depression. When the same variables were entered into a linear regression model to assess severity of depression symptoms, the model was significant (R square = .43, $F = 40.66$), the PSS was positively

associated (beta = 0.67, $P < 0.0005$), and number of children negatively associated (beta = - 0.103, $P = 0.28$) with depression severity. The number of specific stressors and other demographic variables were not associated with depression severity when all other variables were controlled for.



Preparing for deployment is a highly stressful process ...

Analysis of Risk for Endorsing Barriers to Seeking Care

The above listed demographic variables specific stressors, and PSS were entered into multiple logistic regression models to assess their association with the prominent barriers to seeking care. Each specific stressor was associated with 1.23 times greater risk of endorsing difficulty getting time of from work (OR = 1.23, 95% CI = 1.11-1.36, Wald $X^2 = 16.09$, $df = 1$, $P < 0.0005$). Each specific stressor was associated with 1.23 times greater risk of endorsing difficulty getting time away from family (OR = 1.23, 95% CI = 1.11-1.36, Wald $X^2 = 16.30$, $df = 1$, $P < 0.0005$); and each additional child was associated with 1.83 times greater risk of endorsing difficulty getting time away from family (OR = 1.83, 95% CI = 1.37-2.45, Wald $X^2 = 16.66$, $df = 1$, $P < 0.0005$). Each increase in age bracket was associated with a 1.34 times greater risk

and each additional spousal deployment was associated with a 1.47 times greater risk of endorsing concern over their mental health record causing harm to their spouses career (OR = 1.34, 95% CI 1.06-1.70, Wald $X^2 = 6.09$, $df = 1$, $P = 0.014$; OR = 1.46, 95% CI = 1.03-2.06, Wald $X^2 = 4.61$, $df = 1$, $P = 0.032$ respectively). Increasing age was associated with a lower risk (0.68 times), but each additional child was associated with 1.43 times greater risk of endorsing that they would not take medications for a mental health condition (OR = 0.68, 95% CI 0.53-0.88, Wald $X^2 = 8.36$, $df = 1$, $P = 0.004$; OR = 1.43, 95% CI = 1.09-1.87, Wald $X^2 = 6.72$, $df = 1$, $P = 0.010$, respectively).

Barriers to Seeking Care among Depressed and Non-depressed Respondents

Table 2 (see page 59) outlines the comparative rates of endorsing the perceived barriers to care questions between those respondents who met study criteria for depression (PHQ ≥ 10) and those who did not. There were statistical differences in the endorsement rates between those who met criteria for depression and those who did not in all of the perceived barriers-to-care questions, except for "Coworkers and friends might view me differently," and "Difficult to get time away from family to attend appointments."

DISCUSSION

Depression and Perceived Stress

The relatively high rate of endorsed depressive symptoms (43% with moderate or severe symptoms) should be considered in the context of the period in which the survey was conducted. Preparing for deployment is a highly stressful process, which includes long work hours and multiple periods of absence by the service member, transition of responsibility for child rearing and discipline, resolution of financial, health-related and household matters, as well as

the anticipation of more than 1 year of absence of the service member from the family. In addition, during this conflict, high risk of serious injury or death of the service member remained as a threat. Elevated symptoms of depression and anxiety were seen in 70% of spouses during their family member's deployment to Operation Desert Shield/Storm, a conflict of much shorter duration and limited loss of American lives.¹⁸

More than 70% of the sample had one or more children living with them and would soon be placed in the position of "single parent" for an extended period of time. Of interest, having more children at home was not a risk factor for meeting criteria for depression and represented a reduced risk for depression severity. The age of children at home was not obtained and that is an area that warrants further examination.

Of note, the global perception of stress and feeling overwhelmed was predictive of the presence and severity of depression, while the number of endorsed specific stresses was not. In some ways this is to be expected, because depressive symptoms often develop in the setting of feeling unable to cope with the stresses encountered day to day. In this sample, elevations in the PSS may serve as a surrogate marker for depression. Because the mean PSS score was notably higher than in national normative samples, it suggests that the PSS may not measure enduring traits of pessimism and self-doubt; but rather, that when faced with stress from multiple facets of life, some sense of being overwhelmed is to be expected.

