

Pain in Women Veterans

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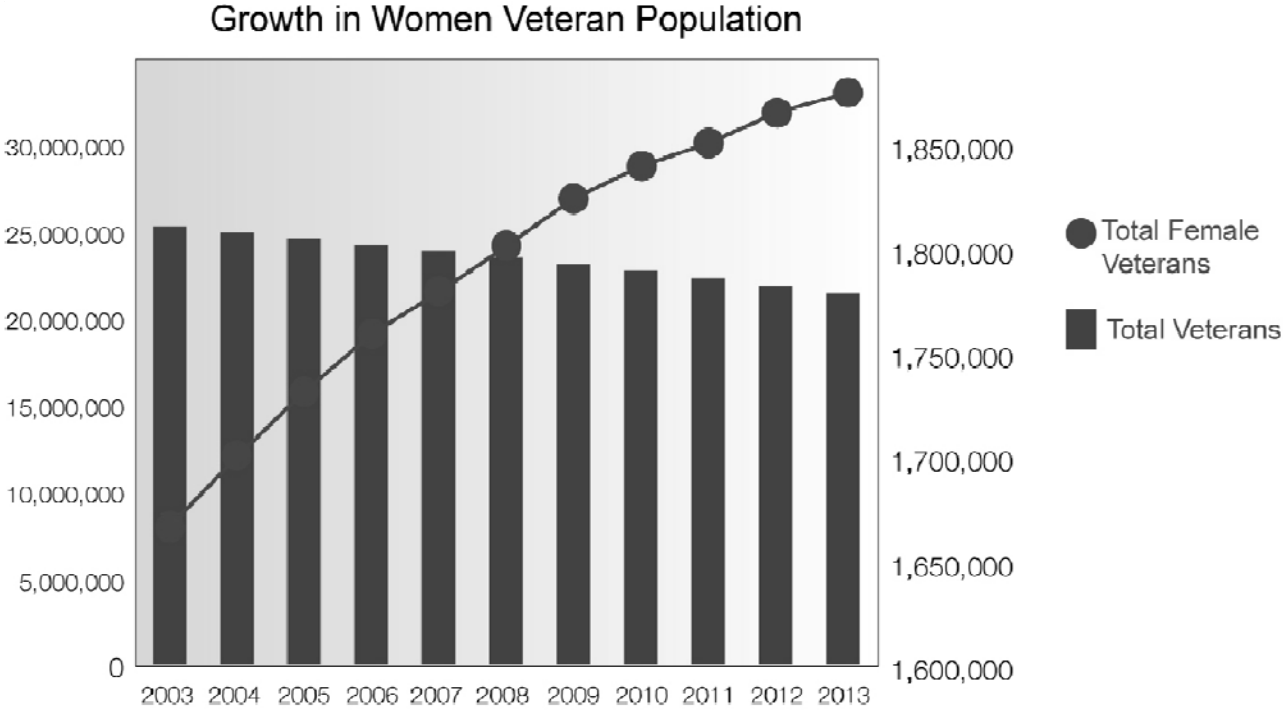
Disclosure Statement

- No conflicts of interest to disclose

Outline

- Changing women Veterans Population
- Pain in Women (non-Veteran studies)
- Risks for pain in Women Veterans
- Women Veteran's Pain Studies
- Pain in women Veterans of OEF-OIF
- Specific Pain syndromes, including musculoskeletal pain, pain in TBI,
- Are there differences in pain treatment and outcomes?

