



# Psychopathology, Iraq and Afghanistan service, and suicide among Veterans Health Administration patients

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# Collaborations and Acknowledgements

- **Collaborators:**
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# Background

- **Soldiers returning from the conflicts in Iraq and Afghanistan report relatively high rates mental health symptoms** (Hoge, Auchterlonie, & Milliken, 2006; Hoge et al., 2004; Seal et al., 2007; Seal et al., 2009).
- **One of the greatest concerns is that OEF/OIF Veterans are at elevated risk for suicide** (Bruce, 2010; Guerra & Calhoun, 2011; Kang & Bullman, 2008).
- **Research on suicide in current and former members of the military has yielded conflicting findings related to suicide risk:**
  - Active duty service members are at lower risk for suicide than the general population although this gap has narrowed recently (Bruce, 2010; Ramchand et al., 2011; US Army: Office of the Chief of Public Affairs, 2010).
  - Some studies have found that military Veterans are at elevated risk for suicide (Kaplan et al., 2007) and others have not (Miller et al., 2009).
  - Veterans Health Administration (VHA) patients are more likely to die by suicide than the general US population (McCarthy et al., 2009; Blow et al., 2012).
  - The only study of OEF/OIF Veterans found that they were not at elevated risk for suicide (Kang & Bullman, 2008).

# Background

- **Because of the importance of the VHA as a treatment service provider for OEF/OIF Veterans, it is crucial to examine whether OEF/OIF Veterans using VHA services are at elevated risk for suicide.**
- **Beyond just documenting level of risk in OEF/OIF Veterans, it is important to identify risk factors for suicide within this group.**
- **Psychiatric conditions are key risk factors for suicide in the general population (Nock et al., 2008) as well as VHA patients (Ilgen et al., 2010).**
- **However, the impact of psychiatric conditions in VHA patients may differ between OEF/OIF Veterans and Veterans of other eras.**
  - E.g., transition out of military service, availability and utilization of specific mental health services
- **The present study assessed whether OEF/OIF Veterans using VHA services were at elevated risk for suicide relative to other VHA patients, and the extent to which the relationship between psychiatric conditions and suicide risk differed by OEF/OIF status.**

# Methods

- **All VHA patients in FY07 (10/1/06-9/30/07) or FY08 (10/1/07-9/30/08) and who were alive at the start of FY08 (N = 5,772,282).**
- **The VHA maintains a roster of OEF/OIF Veterans based on their date of service and time of discharge (VHA Environmental Epidemiology Service, 2010).**
- **A total of 309,108 OEF/OIF Veterans used VHA services in FY07 or FY08, representing 5.4% of all VHA patients.**
- **VHA's National Patient Care Database (NPCD) was used to**
  - Identify all individuals who utilized any VHA inpatient, residential, or outpatient services in FY07 or FY08.
  - Identify demographic and diagnostic information.
- **NDI compiles death record data for all US residents from state vital statistics offices and this study examined the timing (through end of FY 2008) and cause of death (McCarthy et al., 2009).**

## Characteristics of OEF/OIF Veterans compared to other VHA patients

Characteristics	Total		OEF/OIF		Non-OEF/OIF		Chi-Square	p-value
	N	%	N	%	N	%		
<b>All Patients</b>	5772282	100.0	309108	100.0	5463174	100.0		
<b>Sex: Female</b>	550174	9.5	38658	12.5	511516	9.4	3352.3	<.0001
<b>Age in years</b>	60.9	(±16)	32.7	(±10)	62.5	(±15)	1616.5	<.0001
<b>Any Psychiatric Condition</b>	1723310	29.9	111777	36.2	1611533	29.5	6202.1	<.0001
<b>SUDs</b>	417324	7.2	21840	7.1	395484	7.2	13.1	0.0003
<b>Bipolar Disorder</b>	108348	1.9	3725	1.2	104623	1.9	800.7	<.0001
<b>Depression</b>	832400	14.4	52588	17.0	779812	14.3	1778.2	<.0001
<b>Other Anxiety</b>	324029	5.6	25269	8.2	298760	5.5	4043.7	<.0001
<b>PTSD</b>	439517	7.6	65717	21.3	373800	6.8	86454.3	<.0001
<b>Schizophrenia</b>	96029	1.7	1024	0.3	95005	1.7	3543.9	<.0001

