

# A Systematic Review Update: Health Effects of Military Service on Women Veterans

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# Background: Women in VA

## *Women*

- Play an increasing role in military and veteran activities representing:
  - 20% of new recruits
  - 17% of reserve and guard forces
  - 15% of active duty forces
- Represent one of the fastest growing groups of new VA healthcare users



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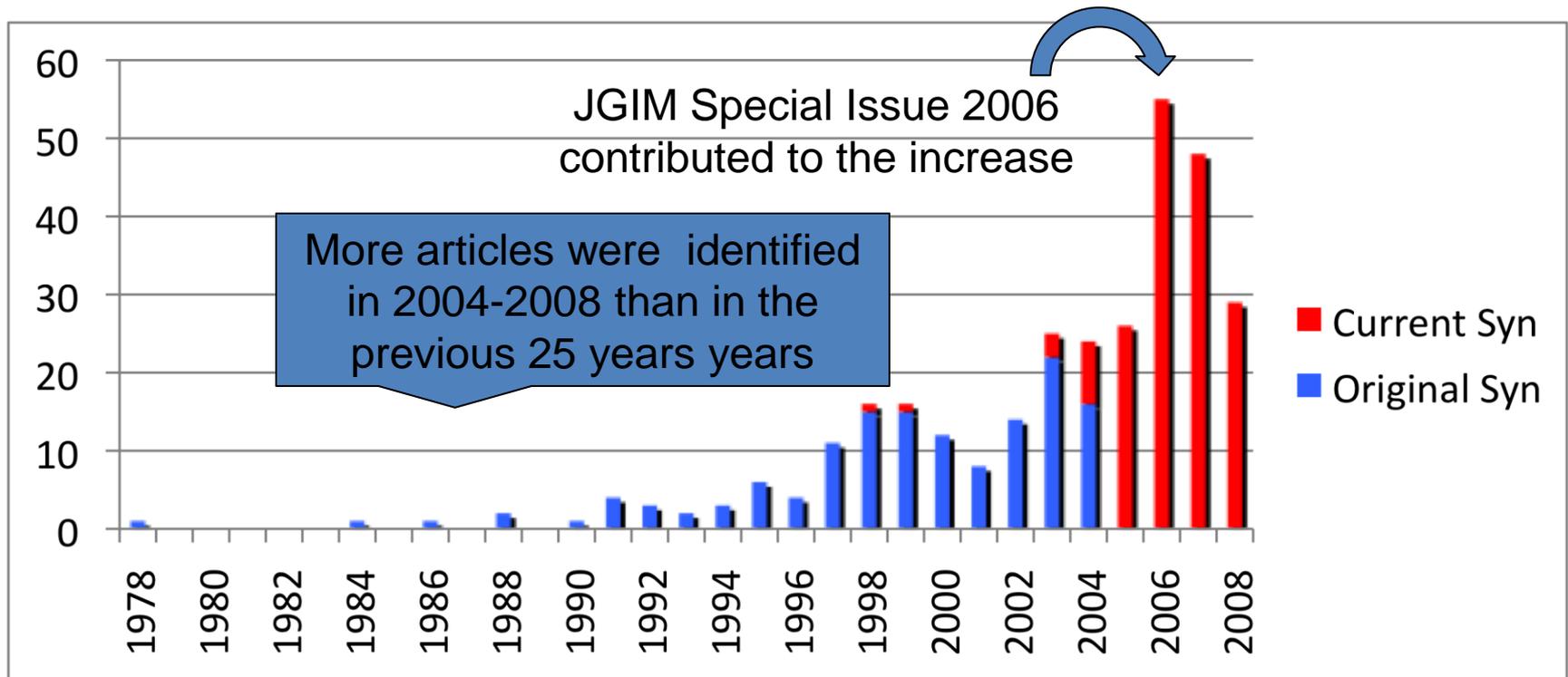
# Systematic Reviews on Women Veterans