Population of Women Veterans

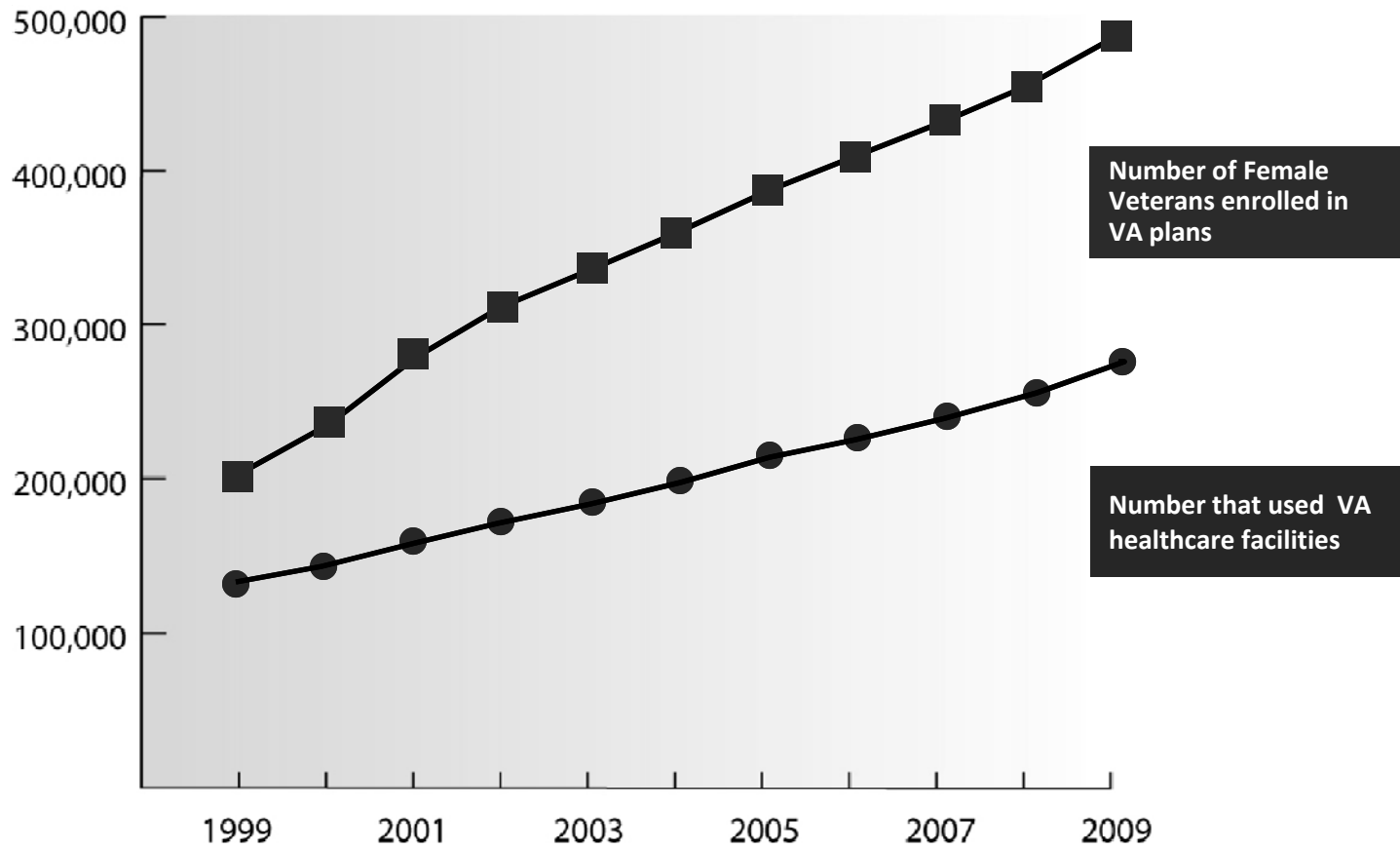


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Expanding Population

- The number of women veterans is growing rapidly.
- Because of the large number of women on active duty and entering military service, the percentage of female veterans is projected to increase:
 - from 7.7 percent in 2008
 - to 10.0 percent in 2018
 - to 14.3 percent in 2033

Women Veterans and the VA



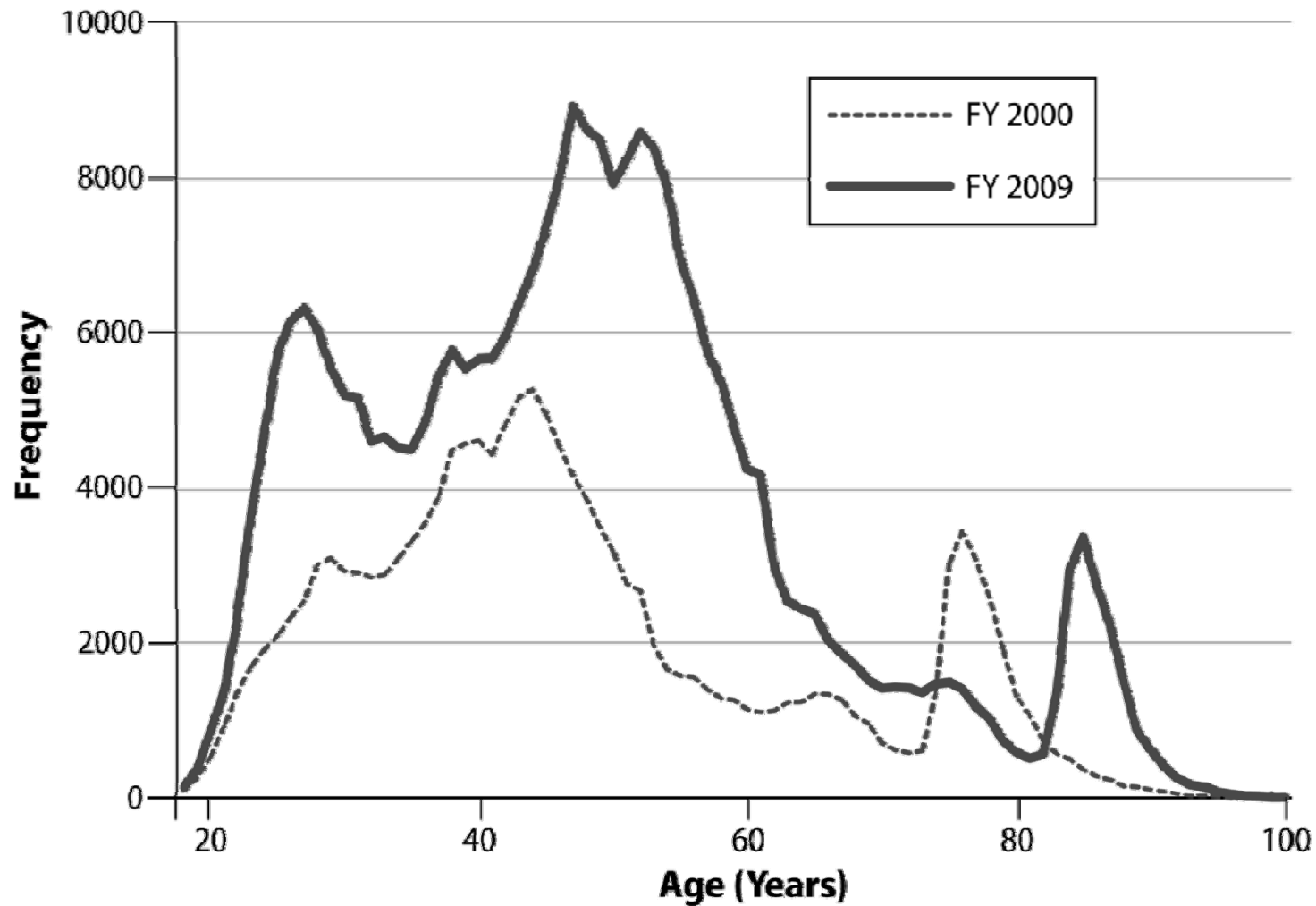
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A New Generation of Women Veterans



