

GULF WAR ILLNESS

[Matrix Analysis of Traditional Chinese Medicine Differential Diagnoses in Gulf War Illness.](#)

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J Altern Complement Med. 2018 Mar 8. doi: 10.1089/acm.2017.0299. PMID: 29641242. [Epub ahead of print]

OBJECTIVE: To qualitatively categorize Traditional Chinese Medicine (TCM) differential diagnoses in a sample of veterans with Gulf War Illness (GWI) pre- and postacupuncture treatment.

SUBJECTS AND METHODS: The authors randomized 104 veterans diagnosed with GWI to a 6-month acupuncture intervention that consisted of either weekly or biweekly individualized acupuncture treatments. TCM differential diagnoses were recorded at baseline and at 6 months. These TCM diagnoses were evaluated using Matrix Analysis to determine co-occurring patterns of excess, deficiency, and channel imbalances. These diagnoses were examined within and between participants to determine patterns of change and to assess stability of TCM diagnoses over time.

RESULTS: Frequencies of diagnoses of excess, deficiency, and channel patterns were tabulated. Diagnoses of excess combined with deficiency decreased from 43% at baseline to 39% of the sample at 6 months. Excess+deficiency+channel imbalances decreased from 26% to 17%, while deficiency+channel imbalances decreased from 11% to 4% over the study duration. The authors observed a trend over time of decreased numbers of individuals presenting with all three types of differential diagnosis combinations. This may suggest that fewer people were diagnosed with concurrent excess, deficiency, and channel imbalances and perhaps a lessening in the complexity of their presentation.

CONCLUSION: This is the first published article that organizes and defines TCM differential diagnoses using Matrix Analysis; currently, there are no TCM frameworks for GWI. These findings are preliminary given the sample size and the amount of missing data at 6 months. Characterization of the TCM clinical presentation of veterans suffering from GWI may help us better understand the potential role that East Asian medicine may play in managing veterans with GWI and the design of effective acupuncture treatments based on TCM. The development of a TCM manual for treating GWI is merited.

CHRONIC FATIGUE SYNDROME

[Weighting of orthostatic intolerance time measurements with standing difficulty score stratifies ME/CFS symptom severity and analyte detection.](#)

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J Transl Med. 2018 Apr 12;16(1):97. doi: 10.1186/s12967-018-1473-z. PMID: 29650052.

BACKGROUND: Myalgic Encephalomyelitis/Chronic Fatigue Syndrome (ME/CFS) is clinically defined and characterised by persistent disabling tiredness and exertional malaise, leading to functional impairment.

METHODS: This study introduces the weighted standing time (WST) as a proxy for ME/CFS severity, and investigates its behaviour in an Australian cohort. WST was calculated from standing time and subjective standing difficulty data, collected via orthostatic intolerance assessments. The distribution of WST for healthy controls and ME/CFS patients was correlated with the clinical criteria, as well as pathology and cytokine markers. Included in the WST cytokine analyses were activins A and B, cytokines causally linked to inflammation, and previously demonstrated to separate ME/CFS from healthy controls. Forty-five ME/CFS patients were recruited from the CFS Discovery Clinic (Victoria) between 2011 and 2013. Seventeen healthy controls were recruited concurrently and identically assessed.

RESULTS: WST distribution was significantly different between ME/CFS participants and controls, with six diagnostic criteria, five analytes and one cytokine also significantly different when comparing severity via WST. On direct comparison of ME/CFS to study controls, only serum activin B was significantly elevated, with no significant variation observed for a broad range of serum and urine markers, or other serum cytokines.

CONCLUSIONS: The enhanced understanding of standing test behaviour to reflect orthostatic intolerance as a ME/CFS symptom, and the subsequent calculation of WST, will encourage the greater implementation of this simple test as a measure of ME/CFS diagnosis, and symptom severity, to the benefit of improved diagnosis and guidance for potential treatments.