- Women's military experiences & responses to their experiences are often unknown or distinct from men
- The impact of those experiences on health status and healthcare needs is important for care delivery
- Systematic reviews of research evidence can inform health care decisions made by managers and policymakers
- 2 comprehensive synthesis of the scientific literature on women veterans' health have been conducted (Goldzweig et al 2006, Bean-Mayberry et al 2011)
- However, the effects of deployment on reproductive health and trauma on post-deployment health have not received direct attention



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# Acceleration of Women Veteran Literature over Time



# Objectives

- To systematically assess the recent literature on women veterans' health specific to 2 key questions for post deployment health



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# Key Question 1

- What research has been published on the effects of deployment on post-deployment reproductive outcomes?
- “Reproductive effects” operationalized to
  - fertility issues, birth defects, menstrual effects,
  - urinary tract infections, sexually transmitted infections
  - reproductive cancers (e.g., cervical, ovarian)



# Key Question 2

- What research has been published on post-trauma sequelae in OEF/OIF women veterans?
- Post trauma sequelae includes:
  - mental health problems, suicide and homicide
  - cardiovascular disease,
  - risky health behaviors (i.e., tobacco use, hazardous alcohol use, substance abuse, assaultive behavior, and eating disorders), and other.



# Methods

- Searched multiple scientific databases
  - PubMed, PsychINFO, CINAHL, Social Science Abs
  - Sample search strategy
    - veteran\*[tiab] OR veteran\*[mh] OR military personnel
    - female\* OR women\* OR woman OR gender OR women's health
    - gulf war OR persian gulf OR "desert storm" OR iraq\* OR afghanistan OR OEF OR OIF OR "enduring freedom" OR afghan



# Methods

- Articles assessed:
  - original articles identified in comprehensive systematic reviews
    - 2004 synthesis by Goldzweig et al
    - 2008 synthesis by Bean-Mayberry et al
  - 1990-2010 updates using search strategy developed specific to key questions for this review
  - search terms and Medical Subject Headings (MeSH) for the various search strategies used



# Methods

- 2 team members performed a title screen of all articles by consensus
- 4 WH physicians performed a full screen of articles using set criteria
- Each article was summarized using standard abstract form and categorized into evidence tables



# Methods

- *Exclusions:*
- Some areas in the literature had been previously summarized in prior reviews or our WH reviews
  - Agent Orange and Gulf War Syndrome
  - Military sexual trauma
  - Post traumatic stress disorder



