

Hearing loss, Health Outcomes, and Health Behavior Differences between Active-Duty Service Members and Recently Separated Veterans

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Introduction

- Prevalence of multiple diagnosed chronic conditions are higher in Veterans compared with non-Veterans¹.
- Veterans have endorsed poor overall health and health-related functional limitations^{2,3}.
- Active-duty Service members (ADSM) reported better access to health care, better physical health, and less engagement in health risk behaviors than Veterans^{2,3}.
- Differences in health status across Veterans and ADSM have been identified².
- However, lack of temporal proximity limits our understanding of the health differences between ADSM and Veterans.

Aim: Compare hearing, health outcomes, and health behaviors in Active-Duty Service Members with recently separated Veterans.

Methods

Participants:
 762 ADSM and 757 Veterans enrolled (2014-2024) in the Noise Outcomes In Service members Epidemiology (NOISE) study⁴.

Independent Variable:
 Military Status (ADSM, Veteran)

Dependent Variables:
Health Behaviors:
 Smoking (no, yes) – Self-reported
 Alcohol use (no, yes) – AUDIT-c⁵
 Sleepiness (no, yes) – Epworth Sleepiness Scale⁶

Health Conditions:
 Mental Health (0, 1, 2+) – Validated Questionnaires
 • Depression - Hospital Anxiety & Depression Scale⁷
 • Anxiety - Hospital Anxiety & Depression Scale
 • PTSD - Primary Care PTSD-5⁸
 Medical Conditions (0, 1, 2+) – Self-reported
 • Heart disease, High blood pressure, Stroke, Emphysema, Arthritis, Diabetes, Thyroid condition, Kidney disease, Cancer, and Sleep disorder

Hearing Health:
 Hearing loss (HL) (no, yes) – Puretone audiometry
 • Low frequency HL (0.5-3 kHz)
 • High frequency HL (4-8 kHz)
 • Either low/high frequency HL
 Tinnitus (no, yes) – Tinnitus Screener⁹

Statistical Analyses:
 Bivariable and multivariable logistic regression models to estimate odds ratios (OR) and 95% confidence intervals (CI). Adjusted for age, sex, race, marital status, ethnicity, branch, and years of service.

Results

Table 1. Health and Healthy Behaviors of ADSM vs Veteran Participants

	Military Status	
	ADSM n (col%)	Veterans n (col%)
Self-reported Health[†]		
Poor/ Fair	57 (7.5)	171 (22.6)
Good/Very good/Excellent	705 (92.5)	586 (77.4)
Smoker[†]		
Never	572 (75.1)	426 (56.3)
Former/current	190 (24.9)	331 (43.7)
Alcohol		
No	443 (58.1)	412 (54.4)
Yes	319 (41.9)	345 (45.6)
ESS category		
Getting enough sleep	287 (37.7)	294 (38.8)
Average sleep	117 (15.4)	131 (17.3)
Very sleepy	358 (47.0)	332 (43.9)
No. Medical conditions[†]		
0	408 (53.5)	235 (31.0)
1 condition	189 (24.8)	249 (32.9)
2+ conditions	165 (21.7)	273 (36.1)
No. Mental health conditions[†]		
0	453 (59.4)	296 (39.1)
1 condition	141 (18.5)	179 (23.6)
2+ conditions	168 (22.0)	282 (37.3)
Tinnitus[†]		
No	474 (62.2)	318 (42.0)
Yes	288 (37.8)	439 (58.0)
Low frequency HL[†]		
No	699 (93.8)	659 (88.9)
Yes	46 (6.2)	82 (11.1)
High frequency HL[†]		
No	633 (85.0)	575 (77.6)
Yes	112 (15.0)	166 (22.4)
Low or high frequency HL[†]		
No	616 (82.7)	548 (74.0)
Yes	129 (17.3)	193 (26.0)

[†]p-value <0.05

Demographic summary: Mean age of 34.1 years for ADSM vs 34.3 years for Veterans. ADSM averaged 12.1 years of service vs 11.9 for Veterans. The largest branch represented in the ADSM sample was Air Force (58.1%), and for Veterans Army (42.5%). Additional demographic data shown in figure below.