CHRONIC FATIGUE SYNDROME (Continued)

[Changes in fatigue, autonomic functions, and blood biomarkers due to sitting isometric yoga in patients with chronic fatigue syndrome.](#)

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Biopsychosoc Med. **2018 Apr 10**;12:3. doi: 10.1186/s13030-018-0123-2. PMCID: PMC5891891. PMID: 29643935. eCollection 2018.

Background: In a previous randomized controlled trial, we found that sitting isometric yoga improves fatigue in patients with chronic fatigue syndrome (CFS) who are resistant to conventional therapy. The aim of this study was to investigate possible mechanisms behind this finding, focusing on the short-term fatigue-relieving effect, by comparing autonomic nervous function and blood biomarkers before and after a session of isometric yoga.

Methods: Fifteen patients with CFS who remained symptomatic despite at least 6 months of conventional therapy practiced sitting isometric yoga (biweekly 20 min practice with a yoga instructor and daily home practice) for eight weeks. Acute effects of sitting isometric yoga on fatigue, autonomic function, and blood biomarkers were investigated after the final session with an instructor. The effect of a single session of sitting isometric yoga on fatigue was assessed by the Profile of Mood Status (POMS) questionnaire immediately before and after the session. Autonomic nervous function (heart rate (HR) variability) and blood biomarkers (cortisol, DHEA-S, TNF- α , IL-6, IFN- γ , IFN- α , prolactin, carnitine, TGF- β 1, BDNF, MHPG, and HVA) were compared before and after the session.

Results: Sitting isometric yoga significantly reduced the POMS fatigue score ($p < 0.01$) and increased the vigor score ($p < 0.01$). It also reduced HR ($p < 0.05$) and increased the high frequency power ($p < 0.05$) of HR variability. Sitting isometric yoga increased serum levels of DHEA-S ($p < 0.05$), reduced levels of cortisol ($p < 0.05$) and TNF- α ($p < 0.05$), and had a tendency to reduce serum levels of prolactin ($p < 0.1$). Decreases in fatigue scores correlated with changes in plasma levels of TGF- β 1 and BDNF. In contrast, increased vigor positively correlated with HVA.

Conclusions: A single session of sitting isometric yoga reduced fatigue and increased vigor in patients with CFS. Yoga also increased vagal nerve function and changed blood biomarkers in a pattern that suggested anti-stress and anti-inflammatory effects. These changes appear to be related to the short-term fatigue-relieving effect of sitting isometric yoga in patients with CFS. Furthermore, dopaminergic nervous system activation might account for sitting isometric yoga-induced increases in energy in this patient population.

Trial registration: University Hospital Medical Information Network (UMIN CTR) UMIN000009646. Registered Dec 27, 2012.

HEADACHE and MIGRAINE

[Interictal levels of calcitonin gene related peptide in gingival crevicular fluid of chronic migraine patients.](#)

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Neurol Sci. **2018 Apr 13**. doi: 10.1007/s10072-018-3340-3. PMID: 29654418. [Epub ahead of print]

Calcitonin gene related peptide (CGRP) is a mediator of neurogenic inflammation playing a major role in the pathogenesis of migraine. Increases in serum CGRP have been detected previously in migraineurs and a return to baseline values regarded as successful treatment. As gingival crevicular fluid is known to originate from the serum, the aim of this study is to measure the CGRP content of gingival crevicular fluid (GCF) in chronic migraine patients and to determine whether there is a correlation between serum and GCF values of CGRP. For this study, 24 female individuals suffering from chronic migraine with aura were age-matched with 15 healthy individuals. Serum and GCF samples were obtained from both groups and enzyme linked immunosorbent assay performed to measure CGRP concentration. The level of CGRP in the serum and GCF of chronic migraine patients was 41 ± 16 pg/mL and 0.25 ± 0.09 pg/ μ g respectively while in healthy individuals CGRP levels were 29 ± 8 pg/mL and 0.19 ± 0.07 pg/ μ g. The correlation between CGRP levels of the GCF and serum was 0.88 for migraineurs and 0.81 in the controls. Only a weak positive relationship was observed between age and CGRP levels in both groups. CGRP levels were higher in migraineurs compared with controls both in serum and GCF. Furthermore there is a strong correlation between CGRP levels of the serum and GCF. The results of this study suggest that CGRP levels of GCF have potential diagnostic purposes in patients with chronic migraine.