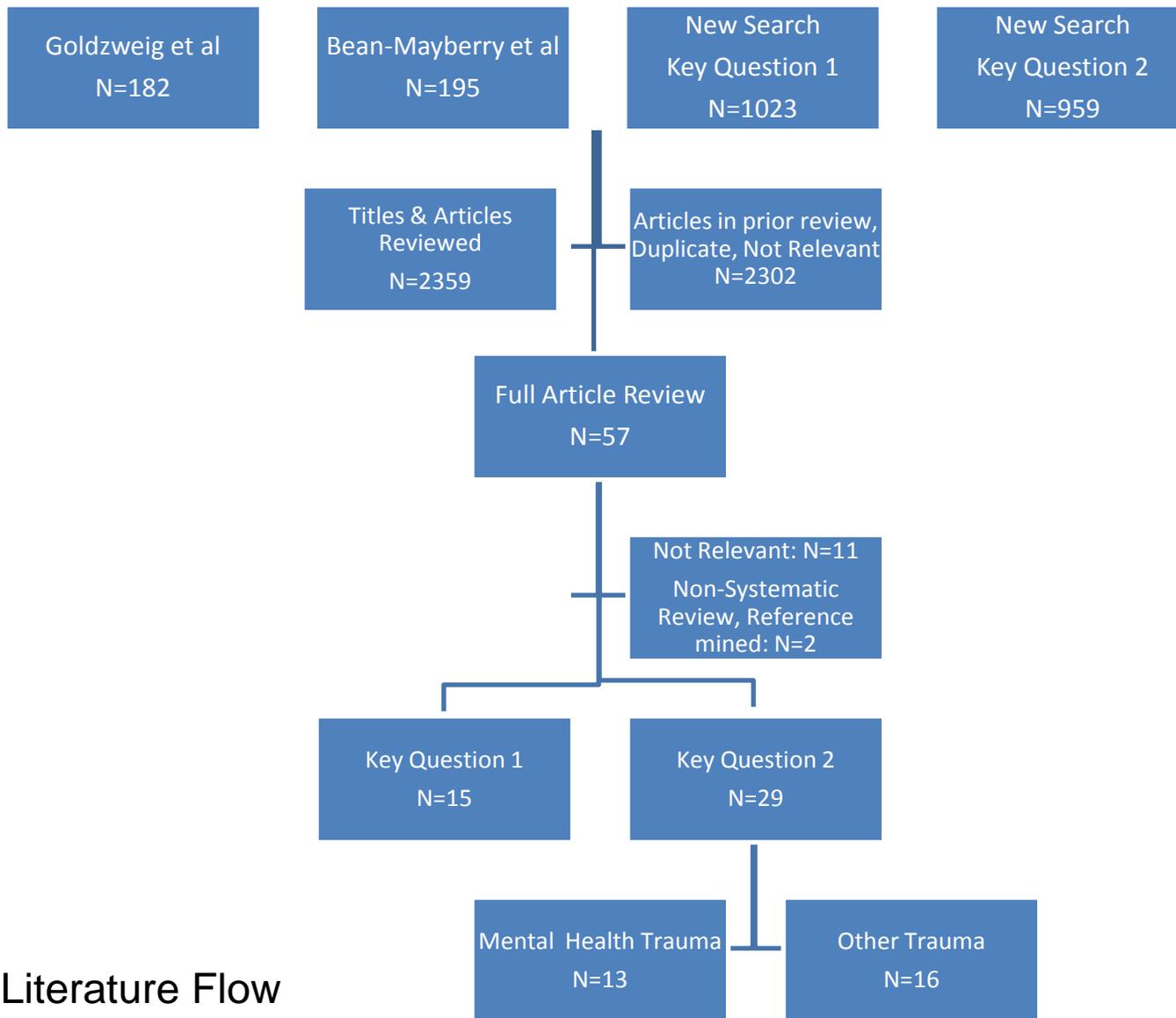


Figure 1. Literature Flow



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# Results by Key Questions

Category	N
KQ1: Reproductive Effects	15
KQ2: Post Deployment Trauma Sequelae	29
- Mental Health	13
- Other Trauma	16



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# Results: Reproductive Effects

Subject Area	Key Findings:
Gynecological Cancer	8% Vietnam Veterans and 7.1% non-Vietnam Veterans reported a history of gynecologic cancers (breast , ovary, uterus, and cervix). Female Vietnam veterans have not experienced a higher prevalence of gynecologic cancer since the conflict.
Sexual Function	Gulf War Veterans with chronic fatigue symptoms had worse sexual dysfunction than female veterans without chronic fatigue syndrome (60% vs 10%, $p=.002$ ). Many subjects with chronic fatigue had Axis I psych. disorders.



# Results: Reproductive Effects

Subject Area	Key Findings:
Conception and Pregnancy	In a self reported questionnaire, pregnancy outcomes for Gulf War exposed conceptions and non-deployed conceptions were similar. However, spontaneous abortions and ectopic pregnancies were higher for Gulf War veterans who conceived post-war.
	A similar study using survey methods of men and women veterans deployed and non-deployed during Gulf War found no differences in birth weight outcomes, risk for ectopic pregnancy, stillbirth or miscarriage.
	Note: Response rates for both studies were 50-51%.



