Title
Heart Rate Variability and Posttraumatic Stress Disorder

Permalink
https://escholarship.org/uc/item/6qx901qb

Journal
JAMA PSYCHIATRY, 73(2)

ISSN
2168-622X

Authors
Minassian, A
Baker, DG
Risbrough, VB

Publication Date
2016-02-01

DOI
10.1001/jamapsychiatry.2015.2663

Peer reviewed
Letters

COMMENT & RESPONSE

Heart Rate Variability and Posttraumatic Stress Disorder

To the Editor We appreciate the thoughtful editorial by Shah and Vaccarino in JAMA Psychiatry in response to our prospective investigation of the association of predeployment heart rate variability (HRV) with postdeployment posttraumatic stress disorder (PTSD) in military service personnel.2 We agree that the findings are in need of replication by other groups, particularly with attention to limitations inherent in HRV indices including the low frequency to high frequency ratio, among others.3 Shah and Vaccarino mentioned several concerns, briefly addressed here.

The authors highlighted the attrition rate from predeployment to postdeployment (39% in the first phase of the Marine Resiliency Study [MRS-I] and 36% in the second phase of the Marine Resiliency Study [MRS-II]) as a factor limiting causal inference. The t test comparisons between participants with and without a postdeployment visit yielded no differences in predeployment HRV, PTSD symptom scores, or Life Events Checklist scores. However, it remains possible that service members who did not return for their postdeployment assessment (eg, the military following deployment) may have been a group uniquely affected by deployment. The main causes of attrition were deployment-related death, injury of such severity that postdeployment return with the battalion was precluded, or high mobility (eg, change of battalion, assignment to specialized training, discharge from the military, and interference from a civilian work schedule). Of the available participants for follow-up, only a very small number actively declined to participate in the postdeployment assessment (4% in MRS-I and 0.04% in MRS-II). The MRS attrition rates matched other recent longitudinal studies of PTSD in service members (40% in the study by Stein et al and 50% in the study by Polusny et al), with causes of attrition (ie, high mobility) being similar across studies.

The authors also commented on the lack of inclusion of factors such as medical history, health behaviors, depression, and trauma history. Our access to medical health records was incomplete; however, it should be noted that owing to deployment requirements, this was a relatively healthy population. When predeployment Beck Depression Inventory 2 scores were included in the regression model, the normalized low frequency to high frequency ratio retained statistical significance as a predictor of postdeployment PTSD (odds ratio, 1.61; 95% CI, 1.12-2.30; P = .01). Therefore, we argue that predeployment HRV, although very likely to be influenced by a host of vulnerability factors, may nevertheless hold independent value in understanding PTSD risk and resilience. We look forward to replication and extension of these findings, which may ultimately provide new targets for prevention and treatment.

Arpi Minassian, PhD
Dewleen G. Baker, MD
Victoria B. Risbrough, PhD

Author Affiliations: Center of Excellence for Stress and Mental Health, Veterans Administration, San Diego, California (Minassian, Baker, Risbrough); Department of Psychiatry, University of California–San Diego (Minassian, Baker, Risbrough); Veterans Administration San Diego Healthcare System, San Diego, California (Baker, Risbrough).

Corresponding Author: Arpi Minassian, PhD, Department of Psychiatry, University of California–San Diego, 200 W Arbor Dr, Mailcode 8620, San Diego, CA 92103-8620 (aminassian@ucsd.edu).


Conflict of Interest Disclosures: None reported.

Funding/Support: This study was funded by VA Health Service Research and Development project No. SDR 09-0128 (Drs Baker and Risbrough), the US Marine Corps (Drs Baker and Risbrough), the Navy Bureau of Medicine and Surgery (Drs Minassian, Baker, and Risbrough), the Center of Excellence for Stress and Mental Health (Drs Minassian, Baker, and Risbrough), and the National Institutes of Health (MH093500) (Drs Baker and Risbrough).

Role of the Funder/Sponsor: The funding organizations had a role in the design and conduct of the study but not the collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication.

Editorial Note: This letter was shown to the corresponding author of the original article, who declined to reply on behalf of the authors.