



Newly Reported Respiratory Symptoms and Conditions among Military Personnel Deployed to Iraq and Afghanistan: A Prospective Population-based Study

Smith, B., Wong, C.A., Smith, T.C., Boyko, E.J., Gackstetter, G.D., & Ryan, M.A.K. (2009). Newly reported respiratory symptoms and conditions among military personnel deployed to Iraq and Afghanistan: A prospective population-based study. *American Journal of Epidemiology*, 170, 1433-1442. doi: 10.1093/aje/kwp287.



Survey and administrative data from 46,077 Service members from all branches of the U.S. Military were used to examine differences in respiratory symptoms and conditions between deployed and non-deployed Service members from 2001-2006. Deployers had a higher rate of newly reported respiratory symptoms than non-deployers, but similar rates of bronchitis and asthma.

Key Findings:

- Over the three-year study span, there was no increase in self-reported asthma, bronchitis, or emphysema for deployed Service members.
- A dose-response relation appeared between cumulative time deployed and risk of respiratory symptoms in the Army cohort members. Longer cumulative time deployed was associated with more symptoms; however, this relationship was not seen in personnel from other branches of the service.
- There were higher rates of respiratory outcomes (higher occurrence of persistent and recurring cough) among deployed Army and Marine Corps personnel compared to non-deployed personnel.
- Rates of persistent and recurring shortness of breath were higher among deployed Army personnel compared to their non-deployed counterparts.
- Among examined locations, deployment to Iraq had the largest odds of association with risk of respiratory symptoms.

Implications for Programs:

- Programs could offer modules in their wellness curricula for families and Service members about the potential for elevated risk for respiratory conditions among those who deployed to Iraq or experienced combat.
- Programs could develop lists of referrals for Service members regarding treatment for respiratory symptoms or conditions.

Implications for Policies:

- Policies could recommend that healthcare providers perform routine screening for respiratory conditions in Service members.
- Policies could allocate resources for continuing education for practitioners regarding early detection of respiratory conditions and the best means of making appropriate referrals.

Avenues for Future Research:

- Additional research using physician evaluated respiratory outcomes and non-self-report measures may be beneficial.
- Future research could assess respiratory conditions and/or symptoms over a longer time period in order identify issues that may arise long after deployment.



Background Information

Methodology:

- Participants from the Millennium Cohort study who filled out a baseline measure from July 2001-June 2003 and a 3-year follow-up measure between June 2004 and January 2006 were included.
- Demographic and military characteristics were obtained from the DoD Manpower Data Center.
- Surveys asked questions about smoking habits, respiratory symptoms and/or conditions, combat exposure, and deployment location.
- Univariate analyses compared groups (such as those deployed and not deployed) on outcomes.
- Multivariate logistics regressions compared the adjusted odds of newly reported respiratory symptoms or conditions in relation to deployment status which adjusting for other variables.

Participants:

- 46,077 Service members from all branches of the military were included.
- Deployed Service member characteristics (n=10,753; 23%): 82% male, 42% born 1960-1969, 35% born 1970-1979, 66% married, 71% White, 49% bachelor's degree or some college, 45% Army, 38% Air Force, 12% Navy/Coast Guard, 5% Marine Corps, 61% Active Duty, 73% enlisted.
- Non-deployed Service member characteristics (n=35,324; 77%): 70% male, 40% born 1960-1969, 28% born 1970-1979, 67% married, 71% White, 45% bachelor's degree or some college, 48% Army, 28% Air Force, 20% Navy/Coast Guard, 4% Marine Corps, 53% Active Duty, 72% enlisted.

Limitations:

- All data were self-report and could be biased and not equivalent to physician findings.
- History of medical treatment for respiratory illness during the 3 year time period was not available, and the findings cannot be linked definitively to deployment or specific exposures while deployed.
- The short time span of follow-up may have missed chronic conditions that develop over a longer time span.

Assessing Research that Works

Research Design and Sample				Quality Rating:	★★★★
	Excellent (★★★★)	Appropriate (★★★)	Limited (★★)	Questionable (★)	
The design of the study (e.g., research plan, sample, recruitment) used to address the research question was....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Research Methods				Quality Rating:	★★★☆☆
	Excellent (★★★★)	Appropriate (★★★)	Limited (★★)	Questionable (★)	
The research methods (e.g., measurement, analysis) used to answer the research question were...	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Limitations				Quality Rating:	★★★☆☆
	Excellent Minor Limitations (★★★★)	Appropriate Few Limitations (★★★)	Limited Several Limitations (★★)	Questionable Many/Severe Limitations (★)	
The limitations of this study are...	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Implications				Quality Rating:	★★★☆☆
	Excellent (★★★★)	Appropriate (★★★)	Limited (★★)	Questionable (★)	
The implications of this research to programs, policies and the field, stated by the authors, are...	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Not applicable because authors do not discuss implications					
				Overall Quality Rating	★★★☆☆