- ★ Young – 47.3% less than 30;
78% less than 40
- ★ 49.7% received VA health care
- ★ 47.8% of outpatients seen for 11 or more visits

Age distributions of women Veteran VHA patients, FY00 and FY09



Civilian studies, pain more common in women

- Chronic pain is more common among women than men
- WHO study—women were found to have elevated rates of persistent pain relative to men across all societies.
- Specific pain syndromes including headaches, oral facial pain, musculoskeletal pain, and abdominal pain have all been demonstrated to have a higher prevalence in women.

- Gureje O, Von Korff, M, Simon GE, Gater R, Persistent pain and well-being: A World Health Organization study in primary care. JAMA 1998;280:147

Women Veterans are at risk of pain

- Are women Veterans at higher risk than men?
- Maybe,
- Several factors may place women Veterans (as a population) at high risk of pain.
- 1-Pain is more common in Women
- 2-Women Veterans, as a population, may be particularly at risk because of high rates of mental health conditions and trauma.

Risks for Pain in Women Veterans

- High injury rates in basic training and active duty
- Higher prevalence of depression, anxiety, adjustment disorders
- Combat trauma
- Sexual Trauma –18% screen positive

Women are excluded from “direct combat” but do serve in a variety of support positions where they come under direct fire

- Women soldiers carry heavy loads and participating in strenuous physical training
- have higher injury rates than men in initial entry training in military service.
- are particularly prone to specific injuries such as stress fracture.







A US Army photo by Lance Cpl. Clifton D. Sams

Army Specialist Jennie Baez provides security for soldiers and Marines in Anbar Province, Iraq (10/11/06)

DOD studies risk factors for injuries

- DOD studies have identified specific risk factors for injury (low aerobic fitness and previous injury history) and targeted strategies to strengthen bones and reduce risk of stress fracture in basic training.
- In addition, other DOD studies of physical strength demands have led to new helmet design, evaluation of spine load lifting tolerance, and further testing of whether strength deficiencies are associated with injury risk.

- Friedl KE. Biomedical research on health and performance of military women: Accomplishments of the Defense Women's Health Research Program. J Wom Health 2005, 14(9): 764-80.

One Study of Disease and Nonbattle Injuries sustained by a U.S. Army Brigade Combat Team during OEF/OIF

- Historically DNBI has resulted in significantly more hospitalizations and time lost than battle injuries as a result of the hostile combat environment.
- In a study of one Army brigade (3,797 males, 325 females) deployed to Iraq for 15 months:
- Females had significantly higher rates of DNBI (accounted for 7.9% of population and 12.5% of DNBI)...However, 74% of the females receiving MEDEVAC had pregnancy related issues.
- Musculoskeletal injuries were the most common body systems involved (50%)
- In this study there was no significant difference in rates of female/male soldiers receiving MEDEVAC for musculoskeletal injuries.

- Belmont PJ, Goodman GP, Waterman B, Dezee K, Burks R, Owens BD. Military Medicine, 175,7:469,2010

Depression and risks for Chronic Pain

- Depression is twice as common in women Veterans compared to men.
- Pain and depression frequently co-exist (30-50% co-occurrence) and have additive effect on adverse health outcomes and treatment responsiveness of one another *
- The presence of depressive symptoms is a strong, independent, and highly prevalent risk factor for the occurrence of disabling back pain **

* Bair, MJ, Robinson RL, Katon W, Kroenke K. Depression and Pain Co-morbidity: a literature review. Arch Intern Med 2003;163:2433-2455

** Reid MC, Depressive symptoms as a risk factor for disabling back pain Am Geriatr Soc. 2000 Dec;51(12):1710-7.

Mental Health Diagnoses of Iraq and Afghanistan Veterans Seeking VA Health Care by Gender: April 2002-March 2008

Maguen S, Ren L, Bosch J, Marmar C, Seal K. AJPA, Dec. 2010

Mental health diagnosis	Women (n=40,701)	Men (n=288,348)
Depression	23%	17%
PTSD	17%	22%
Substance Use	2%	3%
Adjustment Disorder	11%	11%
Anxiety	12%	10%
Alcohol Use	3%	8%
Eating Disorder	0.6%	0.1%