HEADACHE and MIGRAINE (Continued)

[Presence of vestibular symptoms and related disability in migraine with and without aura and chronic migraine.](#)

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Cephalalgia. 2018 Jan 1;333102418769948. doi: 10.1177/0333102418769948. PMID: 29635938. [Epub ahead of print]

Objective: To assess the presence and handicap due to vestibular symptoms in three subgroups of patients with migraine and controls.

Methods: Women between 18-55 years old were diagnosed by headache specialists and stratified as migraine with aura (n = 60), migraine without aura (n = 60), chronic migraine (n = 60) and controls (n = 60). Information regarding demographics, headache and vestibular symptoms were collected in this cross-sectional study. The self-perceived handicap related to vestibular symptoms was assessed through the Dizziness Handicap Inventory questionnaire.

Results: A total of 85% of women with migraine with aura and chronic migraine had vestibular symptoms contrasted to 70% of the migraine without aura group (p < 0.05), and 12% of the control group reported symptoms (p < 0.0001). Patients with migraine exhibited greater Dizziness Handicap Inventory scores than controls (p < 0.001); and migraine with aura and chronic migraine groups reached greater scores than migraine without aura (p < 0.01). Presence of migraine is associated with a greater risk of vestibular symptoms (migraine without aura: 5.20, migraine with aura: 6.60, chronic migraine: 6.20, p < 0.0003) and with a greater risk of moderate-to-severe handicap (migraine without aura: 20.0, migraine with aura: 40.0, chronic migraine: 40.0, p < 0.0003). The presence of aura and greater migraine frequency adds to the risk of any handicap (migraine with aura: 1.9, chronic migraine: 1.7, p < 0.04) and to the risk of moderate-to-severe handicap (migraine with aura: 2.0, chronic migraine: 2.0, p < 0.0003). Migraine aura, intensity and frequency predict 36% of the dizziness handicap.

Conclusion: The prevalence of vestibular symptoms is increased in migraine during and between headache attacks, particularly in migraine with aura and chronic migraine along with an increased handicap due to those symptoms. Vestibular symptoms among subgroups of migraine should be considered when evaluating the functional impact of migraine.

[Chronorisk in cluster headache: A tool for individualised therapy?](#)

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Cephalalgia. 2018 Jan 1;333102418769955. doi: 10.1177/0333102418769955. PMID: 29635936. [Epub ahead of print]

Background: The mechanisms behind the severe pain of cluster headache remain enigmatic. A distinguishing feature of the attacks is the striking rhythms with which they occur. We investigated whether statistical modelling can be used to describe 24-hour attack distributions and identify differences between subgroups.

Methods: Common hours of attacks for 351 cluster headache patients were collected. Probability distributions of attacks throughout the day (chronorisk) was calculated. These 24-hour distributions were analysed with a multimodal Gaussian fit identifying periods of elevated attack risk and a spectral analysis identifying oscillations in risk.

Results: The Gaussian model fit for the chronorisk distribution for all patients reporting diurnal rhythmicity (n = 286) had a goodness of fit R² value of 0.97 and identified three times of increased risk peaking at 21:41, 02:02 and 06:23 hours. In subgroups, three to five modes of increased risk were found and goodness of fit values ranged from 0.85-0.99. Spectral analysis revealed multiple distinct oscillation frequencies in chronorisk in subgroups including a dominant circadian oscillation in episodic patients and an ultradian in chronic.