**Risk for suicide based on OEF/OIF status, psychiatric conditions and the interaction between OEF/OIF status and psychiatric conditions (part 1 of 2).**

Characteristic	Parameter Estimate	Standard Error	p-value
Any psychiatric condition	0.90	0.05	<.0001
OEF/OIF	-0.40	0.23	0.082
<b>OEF/OIF*any psychiatric condition</b>	0.66	0.28	0.020
Substance Use Disorder (SUD)	1.07	0.06	<.0001
OEF/OIF	-0.05	0.14	0.741
<b>OEF/OIF*SUD</b>	0.71	0.25	0.004
Bipolar Disorder (BPD)	1.45	0.10	<.0001
OEF/OIF	0.04	0.12	0.760
OEF/OIF*BPD	0.52	0.39	0.183
Depression	1.03	0.05	<.0001
OEF/OIF	-0.25	0.15	0.096
<b>OEF/OIF*Depression</b>	0.66	0.21	0.002

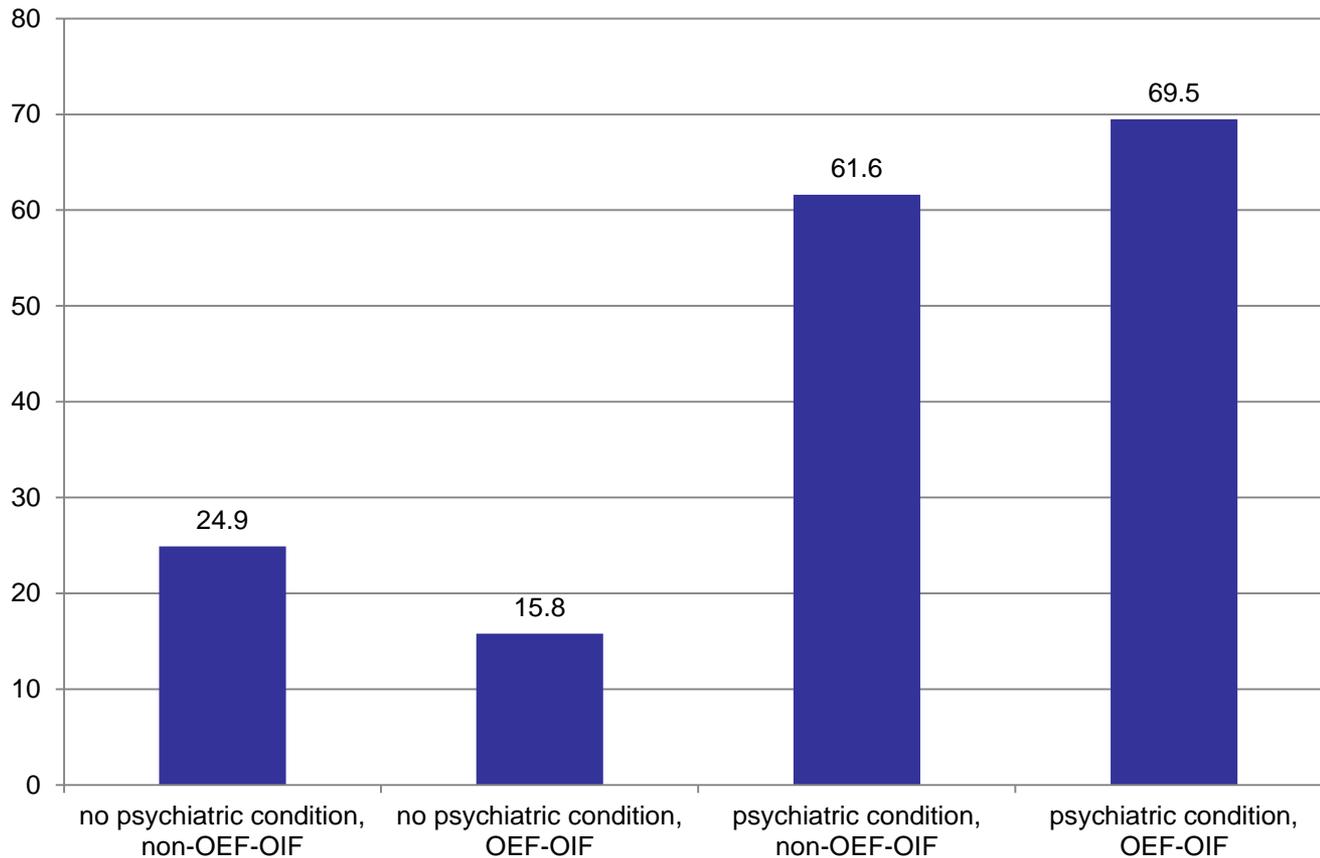
**Risk for suicide based on OEF/OIF status, psychiatric conditions and the interaction between OEF/OIF status and psychiatric conditions (part 2 of 2).**