Sexual trauma may increase risk of pain

- High rates of sexual trauma
- Some studies have found women with sexual trauma have higher rates of pain syndromes such as:
 - Pelvic pain
 - Gastrointestinal disorders
 - Headache
 - Back pain

MST Support Team Screening Report

	Females	Males
% Screened Positive	21.9%	1.1%
	17.9%	0.8%
# Screened Positive	53,295	46,800
	5,590	1,684

All Veteran Data, OEF/OIF Veteran Data, FY2009

Sexual Trauma Associated with Pain Intensity and Pain Interference

- Study of Women VA CT Primary Care Patients
 - 78% reported ongoing pain problem
 - 36% reported any sexual trauma

 - In multivariate linear regression that included only those who reported pain, the presence of sexual trauma was associated with higher levels of pain intensity, and higher levels of pain interference.
-
- Haskell, et al. Pain Medicine 2008

Studies of Pain in Women Veterans



Prevalence and Age-Related Characteristics of Pain in a Sample of Women Veterans Receiving Primary Care

- 213 Women Primary Care Patients
- Mean age 52
- ***78% reported ongoing pain problem***
- Mean duration of pain 6 years
- Average pain intensity 6.3 (range 1-10)
- Commonly endorsed pain sites included:
- Lower extremity (68%), Low back (63%), Shoulder (48%).
- Highest prevalence in age 36-50 (89%), and 51-65(83%)

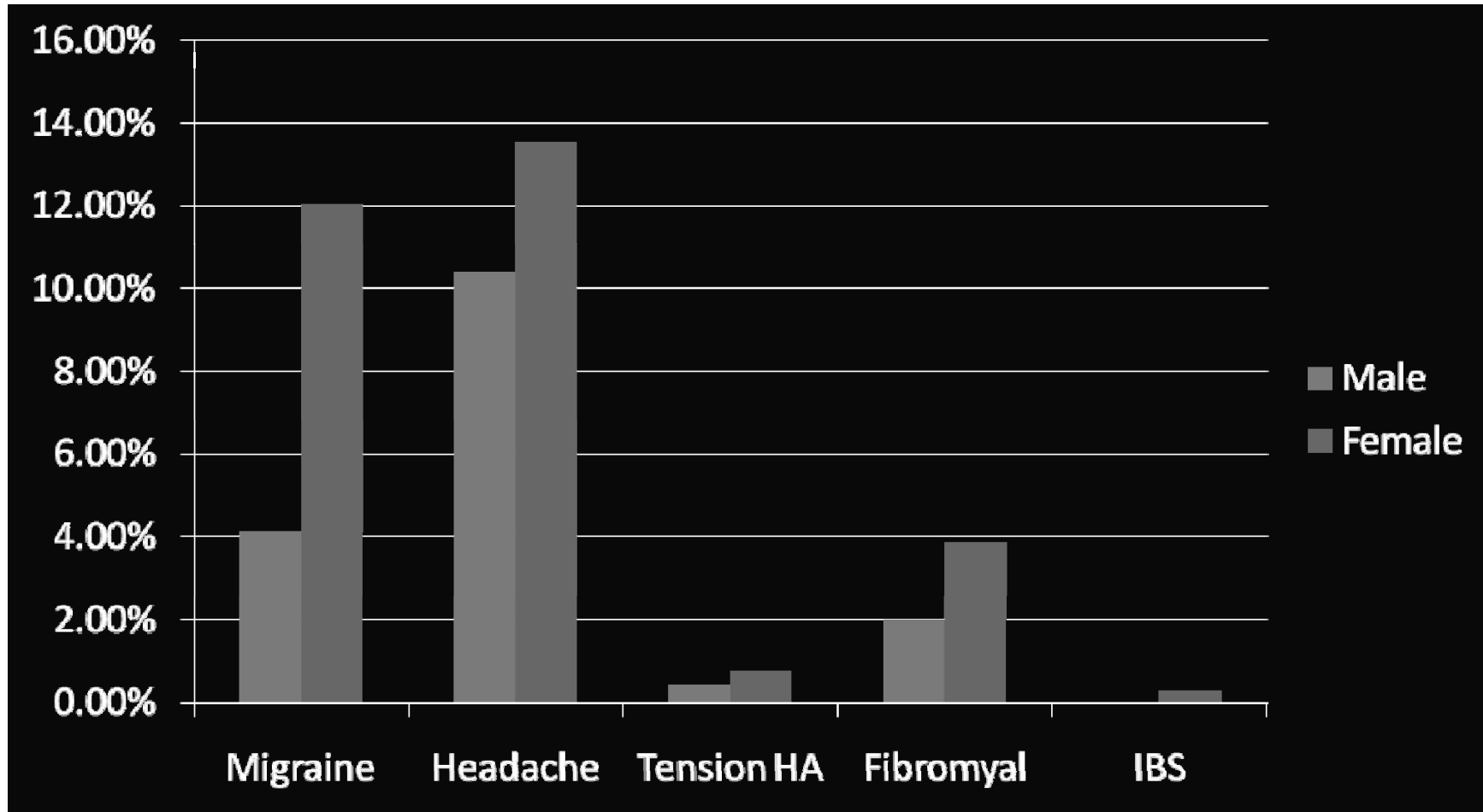
Health Related Quality of Life in VA Patients with Mental Illness

