



# Characteristics of OEF/OIF/OND Veterans Related to Symptom Severity in a VA Post-Deployment Clinic



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## BACKGROUND

- In the period from October 1, 2002 to May 31, 2015, over 1.2 million Operation Enduring Freedom (OEF)/Operation Iraqi Freedom (OIF)/Operation New Dawn (OND) veterans utilized VA healthcare services. Of these, 58.1% received a mental disorder diagnosis, the most frequent of which were PTSD, depressive disorders, and neurotic disorders, in decreasing order of frequency.<sup>1</sup>
- Previous research has suggested that for servicemembers, deployment length is associated with poorer physical and psychological health after deployment.<sup>2</sup>
- Depression and PTSD symptoms may be worse after longer deployments for servicemembers, but this relationship may not apply for women.<sup>3</sup> Research also suggests that longer deployments, as well as greater number of deployments, are associated with severity of sleep disturbance among servicemembers.<sup>4</sup>
- Number of deployments has been linked to PTSD and depressive symptoms, though different studies have found different directions for this association.<sup>5</sup>
- Mental healthcare for veterans in the year following deployment may be protective against worsening general mental health or PTSD symptoms.<sup>6</sup>

## THE CURRENT STUDY

- Although there has been support in the literature for a connection between deployment characteristics (length and number) and severity of psychiatric concerns (particularly depression, PTSD, and sleep disturbance) for servicemembers, less is known about whether this relationship persists over a longer time period (e.g., for veterans who have separated from service).
- The purpose of the current study was to examine whether deployment characteristics might be useful predictors of mental health disorder symptom severity in veterans newly enrolled in the VA. This information could improve the VA's screening procedures, or help identify veterans who are good candidates for early contact with mental health providers.

### Hypotheses

- Longer total deployment length will be associated with higher symptom severity on each screening measure.
- Greater number of deployments will be associated with higher symptoms severity on each screening measure.
- There will be an interaction between deployment length and gender, such that longer deployment length will be associated with higher symptom severity on each screening measure for men, but not for women.
- There will be an interaction between deployment length and number of deployments which influences symptom severity on each screening measure (non-directional).

## METHODS

### Participants

- OEF/OIF/OND Veterans presenting for intake screening (n = 3582; only individuals with complete data were included)
- 86.9% male, 13.1% female
- 57.8% White/Caucasian, 21.7% Black/African American, 16.9% Hispanic, 3.0% Asian/Pacific Islander, 0.4% Native American/Alaskan Native

### Procedure

- Data were collected from intake screening assessments in the Post Deployment Clinic (PDC) at the James A. Haley Veterans' Hospital (JAHVH).
- Data were collected from June 2010 to March 2016.

### Structure of the PDC

- PDC services were offered to all OEF/OIF/OND veterans newly enrolled with the VA.
- Veterans attended orientation to meet the team, including a primary care provider (PCP), a nurse, a dedicated PDC psychologist, and a dedicated PDC social worker.
- During orientation veterans completed the screening questionnaire packet.
- All veterans met for individual evaluation with the PDC psychologist who reviewed screening measures, conducted a semistructured interview to assess mental health needs, provided psychoeducation, and offered referral to appropriate specialty mental health resources.
- Veterans also were offered same-day consultation with the traumatic brain injury, physical therapy, and pain services as needed.

Table 1: Hierarchical Linear Regressions for PHQ-9, GAD-7, PCL-C, and SPQ scores

Model	Factors	PHQ-9			GAD-7			PCL-C			SPQ		
		R <sup>2</sup>	ΔR <sup>2</sup>	p(ΔR <sup>2</sup> )	R <sup>2</sup>	ΔR <sup>2</sup>	p(ΔR <sup>2</sup> )	R <sup>2</sup>	ΔR <sup>2</sup>	p(ΔR <sup>2</sup> )	R <sup>2</sup>	ΔR <sup>2</sup>	p(ΔR <sup>2</sup> )
1	age, sex, ethnicity, marital status, residence, occupation, education, school enrollment, branch, active duty, rank	.0836			.0762			.0942			.0608		
2	[Model 1] + deployment months, number of deployments	.0877	.0041	<b>.0003</b>	.0789	.0027	<b>.0063</b>	.1017	.0075	<b>&lt;.0001</b>	.0654	.0046	<b>.0002</b>
3	[Model 2] + sex*deployment months	.0878	.0001	.7943	.0790	.0001	.4630	.1018	.0001	.6073	.0657	.0003	.3052
4	[Model 3] + deployment months*number of deployments	.0878	.0000	.8042	.0790	.0000	.9646	.1023	.0005	.1495	.0657	.0000	.9393

Note: Significance values of p < .05 are listed in bold; PHQ-9 = Patient Health Questionnaire - 9-item version; GAD-7 = Generalized Anxiety Disorder questionnaire - 7-item version; PCL-C = PTSD Checklist - Civilian version; SPQ = Sleep Problems Questionnaire

Table 2: Factor Effects for Significant Linear Model (Model 2) for PHQ-9, GAD-7, PCL-C, and SPQ