Conclusions: Chronorisk in cluster headache can be characterised as a sum of individual, timed events of increased risk, each having a Gaussian distribution. In episodic cluster headache, attacks follow a circadian rhythmicity whereas, in the chronic variant, ultradian oscillations are dominant reflecting a loss of association with sleep and perhaps explaining observed differences in the effects of specific treatments. The results demonstrate the ability to accurately model chronobiological patterns in a primary headache.

HEADACHE and MIGRAINE (Continued)

Factors associated to chronic migraine with medication overuse: A cross-sectional study.

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Cephalalgia. 2018 Jan 1;333102418761047. doi: 10.1177/0333102418761047. PMID: 29635935. [Epub ahead of print]

Background and aim: Factors implicated in the evolution of episodic migraine into chronic migraine are largely elusive. Medication overuse is considered to be one of the main determinants, but other possible clinical and psychological factors can play a role. The aim of this study is to identify factors that are associated with chronic migraine with medication overuse.

Method: We enrolled consecutive migraine patients, subdividing them in two groups: Subjects with a long history of episodic migraine and subjects with chronic migraine and medication overuse. We then compared their clinical and psychological variables in a cross-sectional study.

Results: Three hundred and eighteen patients were enrolled, of which 156 were episodic migraine and 162 were chronic migraine and medication overuse patients. The mean age was 42.1 ± 10.3 , 80.8% were female. The duration of migraine was 24.6 years in episodic migraine and 24.0 years in chronic migraine and medication overuse ($p = 0.57$). After the multivariate analysis, the factors associated to chronic migraine and medication overuse were: Marital status (married vs. unmarried, OR 3.65, 95% CI 1.63-8.19, $p = 0.002$; separated/divorced/widowed vs. unmarried, OR 4.19, 95% CI 1.13-15.47, $p = 0.031$), physical activity (OR 0.42, 95% CI 0.19-0.91, $p = 0.029$), age at onset of migraine (OR 0.94, 95% CI 0.89-0.98, $p = 0.016$), use of at least one migraine preventive medication (OR 2.36, 95% CI 1.18-4.71, $p = 0.014$), history of depression (OR 2.91, 95% CI 1.25-6.73, $p = 0.012$), insomnia associated with the use of hypnotics (OR 5.59, 95% CI 1.65-18.93, $p = 0.006$), traumatic head injuries (OR 3.54, 95% CI 1.57-7.99, $p = 0.002$), snoring (OR 2.24, 95% CI 1.05-4.79, $p = 0.036$), previous and/or actual use of combined oral contraceptives (OR 3.38, 95% CI 1.10-10.3, $p = 0.031$) and higher scores in the Childhood Trauma questionnaire (OR 1.48, 95% CI 1.09-2.02, $p = 0.012$).

Conclusion: We considered several aspects that may be involved in the development of chronic migraine and medication overuse. A multivariate analysis identified 10 factors belonging to five different areas, to suggest that chronic migraine and medication overuse onset is likely influenced by a complex mixture of factors. This information is useful when planning strategies to prevent and manage chronic migraine and medication overuse.

CHRONIC PAIN

Use of Non-Pharmacological Pain Treatment Modalities Among Veterans with Chronic Pain: Results from a Cross-Sectional Survey.

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J Gen Intern Med. 2018 Apr 9. doi: 10.1007/s11606-018-4322-0. PMID: 29633141. [Epub ahead of print]

BACKGROUND: Despite strong evidence for the effectiveness of non-pharmacological pain treatment modalities (NPMs), little is known about the prevalence or correlates of NPM use.

OBJECTIVE: This study examined rates and correlates of NPM use in a sample of veterans who served during recent conflicts.

DESIGN: We examined rates and demographic and clinical correlates of self-reported NPM use (operationalized as psychological/behavioral therapies, exercise/movement therapies, and manual therapies). We calculated descriptive statistics and examined bivariate associations and multivariable associations using logistic regression.

PARTICIPANTS: Participants were 460 veterans endorsing pain lasting ≥ 3 months who completed the baseline survey of the Women Veterans Cohort Study (response rate 7.7%).