# Results: Reproductive Effects

Subject Area	Key Findings:
Birth Defects	Comparison of the overall risk of birth defects in Gulf War Veterans vs. non-deployed Veterans among infants born at military hospitals revealed no increase in birth defects among children of Gulf War Veterans, and no association between service in Gulf War and prevalence of birth defects for male or female veterans
	A Hawaii based study on prevalence of congenital anomalies in the first year of life found the prevalence of birth defects similar for conceptions occurring before the Gulf War and during and after the Gulf War.
	In a national, population based case control study assessing 30 major birth defects, there was no significant association for any of those birth defects and military service since 1990.



# Results: Reproductive Effects

Subject Area	Key Findings:
General Health and Gynecology	Deployed female veterans reported more general and gender specific health problems than women not deployed, including abnormal paps (10.4% vs. 4.9%)
	Women and men deployed had similar common complaints, but women made more visits to sick call and one-quarter of these visits related to gynecologic issues.



# Results: Post Trauma Sequelae

Subject Area	Key Findings:
Mental Health – Depression & Suicide	Deployed men and women with combat exposures had the highest rates of onset of depression. Compared to non-deployed men and women, combat deployed men and women were at increased risk of depression.
	Veteran men are at greater risk for suicide than veteran women, however, the male to female ratio in VA is less (3:1) than the general population (4:1).
	Among veteran suicide decedents, male and female veterans had higher firearm suicide rates than non-Veterans.
	Suicide rates among VA patients were 66% higher than among the general US population. Male VA patients had a suicide rate 43/100,000 person-years vs. 23/100,000 person years in males in general population, and for female VA patients, 10/100,000 person-years vs. 5/100,000 person-years.



# Results: Post Trauma Sequelae

Subject Area	Key Findings:
Mental Health Needs & Utilization	In a study of soldiers deployed to Iraq or Afghanistan through 2004, both female soldiers and enlisted soldiers has significantly greater risks for psychiatric hospitalization as compared to male and non-enlisted counterparts.
	Among veterans with newly diagnoses PTSD, only 9.5% attended nine or more VA mental health sessions in 15 weeks or less in the first year of diagnosis.
	Veterans with mental health diagnoses, particularly PTSD, had significantly greater utilization of non-mental health medical services. Female sex and lower rank were also independently associated with greater utilization.



# Results: Post Trauma Sequelae

Subject Area	Key Findings:
Other Trauma – Spinal Cord Injury	Unique barriers to care for SCI veterans include geographical distance. Data were limited for women due to small subgroup (2%) for utilization, TBI history and functional scores, and TBI prevalence in military hospitals.
Alcohol & Substance Abuse	Alcohol misuse was greater among OEF/OIF young men compared to non-OEF/OIF men and either group of women.
	In OEF/OIF women veterans who had positive PTSD Symptoms, 47% screened positive for high-risk drinking.
	Re-admission rates for inpatient drug treatment differs among men and women. While sexual and physical abuse were potent predictors for women, substance abuse, aggression, and cognitive impairment were predictors for men.



# Results: Post Trauma Sequelae

Subject Area	Key Findings:
General Health	First time deployments were associated with more increased post-deployment distress in both men and women, but the association between deployment length and distress was only seen in men.
	Women deployed with combat exposures were 1.78x more likely to develop disordered eating and 2.35x more likely to lost an extreme amount of weight compared to women who deployed but reported no combat exposure.
Miscellaneous	In a study of health care use and satisfaction, women with combat exposure (compared to those without combat exposure) described more problems with VHA staff.
	Hospitalization data on soldiers evacuated from war zones showed diagnostic differences by gender, although the majority of evacuees were male (90%).



