Temporal changes in the nature of disability: US Army soldiers discharged with disability, 1981--2005

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Background

➢ Disability increasing at almost 10% per year among US Army soldiers.

➢ In FY 2005, the DoD paid disability-retired military service members $1.25 billion, $474 million of which was for disabled Army retirees

➢ Few studies published describe the nature of these disabilities, risk factors or disposition

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Study Goals

➢ Document major types of disability discharges from 1981-2005

➢ Describe the population at risk for different types of disability

➢ Document and describe the type of compensation (an indicator of severity) awarded for different types of disability as well as temporal changes in these associations

Methods: The Data

Total Army Injury and Health Outcomes Database (TAIHOD)

➢ US Army Physical Disability Agency

➢ DMDC (personnel files)

Methods –
Study Population

➢ All Active Duty Army discharged with a permanent disability between 1981-2005

➢ N = 108,119

VASRD System for classifying disability

➢VASRD codes categorized into 15 body/organ systems

Musculoskeletal	Respiratory
Neurological	Cardiovascular
Mental health	Digestive
Endocrine	Hemic/lymphatic
Ear/other sensory organs	Eye
Infectious/immune/nutritional	Skin
Gynecological	Genitourinary
Dental and oral	

VASRD Dispositions (compensation awards)

➤ Eligibility dependent upon tenure in the Army and whether condition caused, or aggravated, by Army service

- Separation without benefits

- Separation with severance pay

- Retirement with permanent disability

Demographic Factors

- Gender
- Age
- Rank
- Time in service
- Race/ethnicity
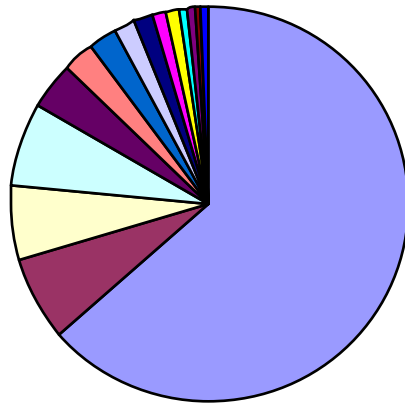- Marital status
- Education

Methods -- Analyses

➤ Frequency distributions

➤ Multiple Logistic Regression analysis

➤ Adjusted (standardized) and unadjusted rates

➤ Autoregressive Time Series Analysis

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Results

1981-1992

- Musculoskeletal system
- Neurological conditions
- Mental disorders
- Cardiovascular system
- Respiratory System
- Endocrine
- Digestive
- Disease of Eye
- Skin
- Genitourinary
- Infectious Diesease/Immune
- Hemic/Lympthatic
- Ear and other sensory organs
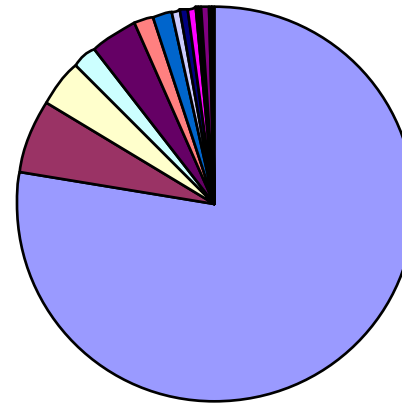- Gynecological
- Dental/Oral
- Missing

1993-2005

- Musculoskeletal system
- Neurological conditions
- Mental disorders
- Cardiovascular system
- Respiratory System
- Endocrine
- Digestive
- Disease of Eye
- Skin
- Genitourinary
- Infectious Diesease/Immune
- Hemic/Lympthatic
- Ear and other sensory organs
- Gynecological
- Dental/Oral
- Missing

Results

➤ 91% all disability captured in top 5 conditions

➤ Top 5 conditions (1981-2005)
  - Musculoskeletal (72%, n = 77,418)
  - Neurological (6%, n = 6,896)
  - Mental health (5%, n = 5,075)
  - Cardiovascular (4%, n = 4429)
  - Respiratory (4%, n = 4202)

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Risk factors for different types of disability