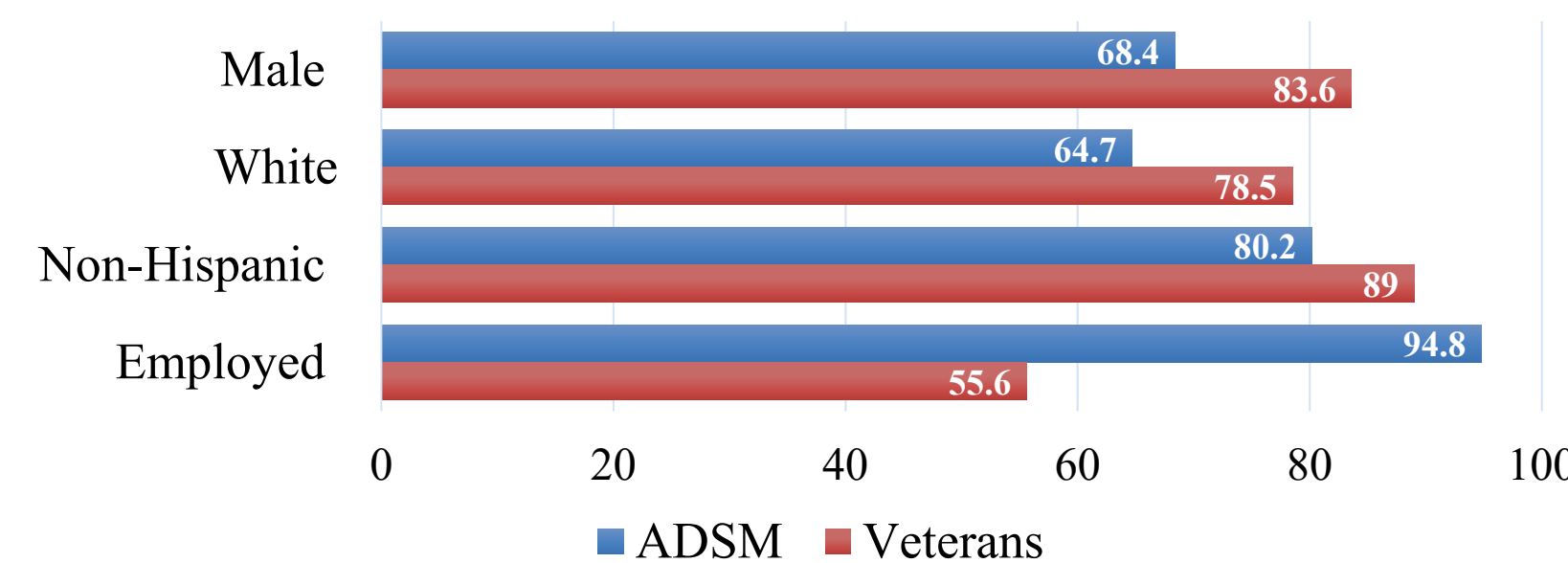


Figure 1: Sample demographics by military status.