MAIN MEASURES: Outcome was self-reported use of NPMs in the past 12 months.

KEY RESULTS: Veterans were 33.76 years old (SD = 10.72), 56.3% female, and 80.2% White. Regarding NPM use, 22.6% reported using psychological/behavioral, 50.9% used exercise/movement and 51.7% used manual therapies. Veterans with a college degree (vs. no degree; OR = 2.51, 95% CI = 1.46, 4.30, $p = 0.001$) or those with worse mental health symptoms (OR = 2.88, 95% CI = 2.11, 3.93, $p < 0.001$) were more likely to use psychological/behavioral therapies. Veterans who were female (OR = 0.63, 95% CI = 0.43, 0.93, $p = 0.02$) or who used non-opioid pain medications (OR = 1.82, 95% CI = 1.146, 2.84, $p = 0.009$) were more likely to use exercise/movement therapies. Veterans who were non-White (OR = 0.57, 95% CI = 0.5, 0.94, $p = 0.03$), with greater educational attainment (OR = 2.11, 95% CI = 1.42, 3.15, $p < 0.001$), or who used non-opioid pain medication (OR = 1.71, 95% CI = 1.09, 2.68, $p = 0.02$) were more likely to use manual therapies.

CONCLUSIONS: Results identified demographic and clinical characteristics among different NPMs, which may indicate differences in veteran treatment preferences or provider referral patterns. Further study of provider referral patterns and veteran treatment preferences is needed to inform interventions to increase NPM utilization. Research is also needed to identify demographic and clinical correlates of clinical outcomes related to NPM use.

CHRONIC PAIN (Continued)

[Veteran Experiences Seeking Non-pharmacologic Approaches for Pain.](#)

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Mil Med. 2018 Mar 26. doi: 10.1093/milmed/usy018. PMID: 29590422. [Epub ahead of print]

Introduction: Pain is a longstanding and growing concern among US military veterans. Although many individuals rely on medications, a growing body of literature supports the use of complementary non-pharmacologic approaches when treating pain. Our objective is to characterize veteran experiences with and barriers to accessing alternatives to medication (e.g., non-pharmacologic treatments or non-pharmacologic approaches) for pain in primary care.

Materials and Methods: Data for this qualitative analysis were collected as part of the Effective Screening for Pain (ESP) study (2012-2017), a national randomized controlled trial of pain screening and assessment methods. This study was approved by the Veterans Affairs (VA) Central IRB and veteran participants signed written informed consent. We recruited a convenience sample of US military veterans in four primary care clinics and conducted semi-structured interviews (25-65 min) elucidating veteran experiences with assessment and management of pain in VA Healthcare Systems. We completed interviews with 36 veterans, including 7 females and 29 males, from three VA health care systems. They ranged in age from 28 to 94 yr and had pain intensity ratings ranging from 0 to 9 on the "pain now" numeric rating scale at the time of the interviews. We analyzed interview transcripts using constant comparison and produced mutually agreed upon themes.

Results: Veteran experiences with and barriers to accessing complementary non-pharmacologic approaches for pain clustered into five main themes: communication with provider about complementary approaches ("one of the best things the VA has ever given me was pain education and it was through my occupational therapist"), care coordination ("I have friends that go to small clinic in [area A] and I still see them down in [facility in area B] and they're going through headaches upon headaches in trying to get their information to their primary care docs"), veteran expectations about pain experience ("I think as a society we have shifted the focus to if this doctor doesn't relieve me of my pain I will find someone who does"), veteran knowledge and beliefs about various complementary non-pharmacologic approaches ("how many people know that tai chi will help with pain?... Probably none. I saw them doing tai chi down here at the VA clinic and the only reason I knew about it was because I saw it being done"), and access ("the only physical therapy I ever did... it helped...but it was a two-and-a-half-hour drive to get there three times a week... I can't do this"). Specific access barriers included local availability, time, distance, scheduling flexibility, enrollment, and reimbursement.