	Musculoskeletal	Respiratory	Cardiovascular	Neurological	Mental Health
	OR (95% C.I.)	OR (95% C.I.)	OR (95% C.I.)	OR (95% C.I.)	OR (95% C.I.)
Gender					
Male	0.86* (0.82-0.88)	0.82* (0.76-0.89)	1.01 (0.92-1.10)	1.24* (1.15-1.33)	1.31* (1.22-1.42)
Female (referent)	1.00	1.00	1.00	1.00	1.00
Age					
<21 (referent)	1.00	1.00	1.00	1.00	1.00
21-25	1.12* (1.07-1.17)	1.03 (0.92-1.16)	0.57* (0.51-0.64)	1.06 (0.92-1.14)	1.05 (0.96-1.15)
26-30	1.24* (1.17-1.31)	0.80 *(0.70-0.92)	0.53* (0.46-0.61)	1.02 (0.92-1.13)	1.22* (1.09-1.37)
31-35	1.27* (1.19-1.36)	0.71* (0.61-0.84)	0.54* (0.46-0.64)	1.00 (0.88-1.13)	1.54* (1.35-1.76)
36-40	1.06 (0.97-1.15)	0.80+ (0.66-0.97)	0.88 (0.74-1.06)	1.00 (0.86-1.17)	2.09* (1.76-2.47)
>40	0.76* (0.68-0.85)	0.91 (0.71-1.16)	1.55* (1.25-1.91)	0.98 (0.81-1.20)	2.37* (1.90-2.96)

Risk factors for different types of disability

|	Musculoskeletal	Respiratory	Cardiovascular	Neurological	Mental Health
	OR (95% C.I.)	OR (95% C.I.)	OR (95% C.I.)	OR (95% C.I.)	OR (95% C.I.)
Race/ethnicity					
White (referent)	1.00	1.00	1.00	1.00	1.00
Black	0.77* (0.75-0.80)	1.62* (1.51-1.74)	1.11* (1.03-1.19)	0.88* (0.83-0.94)	1.04 (0.97-1.12)
Hispanic	1.01 (0.94-1.07)	1.21* (1.05-1.41)	0.61* (0.51-0.74)	0.91 (0.80-1.02)	0.99 (0.86-1.13)
Other	0.97 (0.90-1.04)	1.07 (0.91-1.26)	0.79* (0.67-0.94)	0.92 (0.81-1.05)	1.24* (1.09-1.42)
Marital status					
Single	0.82* (0.80-0.85)	0.86* (0.80-0.93)	1.05 (0.96-1.14)	1.00 (0.94-1.06)	1.80* (1.68-1.93)
Married (referent)	1.00	1.00	1.00	1.00	1.00
Previously married	1.04 (0.97-1.12)	0.89 (0.76-1.05)	0.86 (0.73-1.01)	0.96 0.84-1.10)	1.26* (1.08-1.46)

Risk factors for different types of disability

	Musculoskeletal	Respiratory	Cardiovascular	Neurological	Mental Health
	OR (95% C.I.)	OR (95% C.I.)	OR (95% C.I.)	OR (95% C.I.)	OR (95% C.I.)
Education					
≤High school or equivalent (referent)	1.00	1.00	1.00	1.00	1.00
Some college	0.74* (0.70-0.79)	1.13 (0.99-1.29)	1.34* (1.21-1.50)	1.07 (0.96-1.19)	1.35* (1.20-1.52)
≥College degree	0.91* (0.85-0.98)	0.93 (0.77-1.11)	0.95 (0.82-1.11)	0.94 (0.82-1.08)	1.29* (1.12-1.48)
Rank					
E1-E4 (referent)	1.00	1.00	1.00	1.00	1.00
E5-E6	0.91* (0.87-0.95)	0.99 (0.90-1.09)	1.05 (0.94-1.17)	0.97 (0.90-1.05)	1.09 (0.99-1.21)
E7-E9	0.50* (0.46-0.55)	1.05 (0.87-1.28)	2.06* (1.76-2.43)	1.12 (0.96-1.31)	2.10* (1.72-2.56)
Officer	0.52* (0.47-0.57)	1.23 (0.97-1.55)	1.58* (1.28-1.94)	1.44* (1.21-1.71)	1.70* (1.41-2.04)
Time in service yrs	0.97* (0.97-0.98)	1.03* (1.01-1.04)	1.04* (1.03-1.05)	1.02* (1.01-1.03)	0.93* (0.91-0.94)