Factor	PHQ-9			GAD-7			PCL-C			SPQ		
	F (df <sub>b</sub> ,df <sub>w</sub> )	p	par η <sup>2</sup>	F (df <sub>b</sub> ,df <sub>w</sub> )	p	par η <sup>2</sup>	F (df <sub>b</sub> ,df <sub>w</sub> )	p	par η <sup>2</sup>	F (df <sub>b</sub> ,df <sub>w</sub> )	p	par η <sup>2</sup>
age	5.42 (1,3548)	.0200	.0000	16.02 (1,3548)	<.0001	.0015	6.67 (1,3548)	.0099	.0005	5.76 (1,3548)	.0164	.0009
sex	3.06 (1,3548)	.0804	.0001	1.27 (1,3548)	.2592	.0000	9.39 (1,3548)	.0022	.0008	0.34 (1,3548)	.5603	.0000
ethnicity	4.51 (4,3548)	.0012	.0023	3.31 (4,3548)	.0103	.0010	4.60 (4,3548)	.0010	.0019	1.42 (1,3548)	.2259	.0006
marital status	17.15 (5,3548)	<.0001	<b>.0168</b>	15.65 (5,3548)	<.0001	<b>.0136</b>	19.02 (5,3548)	<.0001	<b>.0177</b>	12.91 (4,3548)	<.0001	<b>.0130</b>
residence	3.12 (5,3548)	.0081	.0032	3.08 (5,3548)	.0089	.0043	2.98 (5,3548)	.0110	.0031	2.27 (5,3548)	.0449	.0025
occupation	21.86 (4,3548)	<.0001	<b>.0188</b>	14.77 (4,3548)	<.0001	<b>.0121</b>	18.52 (4,3548)	<.0001	<b>.0148</b>	11.86 (4,3548)	<.0001	.0085
education	26.12 (1,3548)	<.0001	.0016	19.19 (1,3548)	<.0001	.0006	21.39 (1,3548)	<.0001	.0011	5.72 (4,3548)	.0169	.0001
school enrollment	16.44 (1,3548)	<.0001	.0050	14.87 (1,3548)	.0001	.0047	19.66 (1,3548)	<.0001	.0058	0.85 (1,3548)	.3562	.0003
branch	10.05 (4,3548)	<.0001	.0070	10.26 (4,3548)	<.0001	.0083	17.69 (4,3548)	<.0001	<b>.0126</b>	10.35 (1,3548)	<.0001	.0095
active duty	14.30 (1,3548)	.0002	.0037	17.38 (1,3548)	<.0001	.0045	26.45 (1,3548)	<.0001	.0065	39.21 (1,3548)	<.0001	.0096
rank	6.37 (3,3548)	.0017	.0032	8.94 (3,3548)	.0001	.0046	7.69 (3,3548)	.0005	.0038	4.35 (3,3548)	.0129	.0022
deployment months	5.88 (1,3548)	.0153	.0045	3.89 (1,3548)	.0488	.0028	17.73 (1,3548)	<.0001	.0081	15.51 (1,3548)	<.0001	.0038
number of deployments	10.26 (1,3548)	.0014	.0029	6.24 (1,3548)	.0125	.0018	11.69 (1,3548)	<.0001	.0033	1.69 (1,3548)	.1941	.0005

Note: Effect sizes of partial η<sup>2</sup> > .01 are listed in bold; PHQ-9 = Patient Health Questionnaire - 9-item version; GAD-7 = Generalized Anxiety Disorder questionnaire - 7-item version; PCL-C = PTSD Checklist - Civilian version; SPQ = Sleep Problems Questionnaire

### Screening Measures (DVs)

- Patient Health Questionnaire – 9 item form (PHQ-9) to assess depressive symptoms
- Generalized Anxiety Disorder Questionnaire – 7 item form (GAD-7) to assess anxiety symptoms
- PTSD Checklist – Civilian (PCL-C) to assess trauma-related symptoms
- Sleep Problem Questionnaire (SPQ) to assess subjective sleep disturbance

### Data Analysis

- Control variables included: age, sex, ethnicity, marital status, residence, occupation, years of education, current school enrollment status, military branch, current active duty status, and military rank group (enlisted, warrant officer, officer)
- Total deployment length was the total number of months deployed, across all deployments.
- Deployment number was total number of deployments during military service.
- Hierarchical linear regression (one for each DV)
  - Step 1: control variables
  - Step 2: main effects (total deployment length, deployment number) [H1, H2]
  - Step 3: interaction effect of gender\*deployment length [H3]
  - Step 4: interaction effect of deployment length\*deployment number [H4]
- For all tests α = .05, and all tests were non-directional to allow for unexpected findings.

## RESULTS

- For all DVs, there were significant increases in predictive ability of the regression models at Step 2 (all p < .05) but not at Steps 3 or 4. [H3 not supported, H4 not supported]
- For all DVs, total deployment length was predictive of screening measure score, such that longer total deployment length was associated with a higher score (higher symptom severity) on each screening measure (all p < .05). [H1 supported]
- For PHQ-9, GAD-7, and PCL-C, number of deployments was predictive of screening measure score, such that a greater number of deployments was associated with lower score (lower symptom severity) on each screening measure (all p < .05). There was no significant relationship between SPQ score and number of deployments (p = .1941). [H2 not supported]
- Although several relationships between deployment characteristics and screening measures were statistically significant, effect sizes were very small (all par η<sup>2</sup> < .01). In all cases, deployment characteristics explained less than 1% of the variance in screening measure scores. Therefore, these results are not clinically significant.

## DISCUSSION

- When considered in the context of previous research, results suggest that although there may be relationships between deployment length or number of deployments and psychiatric symptom severity among servicemembers, these relationships may not be as strong among veterans.
- Although deployment length does not appear to be strongly correlated to symptom severity among veterans presenting to this PDC, other metrics may be related to mental health symptoms. For example, one study<sup>7</sup> found that long-term PTSD symptom severity was associated with combat exposure and shorter time between deployments in veterans.
- Providers in integrated healthcare settings should continue to utilize screening questionnaires to assess mental health needs of veterans.
- Further research is needed to determine whether these results generalize to other veteran populations, or whether other deployment characteristics hold more predictive value for mental health.
- Limitations of this study include very high statistical power, uncertainty of the length of time since participants were last deployed, high variability in time since separation from service for participants, and use of self-report measures of psychiatric symptom severity.

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