Conclusion: The veterans in this qualitative study expressed interest in using non-pharmacologic approaches to manage pain, but voiced complex multi-level barriers. Limitations of our study include that interviews were conducted only in five clinics and with seven female veterans. These limitations are minimized in that the clinics covered are diverse ranging to include urban, suburban, and rural residents. Future implementation efforts can learn from the veterans' voice to appropriately target veteran concerns and achieve more patient-centered pain care.

CHRONIC PAIN (Continued)

[Automating Collection of Pain-Related Patient-Reported Outcomes to Enhance Clinical Care and Research.](#)

[Owen-Smith A](#)^{1,2}, [Mayhew M](#)³, [Leo MC](#)³, [Varga A](#)³, [Benes L](#)^{3,4}, [Bonifay A](#)³, [DeBar L](#)⁵.

J Gen Intern Med. 2018 Apr 9. doi: 10.1007/s11606-018-4326-9. PMID: 29633139. [Epub ahead of print]

INTRODUCTION: Chronic pain is highly prevalent, and the ability to routinely measure patients' pain and treatment response using validated patient-reported outcome (PRO) assessments is important to clinical care. Despite this recognition, systematic use in everyday clinical care is rare.

AIMS: The aims of this study were to (1) describe infrastructure designed to automate PRO data collection, (2) compare study-enhanced PRO completion rates to those in clinical care, and (3) evaluate patient response rates by method of PRO administration and sociodemographic and/or clinical characteristics.

SETTING: The Pain Program for Active Coping and Training (PPACT) is a pragmatic clinical trial conducted within three regions of the Kaiser Permanente health care system.

PROGRAM DESCRIPTION: PPACT evaluates the effect of integrative primary care-based pain management services on outcomes for chronic pain patients on long-term opioid treatment. We implemented a tiered process for quarterly assessment of PROs to supplement clinical collection and ensure adequate trial data using three methods: web-based personal health records (PHR), automated interactive voice response (IVR) calls, and live outreach.

PROGRAM EVALUATION: Among a subset of PPACT participants examined (n = 632), the tiered study-enhanced PRO completion rates were higher than in clinical care: 96% completed ≥ 1 study-administered PRO with mean of 3.46 (SD = 0.85) vs. 74% completed in clinical care with a mean of 2.43 (SD = 2.08). Among all PPACT participants at 3 months (n = 831), PRO completion was 86% and analyses of response by key characteristics found only that participant age predicted an increased likelihood of responding to PHR and IVR outreach.

DISCUSSION: Adherence to pain-related PRO data collection using our enhanced tiered approach was high. No demographic or clinical identifiers other than age were associated with differential response by modality. Successful ancillary support should employ multimodal electronic health record functionalities for PRO administration. Using automated modalities is feasible and may facilitate better sustainability for regular PRO administration within health care systems. Clinical Trials Registration Number: [NCT02113592](#).

[Is sleep disturbance in patients with chronic pain affected by physical exercise or ACT-based stress management? - A randomized controlled study.](#)

[Wiklund T](#)^{1,2}, [Linton SJ](#)³, [Alföldi P](#)⁴, [Gerdle B](#)⁴.

BMC Musculoskelet Disord. 2018 Apr 10;19(1):111. doi: 10.1186/s12891-018-2020-z. PMCID: PMC5892036. PMID: 29631567.

BACKGROUND: Most people suffering chronic pain are plagued by sleeping difficulties. Cognitive behaviour therapy has produced promising results for insomnia comorbid with chronic pain, but the access to such treatment is often limited. Over the last ten years, interventions aiming to increase cognitive flexibility and physical activity have been assumed to be effective treatments for a variety of conditions, including insomnia and chronic pain. If proven effective, these treatments could constitute the first steps in a stepped care model for chronic pain and insomnia.

METHODS: Two hundred ninety-nine chronic pain subjects were randomized to Exercise, ACT-based stress management (ACT-bsm), or an active control group. Two hundred thirty-two participants (78%) received their allocated intervention at least to some extent. These participants were evaluated using mixed model analyses for changes in sleep (Insomnia Severity Index, ISI), pain intensity, depression, and anxiety immediately after treatment, six months and twelve months after treatment.

