REACH Supporting Military Families Through Research and Outreach

PUTTING RESEARCH TO WORK FOR MILITARY FAMILIES

Newly Reported Hypertension after Military Combat Deployment in a Large Population-based Study

Granado, N.S., Smith, T.C., Swanson, M., Harris, R.B., Shahar, E., Smith, B., Boyko, E.J., Wells, T.S., & Ryan, M.A.K. (2009). Newly reported hypertension after military combat deployment in a large population-based study. *Hypertension, 54*, 966-973. doi: 10.1161/HYPERTENSIONAHA.109.132555

Military Focused Article

36,061 U.S. Service members from all branches of the military were included in a study examining the relationship between combat deployment-induced stress and hypertension. 6% of the deployers with multiple combat exposures reported new hypertension compared to 7% in the general population. Deployers with multiple combat exposures were at significantly higher risk of newly reported hypertension compared to noncombat deployers.

Key Findings:

- Over the approximate 3 year period of the study, newly reported hypertension was observed in 6% of deployers with multiple combat exposures and 7% in the overall population; newly reported hypertension was found to be higher among nondeployers than deployers.
- Compared with noncombat deployers, with multiple combat deployers were at significantly higher risk of newly reported hypertension.
- Non-Hispanic Blacks had an 84% higher risk for newly reported hypertension than non-Hispanic Whites; among deployers, non-Hispanic Blacks had a 97% higher chance than non-Hispanic Whites.
- Obese military personnel had a 3 times higher likelihood of reporting hypertension than normal or underweight Service members.
- Individuals who strength-trained and were physically active were at a decreased risk of hypertension, but only if nondeployers were included in the model
- In the total sample, smoking was not associated with increased risk of hypertension, and in deployers only current smoking was inversely related to newly reported hypertension.

Implications for Programs:

- Programs could target young Service members at highest risk (non-Hispanic Blacks, deployers with multiple combat tours, obese Service members) for new hypertension cases for outreach and prevention efforts.
- Programs might consider including information about hypertension prevention behaviors and risk factors during active duty, post-deployment briefings and re-integration activities.

Implications for Policies:

- Policies could track Service members with multiple risk factors for new hypertension or place them in a special prevention program.
- Policies could be enacted through health insurance plans to incentivize preventative behaviors such as being physically active or quitting smoking.

Avenues for Future Research:

- Future studies could use non-self-report measures, such as medical records or blood pressure measurements, to verify hypertension diagnoses.
- Additional follow-up of this cohort could allow for better understanding of relations between deployment and hypertension.
- Research on this issue with a more recent sample of Service members would allow for understanding about the generalizability of these findings.

Prepared by the Military REACH Team.
For additional information, please visit reachmilitaryfamilies.umn.edu

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Background Information

Methodology:

- Data from the Millennium Cohort respondents, a random sample of U.S. Military members who were serving as of 10/1/2000, who completed baseline (07/2001-06/2003) and a follow-up measure (06/2004-02/2006) were used.
- Deployment, demographic, and occupational data was obtained from the Defense Manpower Data Center, and hypertension, general health, alcohol consumption, physical activity, and cigarette smoking were assessed via survey.
- Multivariable logistic regression was used to predict relations between newly reported hypertension and combat deployment.

Participants:

- 36,061 U.S. Service members participated.
- Nondeployed characteristics (N=27,232): 75% male, 42% born 1960-69, 37% high school diploma, 67% married, 73% Non-Hispanic White, 53% active duty, 48% Army, 27% Air Force, 20% Navy/Coast Guard.
- Deployed without combat characteristics (N=4,385): 84% male, 45% born 1960-69, 32% high school diploma, 67% married, 75% Non-Hispanic White, 60% active duty, 26% Army, 52% Air Force, 19% Navy/Coast Guard.
- Deployed with single combat tour characteristics (N=586): 81% male, 44% born 1960-69, 38% high school diploma, 62% married, 71% Non-Hispanic White, 60% active duty, 44% Army, 38% Air Force, 15% Navy/Coast Guard.
- Deployed with multiple combat tours characteristics (N=3858): 86% male, 39% born 1960-69, 46% high school diploma, 63% married, 69% Non-Hispanic White, 62% active duty, 68% Army, 18% Air Force, 6% Navy/Coast Guard.

Limitations:

- Loss of participants at the time of the second assessment and the use of self-report measures may have biased this data.
- Some risk factors such as family history and high dietary salt were not measured.
- Selection bias may have occurred as those who were currently deployed were excluded.
- Misclassification bias may have occurred for some who did not have adequate time to be examined and diagnosed with hypertension post-deployment.

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....	☒	☐	☐	☐
Research Methods				**Quality Rating:** ★★☆
	Excellent (★★★)	Appropriate (★★☆)	Limited (★☆☆)	Questionable (☆☆☆)
The research methods (e.g., measurement, analysis) used to answer the research question were...	☐	☒	☐	☐
Limitations				**Quality Rating:** ★★☆
	Excellent *Minor Limitations* (★★★)	Appropriate *Few Limitations* (★★☆)	Limited *Several Limitations* (★☆☆)	Questionable *Many/Severe Limitations* (☆☆☆)
The limitations of this study are…	☐	☒	☐	☐
Implications				**Quality Rating:** N/A
	Excellent (★★★)	Appropriate (★★☆)	Limited (★☆☆)	Questionable (☆☆☆)
The implications of this research to programs, policies and the field, stated by the authors, are…	☐	☐	☐	☐
	☒ Not applicable because authors do not discuss implications			
Overall Quality Rating				★★½