- Another study of health related quality of life in over 18,000 veterans with mental illness found females had lower scores on the SF-36 physical component summary (indicating worse symptoms), were more likely to report that they were limited "a lot" in activities of daily living, and had more pain than males

- Teh CF, Kilbourne AM, McCarthy JF, Welsh D, Blow FC. Gender differences in health related quality of life for Veterans with Serious Mental Illness. *Psychiatry Serv* 2008; 59(6):663-9

Painful Conditions in OEF/OIF Veterans by Gender

(unpublished WVCS data)



Painful Conditions in Homeless OEF/OIF Veterans

(WVCS, Blackstock, et al, Unpublished data)

- Chronic Pain Conditions defined as having at least one or more of the following ICD-9 codes for one inpatient visit or two outpatient visits:
- Headache, tension headache, migraine, back pain, fibromyalgia, IBS, TMJ, peripheral neuropathy, CRPS, malignancy, arthritis.
- N = 9,170 Homeless Veterans
- Women with Pain: 39.9%
- Men with Pain: 31.3%

Pain in OEF-OIF Veterans-Are there Gender Differences?

- Because of the high prevalence of pain in women, and the risks of pain in Women Veterans, we evaluated pain scores in OEF/OIF Veterans who use VA in the first year after deployment.
- We hypothesized that women Veterans would have more pain, more moderate to severe pain, and more persistent pain than men Veterans.

Women Veteran's Cohort Study

Study of gender differences in healthcare costs, utilization and medical and mental health outcomes (including pain) after service in OEF/OIF.

Links OEF/OIF Roster to VA Electronic Medical Record

Includes prospective survey component

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Methods

- Study population from VA's OEF/OIF roster
 - Roster contains information on U.S. Military personnel discharged from 10/1/2001-11/30/2007
 - Who enrolled for VA services before January 1, 2008.
 - N=406,802 at the time of this analysis
- Sample limited to:
 - Veterans who had at least 1 visit to a VA clinic likely to obtain pain scores (e.g. primary care, women's clinic)
 - And at least one year of observation after enrollment

Data Sources

- Roster includes information on Veteran's sex, DOB, race, education, marital status, rank, branch of service, and deployment start and end dates.
- Data on eligible visits, ICD-9 codes, and pain scores ascertained from VA Corporate Data Warehouse (CDW).

Pain numeric rating scale

- At each visit, Veterans are asked to rate their current pain intensity on a scale of 0–10, where 0 is no pain and 10 is the worst possible pain
- The score is recorded along with vital signs.
- We retained only scores recorded at outpatient visits.
- We retained the highest scores on a day.

Definitions

- Pain was defined as assessed if the Veteran had a valid pain score in the 1 year observation period.
- Among Veterans who were assessed, Any Pain was defined as a score ≥ 1 .
- Among those with Any Pain, Moderate-Severe pain was defined as a score ≥ 4 .
- Persistent pain was defined as 3 or more scores ≥ 4 recorded in at least 3 different months.

Gender Differences in OEF/OIF Population- Demographics

	Female	Male	P-value
Age mean (SD)	30 (8.8)	32 (9.7)	<.0001
Race			<.0001
White	53%	69%	
Black	30%	15%	
Hispanic	11%	10%	
Other/unknown	6%	6%	
Married	32%	49%	<.0001

Clinical Diagnoses in first year after deployment (Top 6)

Diagnosis	Female	Male	OR (95%CI)	P value	Adjusted OR (95% CI)	P value
Back Problems	9.4%	10.3%	.95(0.86,0.95)	<.0001	0.97(0.92,1.02)	0.227
Joint Disorders	9.2%	9.5%	0.97(0.92,1.02)	0.1940	1.00(0.95,1.05)	0.930
PTSD	8.4%	9.7%	0.86(0.81,0.90)	<.0001	0.95(0.89,1.0)	0.459
Female Genital Disorders	6.2%					
Mild Depression	6.8%	4.1%	1.72(1.62,1.83)	<.0001	1.81(1.70,1.93)	<.0001
Musculoskeletal Disorders	4.6%	4.1%	1.13(1.05,1.21)	.0011	1.22(1.13,1.31)	<.0001

Pain Assessment and Pain Characteristics by Sex

	Female n=18,481	Male n=134,731	P value
Pain Assessment	60.1%	59.6%	0.247
Any pain	38.1%	44.0%	<0.0001
Moderate pain	68.0%	62.6%	<0.0001
Persistent pain	18.0%	21.2%	<0.0001

Results of regression models (relative risks)

Variable	Assessed RR 95% CI)	Any pain RR (95%CI)	Moderate Pain RR (95%CI)	Persistent Pain RR(95%CI)
Female	0.98 (0.96, 1.00)	0.89 (0.86, 0.92)	1.05 (1.01, 1.09)	0.90 (0.81, 0.99)
Male	Ref.	Ref.	Ref.	Ref.
Age	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)
Divorced	1.05 (1.02, 1.08)	1.00 (0.96, 1.04)	1.00 (0.95, 1.06)	0.99 (0.87, 1.12)
Never married	1.10 (1.08, 1.12)	0.88 (0.86, 0.90)	0.98 (0.95, 1.01)	0.80 (0.73, 0.87)
Married	Ref.	Ref.	Ref.	Ref.
Black	1.00 (.098, 1.02)	0.97 (0.94, 1.00)	1.22 (1.18, 1.26)	1.10 (1.01, 1.20)
Hispanic	1.07 (1.05, 1.10)	0.92 (0.90, 0.95)	1.01 (0.97, 1.05)	0.68 (0.61, 0.76)
Other	1.05 (1.01, 1.09)	0.97 (0.91, 1.03)	1.09 (1.01, 1.17)	0.70 (0.56, 0.89)
Unknown	0.92 (0.88, 0.96)	0.97 (0.90, 1.03)	1.16 (1.07, 1.25)	1.17 (0.93, 1.46)
White	Ref.	Ref.	Ref.	Ref.