RESULTS: The mixed model analyses revealed that Exercise had a positive effect on insomnia compared with the control group and the effect remained after 12 months. No clear effect (i.e., both for completers and for completers together with treatment non-completers) upon ISI was found for the ACT-bsm. Pain intensity decreased significantly both in the exercise group and in the control group. For the two psychological variables (i.e., symptoms of anxiety and depression) were found significant improvements over time but no group differences. The treatment effects for ISI and pain intensity did not reach clinical significance per definitions presented in other relevant studies.

CONCLUSIONS: Beneficial significant effects on insomnia was confirmed in the exercise condition. However, these changes were probably not clinically important. For pain intensity a general decrease was found in the Exercise condition and in the control condition, while no change occurred in ACT-bsm. No group differences were found for the two psychological variables.

TRIAL REGISTRATION: The study was registered in Clinical Trials (Trial registration: ClinicalTrials.gov Id: [NCT02399644](#) , 21 January 2015, retrospectively registered).

OTHER RESEARCH OF INTEREST

[Robert Kerns, PhD: Researching Nondrug Approaches to Pain Management.](#)

[Abbasi J.](#)

JAMA. 2018 Mar 28. doi: 10.1001/jama.2018.0247. PMID: 29590287. [Epub ahead of print]

Introduction to [JAMA Medical News & Perspectives Interview Article](#):

Robert Kerns, PhD, has spent the better part of 4 decades treating and studying pain in veterans and military service members. Kerns is a clinical psychologist and a professor of psychiatry, neurology, and psychology at Yale University. He opened an interdisciplinary pain management center for veterans at the Yale-affiliated Veterans Affairs (VA) Connecticut Healthcare System in 1980, where he's still a research psychologist. In 2006, he became the VA's first national program director for pain management, a position he left in 2016.

For his next chapter, Kerns will be at the forefront of the recently [announced](#) Pain Management Collaboratory, a research initiative of the National Institutes of Health, the Department of Defense, and the VA. Together the agencies have pledged \$81 million in grants over 6 years for trials investigating nondrug approaches to pain management, with the National Institutes of Health's National Center for Complementary and Integrative Health providing more than half of the funding. The trials will take place at military and veteran health facilities around the country, and Kerns will colead a coordinating center at Yale.

Kerns recently spoke with *JAMA* about the project.

[Sexual Assault and Disabling PTSD in Active Duty Service Women.](#)

[Parnell D](#)¹, [Ram V](#)², [Cazaes P](#)³, [Webb-Murphy J](#)², [Roberson M](#)⁴, [Ghaed S](#)³.

Mil Med. 2018 Apr 6. doi: 10.1093/milmed/usy048. PMID: 29660018. [Epub ahead of print].

Introduction: Sexual assault in the military is a major concern and may result in significant health problems, such as post-traumatic stress disorder (PTSD). Those developing disabling PTSD symptoms may require a disability evaluation. We examined disability evaluation trends for service women with PTSD to better understand characteristics associated with inability to continue Active Duty service.

Methods: This is a retrospective review of disability reports and electronic medical records for 322 Active Duty women diagnosed with and treated for PTSD by psychiatrists and psychologists at a large military treatment facility between 2011 and 2014. Service women requiring medical disability evaluation for PTSD (n = 159) were included in the study as "IDES cases" (Integrated Disability Evaluation System - IDES). A similar number of women, randomly selected from those seeking care for PTSD but not requiring disability evaluation during the same period, were included in the "control" group (n = 163). Analyses done to evaluate differences between groups (IDES cases vs. controls) included demographic and service-related characteristics, history of chronic pain, and PTSD index trauma types, such as pre-military trauma and military sexual trauma (MST). Logistic regression was performed to identify the factors associated with inclusion in IDES.