Health and Healthy Behaviors

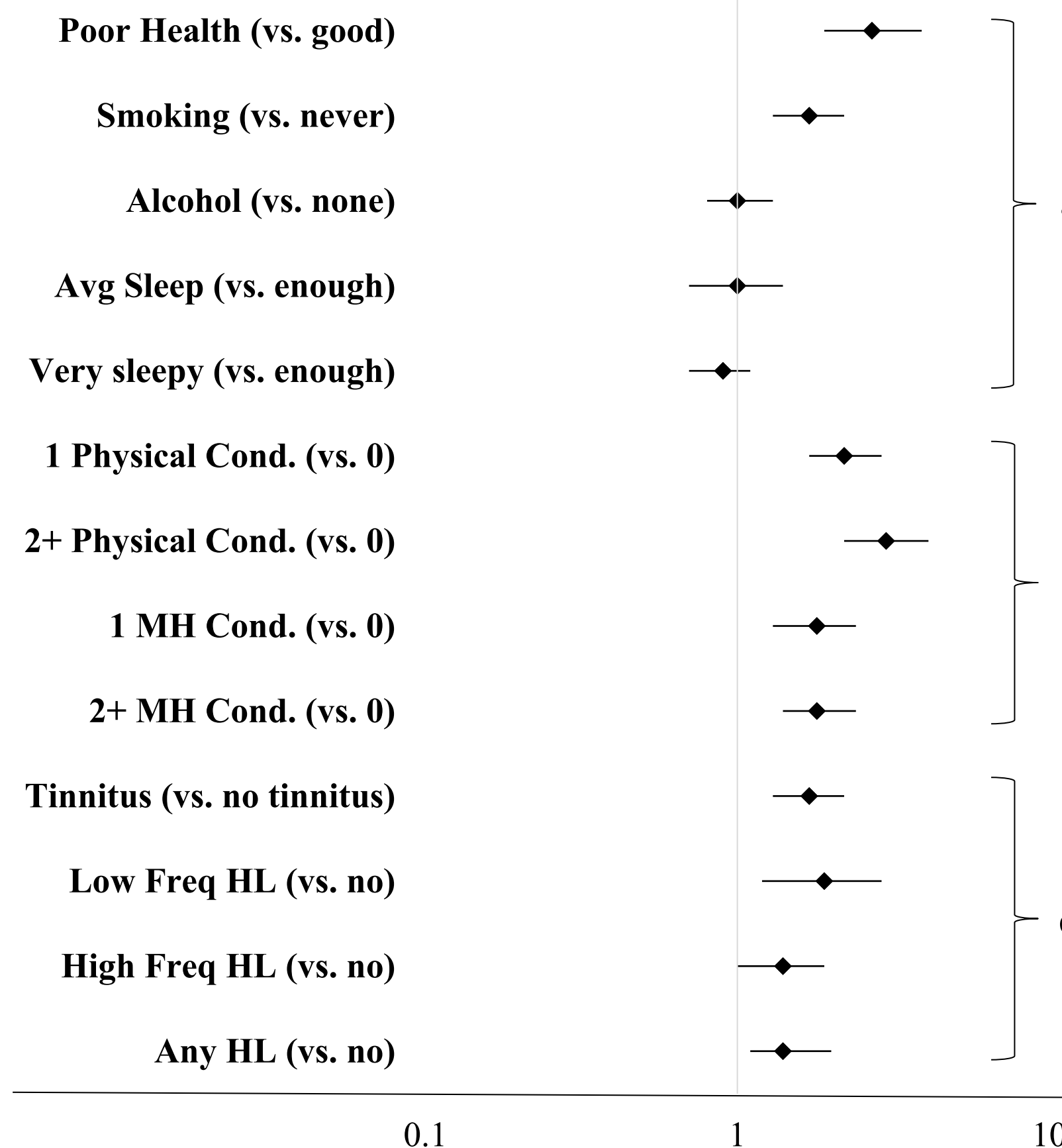


Figure 2: Multivariable regression model results regressing a) health behaviors, b) health conditions, and c) hearing health on military status (ADSM as referent). Odds ratio and 95% confidence intervals are displayed. MH = Mental health; HL = Hearing loss

Discussion

- Averages of age and length of military service between ADSM and Veterans were similar.
- Veterans are more likely than ADSM to have low frequency hearing loss (OR: 1.9; 95% CI: 1.2-2.9) and tinnitus (OR: 1.7, 95% CI: 1.3-2.2).
- Compared to ADSM, Veterans were more likely to self-report at least one medical condition (OR: 2.2; 95% CI: 1.7-2.9) and one mental health condition (OR: 1.8; 95% CI: 1.3-2.4) and were more likely to be current or former smokers and report poor health..

Conclusion

- Results underscore the significant health challenges individuals face when transitioning from active duty to civilian life.
- Disparities in health outcomes and behaviors between ADSM and Veterans highlight the need for integrated care to address the complex health needs of Veterans.
- Identifying specific areas of health disparities, such as mental health or hearing loss, can drive targeted improvements in prevention, intervention, and rehabilitative efforts at the VA.
- Understanding and addressing these conditions may also contribute to better retention and reduced attrition in the military.

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