Also controlled for education, branch, and rank

Limitations:

- Accuracy of Pain Scores?
- In one study, that compared Pain Scores to Brief Pain Inventory, the Pain Score misses nearly 1/3 of patients with clinically important pain.
- In a second study the Pain Score underestimated pain in 33% of cases and overestimated in 12% of cases.
- Does inaccuracy vary by Gender?
 - Krebs EE, et al. Accuracy of the pain numeric rating scale as a screening test in primary care. J Gen Intern Med. 2007;22 (10): 1453-8)
 - Lorenz KA, et al. How reliable is pain as the 5th vital sign. J Am board Fam Med 2009;22(3):291-8.

Specific Painful Conditions in OEF/OIF Women Veterans

- ***Because of concern for risk of musculoskeletal injury in female Veterans, we examined the prevalence of Painful Musculoskeletal Conditions and the trajectory of these conditions over 7 years after return from deployment.***

- Haskell, et al. Clinical Journal of Pain, 2011, In press

Methods

- Used VA administrative and clinical data bases of OEF/OIF Veterans who had enrolled in and used VA care.
- The prevalence of back problems, musculoskeletal problems and joint disorders was determined at years 1 through 7 after deployment for female and male Veterans using ICD-9 code groupings for these conditions.

Results

- For both female and male Veterans the prevalence of painful musculoskeletal conditions increased each year after deployment.
- After adjustment for demographic differences, ***Women Veterans were more likely than men to have back problems, musculoskeletal problems, and joint problems, and the odds of having these conditions increased each year for women compared to men in years 1-7 after deployment.***

The prevalence of back problems in female and male OEF/OIF Veterans in years 1-7 after end of last deployment

Year	Female	Male	OR (95% CI)	P value	Adjusted OR (95%CI)	P value
1	3.89	4.27	0.91(0.87,0.95)	<.001	1.06(1.01,1.11)	0.01
2	8.25	8.7	0.94(0.91,0.98)	0.001	1.10(1.06,1.14)	<.001
3	13.07	13.3	0.98(0.95,1.01)	0.23	1.15(1.11,1.19)	<.001
4	16.9	16.92	1.00(0.96,1.03)	0.91	1.17(1.13,1.21)	<.001
5	19.43	18.77	1.04(1.00,1.09)	0.04	1.22(1.17,1.28)	<.001
6	20.53	19.59	1.06(1.01,1.12)	0.03	1.25(1.18,1.32)	<.001
7	19.63	17.19	1.18(1.05,1.31)	.0004	1.38(1.23,1.55)	<.001

The prevalence of musculoskeletal conditions in female and male OEF/OIF Veterans in years 1-7 after end of last deployment

year	Female	Male	OR (95%CI)	P value	Adjusted OR (95% CI)	P value
1	2.23	2.05	1.09(0.87,0.95)	<.001	1.32(1.10,1.11)	<.001
2	4.88	4.34	1.13(1.08,1.19)	<.001	1.36(1.30,1.43)	<.001
3	8.03	6.94	1.17(1.12,1.22)	<.001	1.40(1.34,1.46)	<.001
4	10.87	9.27	1.19(1.15,1.25)	<.001	1.42(1.36,1.48)	<.001
5	12.84	10.68	1.23(1.17,1.33)	<.001	1.47(1.39,1.54)	<.001
6	13.52	11.15	1.25(1.17,1.33)	<.001	1.50(1.40,1.60)	<.001
7	12.42	9.58	1.34(1.17,1.53)	<.001	1.60(1.39,1.84)	<.001

The prevalence of joint problems in female and male OEF/OIF Veterans in years 1-7 after end of last deployment

Year	Female	Male	OR(95%CI)	P value	Adjusted OR (95%CI)	P value
1	4.23	4.42	0.95(0.91,0.99)	0.03	1.13(1.08,1.18)	<.001
2	8.66	8.8	0.98(0.95,1.02)	0.33	1.16(1.12,1.21)	<.001
3	13.59	13.4	1.02(0.98,1.05)	0.009	1.21(1.17,1.25)	<.001
4	17.64	16.99	1.05(1.01,1.08)	<.001	1.24(1.20,1.29)	<.001
5	20.32	18.87	1.10(1.05,1.14)	<.001	1.29(1.24,1.35)	<.001
6	21.18	19.52	1.11(1.05,1.17)	<.001	1.31(1.24,1.39)	<.001
7	19.47	16.66	1.21(1.08,1.35)	<.001	1.36(1.21,1.53)	<.001