# Limitations

- Possible missing articles on women veterans
- Search terms may not have been specific for research on reproductive effects or post-deployment trauma
- Publication bias
- Some studies used small samples, had poor responses rates, or relied only on patient self-reports limiting generalizability



# Summary

- Differential effects from military service are apparent but the volume and quality of the research is modest
- More research is needed on the reproductive health effects of military service
  - The evidence is clearly mixed regarding the effects on pregnancy and birth outcomes
  - The range of reproductive issues is also limited
  - Gynecological problems and access to services in the field appear to be a recurrent issue



# Summary cont.

- Post trauma sequelae highlight the following:
  - Early TBI data show an initial preponderance of men, ongoing evaluation is needed to understand what, if any, gender issues will be important
  - Alcohol use in recently returning women veterans may present a greater risk at lower levels of consumption in patients with other risk conditions
  - Health care use by gender and diagnosis require ongoing follow up because data are mixed



# Study Implications

# Future Implications

- Specific areas that need to be more fully developed in women veterans' research should serve as targets for future research in VA.....
  - More research is needed on a range of reproductive health issues
    - Pregnancy outcomes
    - Gynecological diagnoses
    - Access to services
  - Current knowledge on post-deployment trauma issues should expand
    - To explore ways in which veteran, provider or practice settings can incorporate evidenced based treatments & evaluate outcomes



# Improving Reproductive Health Services

- Upcoming policies
  - Maternity Care Coordination Handbook
  - Infertility Handbook
  - Emergency Contraception Rights of Conscience (ROC) Information Letter (IL)
- Maternity care
  - 2010 Caregiver Law
  - Newborn care
  - Childcare pilots
  - VA/DoD Pregnancy Guidelines



# Understanding Women Veterans

- National Survey of Women Veterans 2008
  - 3,500+ participants thru telephone interviews
  - Findings: access, quality perception, barriers
  - Next Scientific Survey of Women Veterans: 2012
- Research: Women's Health Evaluation Initiative
  - Data on demographics and use of VHA care
  - Effects of military service on women's lives
  - Women Vietnam Veterans Study
  - OEF/OIF Cohort Study

# Women's Health Transformation Initiative

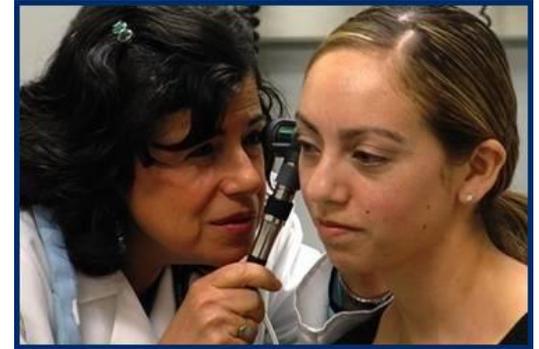
## Sub-initiative of New Models of Care

### Improved Care Coordination

- ✓ **Emergency room care**
  - Assessment tool development
  - Ongoing provider/staff education
  - Planned completion: 9/2013
- ✓ **Breast cancer**
  - Tracking of abnormal test results
  - Breast Cancer Clinical Case Registry
  - Planned completion: 9/2013
- ✓ **Teratogenic identification of drugs**
  - Planned completion: 9/2013



# Accomplishments: 2008–Present



- ✓ Comprehensive primary care for women Veterans implemented
- ✓ 144 full-time Women Veterans Program Managers (WVPMs) installed at VA facilities nationwide
- ✓ VHA Handbook 1330.01 revised: Health Care Services for Women Veterans
- ✓ Enhancing mental health, homeless services for women Veterans through collaboration across program offices
- ✓ Provider education in Women's Health developed and delivered
- ✓ Ramped-up communications to and about women Veterans

# VA Women's Health Links

- Health Effects of Military Service on Women Veterans
- <http://www.hsrd.research.va.gov/publications/esp/women-vets.cfm>
- Systematic Review of Women Veterans Health Research
- <http://www.hsrd.research.va.gov/publications/esp/womens-health.pdf>
- VA Evidence Synthesis Program  
<http://www.hsrd.research.va.gov/publications/esp/>



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# Thank you

- VA Greater Los Angeles Evidence Synthesis Program & Southern California/RAND Evidence-based Practice Center
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- VA Center for Information Dissemination and Education Resources (CIDER)



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