Although it has been anecdotally reported that multiple deployments increase family stress, in this sample, repeated prior deployments were not associated with depression at the time of deployment. It could be that those families with prior difficulties during or following deployment may have chosen to leave service and were not included in this sample.

Among career military families, having experienced a prior deployment may be protective in that one can more accurately predict the specific issues that will come up during an extended absence.

Identified Stressors at the Time of Deployment

As in prior studies of spouses during deployment, feelings of loneliness and fear for the safety of the deploying member were nearly universal.¹⁶ Raising children and attending to family matters were also strongly endorsed areas of stress. Although the number of specific



Of some concern, 28.5% endorsed concern that their own mental health treatment might have a negative impact on their spouse's career.

stress items endorsed was not associated with depression, this may be because of the endorsement of multiple stressors by all respondents with limited variance within the group. With a mean of 6.77 and a standard deviation of 2.91, roughly two-thirds of the sample endorsed 4 to 10 stress areas. The high level of stress areas points to the ongoing need for commands and communities to support military families prior to, during, and following deployments.

Willingness to Seek Care/ Boundaries to Care

Although 88.5% of spouses endorsed that they would be willing to seek mental healthcare if they were having problems, or if family or friends suggested it, respondents reported endorsement of the many potential barriers to care. As with prior studies of active duty members, those spouses who met criteria for depression also endorsed agreement with the barriers at higher rates than those who were not depressed.¹ Once again, this may be an inherent consequence of the cognitive perceptions and appraisal that accompany depression. Interestingly, despite its association with depression, an elevated PSS score was not associated with increased endorsement. Unlike the career and unit relationship concerns endorsed by service members, the leading barriers among spouses were getting time away from work and family to attend appointments. This may reflect the realities of being in the role of single parent. This is supported by associations between increased specific stressors and number of children, with getting time away from work and family to attend appointments.

Of some concern, 28.5% endorsed concern that their own mental health treatment might have a negative impact on their spouse's career. The endorsement of this question rose with each prior spouse deployment and with each age bracket. This may be a consequence of increased commitment to a service career or possibly because of rumors or experiences that they have witnessed among other military families. Whatever the explanation, this provides additional evidence that each military service must continue its programs to reduce stigma and actual negative career consequences for those seeking mental healthcare.

It is unclear why 88.5% of respondents reported that they would seek mental healthcare if it was indicated, 40% indicated that they would not take medica-

tions for their problems. This may reflect their belief that their problems are based in their environment or their interaction with their environment rather than from some inherent biological vulnerability.

Limitations

This was an anonymous survey conducted among a convenience sample of military spouses. The one-third response rate is not robust and may therefore be the consequence of participation bias which cannot be accurately assessed. Lack of participation could be because of lack of time, lack of distress, or conversely, overwhelming distress. The rate of white participants is higher than that in the general military population but the reasons for this are not known. It could be that other racial/ethnic groups are not enrolled in the Family Readiness Group, or these groups are simply less likely to respond to internet-based surveys. Although the instruments used possess good predictive value in the general population, they have not been validated in any group under high levels of environmental stress. For these reasons, the rates reported cannot be used to suggest the prevalence of illness, but rather to provide information on the levels of stress experienced by military families at the time of deployment, and some of the elements that contribute to stress and responses to that stress.

CONCLUSION

Rates of individual deployment-related stressors, the global perception of stress, and depressive symptoms are high among spouses as their family members deploy to war. Under such circumstances, the interactions between the realities of stressful events and the appraisal of such events are complex and an area for further research. These

reactions to deployment warrant ongoing and expanded programs to military families prior to, during, and following deployment. Perceived barriers to seeking mental healthcare persist and some barriers, such as getting time away from work or obtaining child care to attend treatment could be mitigated by military or community programs.

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