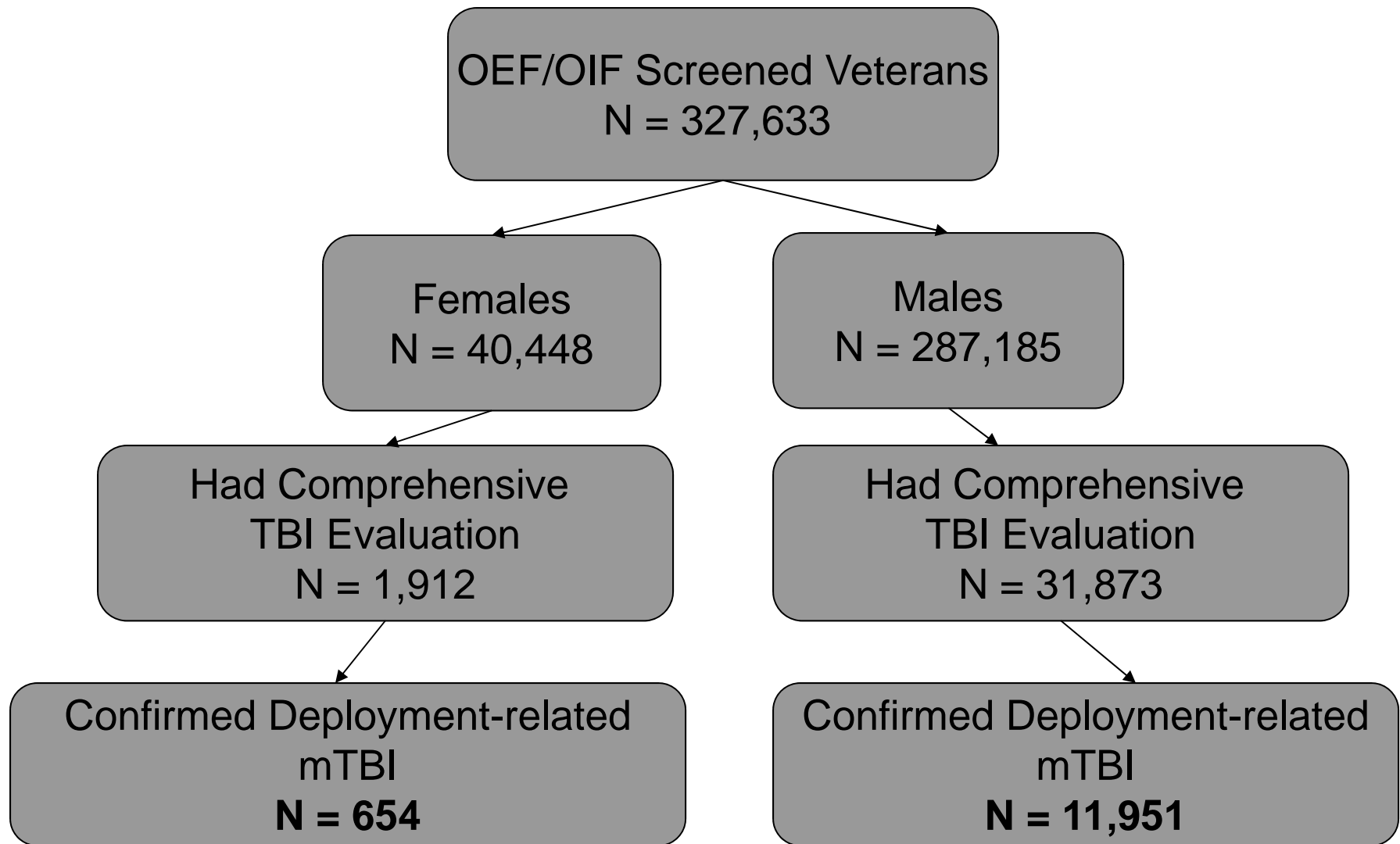
Limitations

- Findings can't be generalized to all Veterans, as we only those who enrolled in and sought care in VA.
- Large sample size, group comparisons reach statistical significance and are not necessarily of clinical importance.
- Analysis each year is based on those Veterans who continue care for that period of time. While many Veterans have completed one year of care, far fewer have completed up to 7 years of care and attrition may disproportionately affect those with or without certain conditions.