Results

Crude and adjusted rates of permanent musculoskeletal disability per 100,000 active duty soldiers , 1981-2005
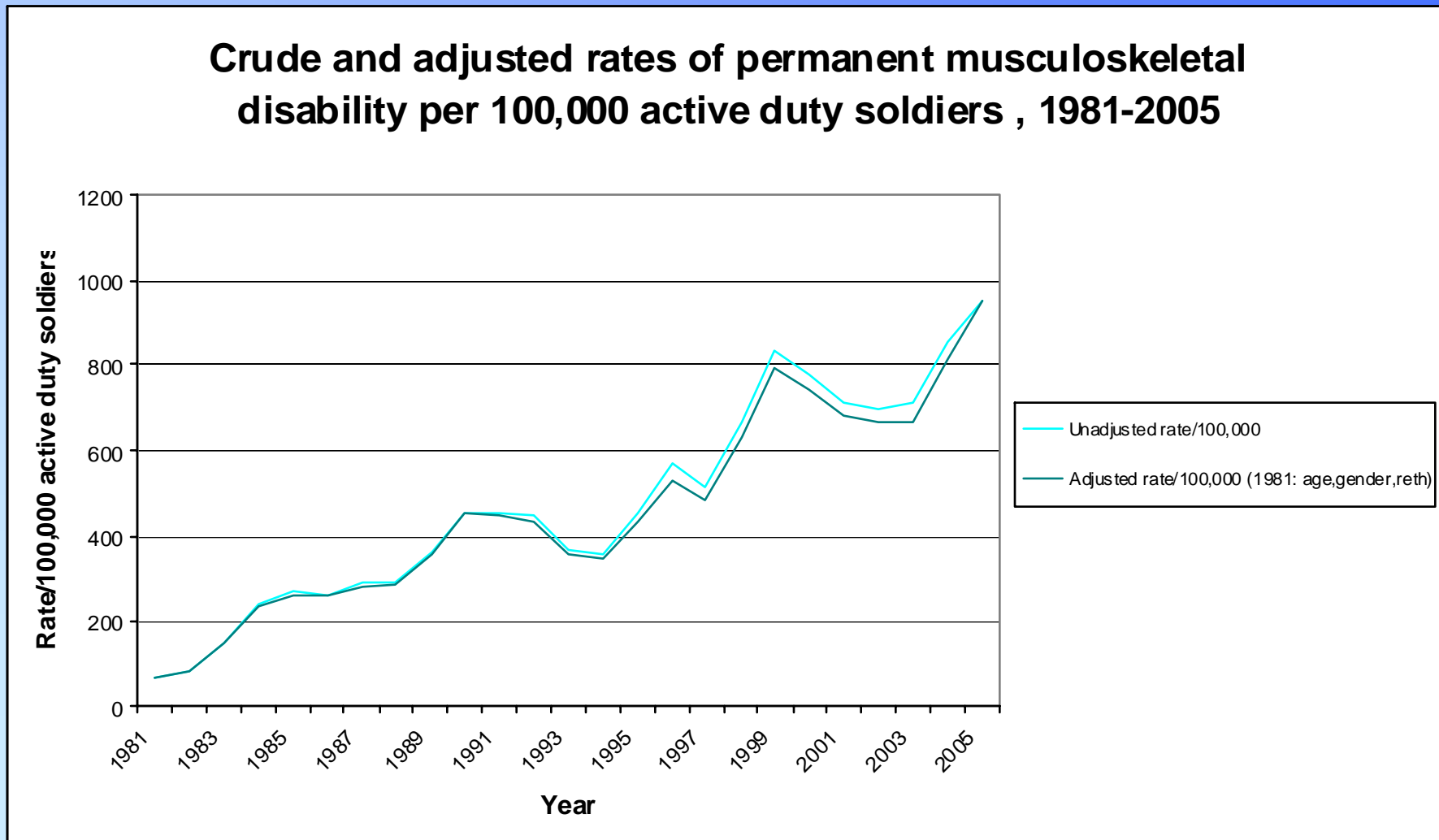
Results

➤ Separation with Severance pay 77%

➤ Permanent Disability Retirement 15%

➤ Separation without benefits 8%

Results: Disability compensation varies by disability type

➢ Musculoskeletal disability cases were more likely to be discharged with severance pay

➢ Mental disorders and respiratory disorder disabilities more likely to be discharged with no benefits

➢ Cardiovascular disorders more likely to be retired with a permanent disability discharge

➢ Neurological disorders more likely to be either discharged with no benefits or retired with permanent disability discharge.

Conclusion

➢ Disability is increasing among active duty army and this is primarily driven by musculoskeletal disorders. This is by far the largest and fastest growing cause of disability

➢ Women, 21-25 year old, white, lower ranking enlisted, short tenured soldiers with high school degree or less at greatest risk for musculoskeletal

➢ Demographic shifts in Army population composition do not explain increasing musculoskeletal disability rates

➢ Separation with lump sum fastest growing compensation group & is associated with musculoskeletal disability

Recommendations

➤ More research needed to understand occupational exposures and health behavior risk factors for all disability, especially musculoskeletal disorder

➤ More research clarifying the clinical significance of musculoskeletal disability