Characteristic	Parameter Estimate	Standard Error	p-value
Other Anxiety	0.93	0.07	<.0001
OEF/OIF	0.00	0.13	0.975
OEF/OIF*Other Anxiety	-0.13	0.30	0.672
Post-Traumatic Stress Disorder (PTSD)	0.36	0.08	<.0001
OEF/OIF	-0.16	0.14	0.250
OEF/OIF*PTSD	0.25	0.21	0.229
Schizophrenia	0.62	0.13	<.0001
OEF/OIF	-0.05	0.12	0.708
<b>OEF/OIF*Schizophrenia</b>	2.09	0.47	<.0001

## Association between psychiatric conditions and suicide risk among OEF/OIF or Non-OEF/OIF Veterans

Psychiatric Diagnosis	OEF/OIF				Non-OEF/OIF			
	Hazard Ratio	Lower 95%CI	Upper 95%CI	p-value	Hazard Ratio	Lower 95%CI	Upper 95%CI	p-value
Any Psychiatric Condition	4.41	2.57	7.55	<.0001	2.48	2.27	2.71	<.0001
Substance Use Disorder	5.21	3.23	8.40	<.0001	2.96	2.61	3.35	<.0001
Depression	5.27	3.50	7.93	<.0001	2.81	2.55	3.09	<.0001
Schizophrenia	13.18	5.41	32.10	<.0001	1.88	1.46	2.42	<.0001

## Average adjusted rates of suicide per 100,000 by OEF/OIF status and Psychiatric Condition



# Discussion

- **Among Veterans using VHA services, Veterans of the conflicts in Iraq and Afghanistan were not at greater risk for suicide than other Veterans using VHA services after controlling for sex, age, geographic region, psychiatric conditions, and the interaction between OEF/OIF status and psychiatric condition.**
- **However, previously established risk factors for suicide may be particularly salient for OEF/OIF Veterans.**
- **The present results indicate that psychiatric conditions are generally associated with increased risk for suicide, and this association is almost twice as strong for OEF/OIF Veterans (especially those with SUDs, Depression and Schizophrenia).**

# Discussion

- **Limitations:**
  - Observational data
  - Diagnoses come from clinical records
  - Based on VHA patients
  - No data on timing of onset of conditions
- **These findings highlight the importance of mental health screening and suicide intervention efforts in Veterans.**
- **For recent returnees, it may be appropriate to increase the frequency of screens for mental health conditions as well as screening for suicidal thoughts and plans for those already identified as at high risk based on the presence of a psychiatric condition.**

**Thank You!**

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