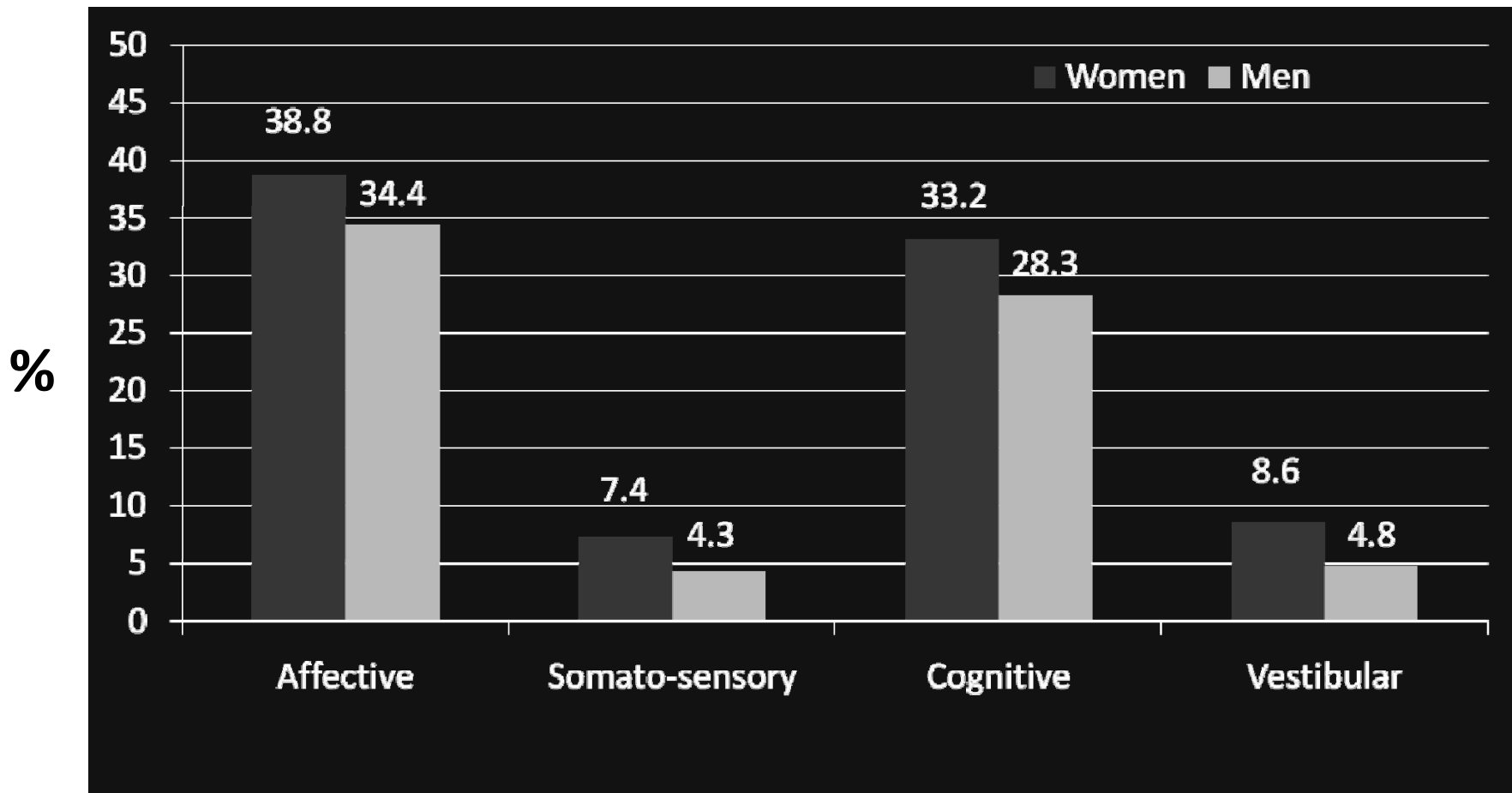
Gender Differences in Symptoms in OEF-OIF Veterans with Deployment Related TBI

- Iverson, K. M., et al, (July,2010). Oral presentation at the annual HSR&D National Meeting on Building the Evidence Base to Improve Healthcare Outcomes for Women Veterans, Arlington, VA.

Inclusion Criteria



Percentages of Veterans Who Report “Severe” and “Very Severe” Symptoms on the Four NSI-22 Scales by Gender (N = 12,605)



Sex Differences in Pain and Pain-Related Disability

(Stubbs et al, Pain Medicine, 2010;11:232-239)

- Study analyzed baseline data collected for the Stepped Care for Affective Disorders and Musculoskeletal Pain (SCAMP) study, a randomized clinical trial of pain and depression care management. (Kroenke et al, Gen Hosp Psychiatry 2007;29:506-17)
- SCAMP enrolled 500 patients with chronic musculoskeletal pain, 250 had comorbid depression.

Sex Differences in Pain and Pain Related Disability

- 259 Women, 249 Men
- **Women reported greater pain intensity**
- BPI Severity 6.2 vs. 5.2 (P<.001)
- **Greater pain specific disability**
- BPI interference 6.47 vs. 5.27 (P<.001)
- **More pain related disability days**
- 32.5 vs. 23.4 (P<.001)
- **More likely to acknowledge emotional aspects of pain and expressed a greater need for empathy.**

Differences in Pain Treatment

- Women seek care for musculoskeletal pain more often than men.
- Women may face challenges in pain treatment such as stigmatization, misunderstanding and gender bias.
- Women may respond differently to pain treatment programs.
 - 1. Wijnhoven HA, Sex differences in Consequences of Musculoskeletal Pain. Spine 2007;32:1360-7)
 - 2. Frantsve LM, et al. Patient-provider interactions in the management of chronic pain: current findings within the context of shared medical decision making. Pain Medicine 2007,8:10:25-35
 - 3. Keogh E et al. Do men and women differ in their response to interdisciplinary chronic pain management? Pain 2005;14:1:37-46.

Are there gender differences in pain treatment in VA? (unpublished WVCS data)

Gender Distribution of Pain Clinic Stop Code (420)		
Gender	N	%
Male	8449	1.94%
Female	1049	1.82%

Summary and Conclusions

- Women Veterans who use VA have a high prevalence of pain.
- With rising numbers of female military service members and female Veterans, it will be imperative for VHA to develop prevention and treatment programs that focus on issues of particular importance to women, including patient-provider communication and prevention of functional disability.