Results: MST was the most frequent PTSD index trauma in the IDES group (73.6% vs. 44.8% of control group) and the most significant factor associated with IDES inclusion (OR 2.6, p = 0.032). Those in the IDES group had significantly greater number of mental health visits for PTSD (IDES: m = 68.6 vs. controls: m = 29.6) and more frequent chronic pain history (IDES 40.9% vs. controls 19.6%) than those in the control group. Approximately 65% of women in both groups had a history of childhood abuse, but childhood abuse, as a PTSD index trauma, was negatively associated with IDES inclusion (OR 0.293, p = 0.006).

Conclusions: Active Duty service women with PTSD and a MST index trauma are much more likely to require disability evaluation (IDES) than those with PTSD due to other trauma types. IDES evaluation for conditions such as PTSD may result in early termination of military service and is a potential downstream consequence of MST. Service women requiring greater numbers of mental health visits for PTSD treatment may benefit from a multidisciplinary approach to treating concurrent health conditions, such as chronic pain. Those providing care for service women should evaluate for MST, chronic pain and pre-military trauma, such as childhood abuse; and aggressively treat these conditions to prevent PTSD and disability.

OTHER RESEARCH OF INTEREST (Continued)**[Perceived health, caregiver burden, and quality of life in women partners providing care to Veterans with traumatic brain injury.](#)**

[Saban KL](#)^{1,2}, [Griffin JM](#)^{3,4}, [Urban A](#)⁵, [Janusek MA](#)⁶, [Pape TL](#)^{1,7}, [Collins E](#)^{1,8}.

J Rehabil Res Dev. **2016**;53(6):681-692. doi: 10.1682/JRRD.2015.07.0143. PMID: 27997670.

Families of Veterans with traumatic brain injury (TBI) are often faced with providing long-term informal care to their loved one. However, little is known about how their perceived health and caregiving burden contribute to their quality of life (QOL). The purpose of this descriptive study was to describe perceived health, somatic symptoms, caregiver burden, and perceived QOL and to identify the extent to which these variables are associated with QOL in female partners/spouses of Veterans with TBI. Participants completed a written questionnaire including the Patient Health Questionnaire-15, Caregiver Reaction Assessment, Quality of Life Index, and the general health subscale of the 12-Item Short Form Survey version 2. Caregivers reported moderate levels of QOL, and over a quarter of the sample reported high levels of somatic symptoms, particularly fatigue and sleep disturbance. Age, perceived general health, somatic symptoms, the five subscales of caregiver burden (self-esteem, disrupted schedule, effect on finances, lack of family support, and effect on health) predicted QOL and explained 64% of its variance (adjusted $r^2 = 0.64$, $F(8,31) = 9.59$). However, only somatic symptoms and the caregiver burden subscales of self-esteem and effect on finances were significant predictors in the model. These findings have implications for development of family-centered interventions to enhance the QOL of informal caregivers of Veterans with TBI.

[β-Amyloid accumulation in the human brain after one night of sleep deprivation.](#)

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The effects of acute sleep deprivation on β -amyloid ($A\beta$) clearance in the human brain have not been documented. Here we used PET and ^{18}F -florbetaben to measure brain $A\beta$ burden (ABB) in 20 healthy controls tested after a night of rested sleep (baseline) and after a night of sleep deprivation. We show that one night of sleep deprivation, relative to baseline, resulted in a significant increase in $A\beta$ burden in the right hippocampus and thalamus. These increases were associated with mood worsening following sleep deprivation, but were not related to the genetic risk (APOE genotype) for Alzheimer's disease. Additionally, baseline ABB in a range of subcortical regions and the precuneus was inversely associated with reported night sleep hours. APOE genotyping was also linked to subcortical ABB, suggesting that different Alzheimer's disease risk factors might independently affect ABB in nearby brain regions. In summary, our findings show adverse effects of one-night sleep deprivation on brain ABB and expand on prior findings of higher $A\beta$ accumulation with chronic less sleep.

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