Health Readiness Following Obstructive Sleep Apnea Treatment: Comparing Direct On-base vs Private Sector TRICARE

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BACKGROUND

- Obstructive sleep apnea (OSA) incurs substantial health and economic burden within the Military Health System (MHS).
- Due to a shortage of sleep specialists and accredited sleep centers, many service members (SMs) receive OSA care in the private sector TRICARE network.
- This study compared health readiness among SMs receiving on-base vs private sector OSA care.

METHODS

Participants

- Data were derived from the MHS Data Repository (2016-2024).

Measures

- Newly diagnosed OSA was defined as a diagnostic sleep test (CPT codes) followed by a confirmatory OSA diagnosis (ICD 10 code) within 6 months.
- Care setting (on base vs private sector) was determined based on diagnostic sleep testing.
- Health readiness was defined as healthy days (i.e., days prior to new onset disease) over 12 months following the diagnostic sleep test.

Analytic Plan

- Baseline characteristics were compared using standard mean differences (SMDs).
- Cox models assessed readiness (healthy days), adjusting for unbalanced covariates (SMD>0.1). OSA treatment was included as a time-varying covariate. Hazard ratios (HR) or time ratios were reported as appropriate.

RESULTS

- Participants included 31,059 ADSMs with OSA; most were age 35-44 (50.1%), male (93.0%), with ≥1 medical comorbidity (92.4%) and ≥1 psychiatric condition (22.7%) at baseline.
- 49% of participants received direct on-base OSA care.
- Between-groups differences (on-base vs private sector) were observed in service branch (SMD=0.39), region (SMD=0.32), and prior medical conditions (SMD=0.21).
- Relative to private sector TRICARE, on-base care resulted in greater medical readiness/more healthy days (HR=1.17,95% CI:1.01–1.34, p=0.03).

Disclaimer: Material has been reviewed by the Uniformed Services University and Walter Reed Army Institute of Research. The opinions and assertions expressed herein are those of the author(s) and do not reflect the official policy or position of the Uniformed Services University of the Health Sciences, Walter Reed Army Institute of Research, the Defense Health Agency, or the Department of War. The study protocol was approved by the Uniformed Services University and WRAIR Institutional Review Boards in compliance with all applicable Federal regulations governing the protection of human subjects.

RESULTS

Table 1. Participant demographic, military, & clinical characteristics.

Variable	Value	DC n(%)	PC n(%)	SMD
N		15230 (100.0)	15829 (100.0)	(100.0)
Demographics				
Age (cat)				0.095
	18-24	770 (5.1)	830 (5.2)	
	25-34	4088 (26.8)	4169 (26.3)	
	35-44	7386 (48.5)	8181 (51.7)	
	45-54	2722 (17.9)	2492 (15.7)	
	55-64	264 (1.7)	157 (1.0)	
Female		1002 (6.6)	1180 (7.5)	0.034
Charlson Cat				0.032
	0	14181 (93.1)	14713 (92.9)	
	1	833 (5.5)	941 (5.9)	
	2+	188 (1.2)	153 (1.0)	
Race				0.063
	White	9877 (64.9)	10282 (65.0)	
	Black	2942 (19.3)	2932 (18.5)	
	Asian/PI	1402 (9.2)	1335 (8.4)	
	Am Ind/Al Native	181 (1.2)	230 (1.5)	
	Other/Unknown	827 (5.4)	1050 (6.6)	
Hispanic Ethnicity		**2271 (14.9)**	**2242 (14.2)**	**0.021**
Service Branch				0.391
	Army	6481 (42.6)	5221 (33.0)	
	Air Force	3818 (25.1)	4655 (29.4)	
	Coast Guard	164 (1.1)	1152 (7.3)	
	Marine Corps	696 (4.6)	1153 (7.3)	
	NOAA	2 (0.0)	3 (0.0)	
	Navy	4028 (26.4)	3528 (22.3)	
	PHS	41 (0.3)	117 (0.7)	
Enlisted		**11636 (76.4)**	**12404 (78.4)**	**0.047**
Geographic Region				0.323
	East North Central	423 (2.8)	488 (3.1)	
	East South Central	282 (1.9)	947 (6.0)	
	Mountain	1251 (8.2)	710 (4.5)	
	Pacific	3029 (19.9)	3081 (19.5)	
Medical Hx				
Hx:Fibromyalgia		2028 (13.3)	2272 (14.4)	0.030
Hx:Hyperlipidemia		1621 (10.6)	1568 (9.9)	0.024
Hx:MSKI		11527 (75.7)	12182 (77.0)	0.030
		13632 (89.5)	15058 (95.1)	0.212
Psychiatric Hx				
Hx:Anxiety		1909 (12.5)	2164 (13.7)	0.034
Hx:Depression		921 (6.0)	992 (6.3)	0.009
Hx:PTSD		641 (4.2)	633 (4.0)	0.011
Hx:Adjustment disorder		1201 (7.9)	1264 (8.0)	0.004
Hx:Other Mood Disorder		1708 (11.2)	1846 (11.7)	0.014

RESULTS

Table 2. Logistic Regression

Variable	DC %	PC %	Effect OR (95% CI)	P-value
Medical Dxes				
Fracture	0.2	0.2	1.410 (0.851,2.334)	0.182
TBI	1.4	1.2	0.817 (0.666,1.002)	0.052
Asthma	2.1	2.5	1.188 (1.020,1.383)	0.027
COPD	0.8	1.2	1.562 (1.236,1.973)	<0.001
Diabetes	1.1	1.2	1.061 (0.854,1.318)	0.591
Fibromyalgia	16.3	16.6	1.025 (0.959,1.096)	0.467
Hyperlipidemia	10.2	10.4	1.025 (0.946,1.111)	0.548
Hypertension	0.2	0.3	1.608 (0.974,2.653)	0.063
MSKI	42.4	41.7	0.970 (0.881,1.068)	0.537
Cardiovascular Disease	1.0	1.0	0.991 (0.784,1.253)	0.940
Any Medical Dx	44.9	50.2	1.243 (1.038,1.488)	0.018
Psychiatric Dxes				
Anxiety	13.0	13.9	1.084 (1.009,1.164)	0.027
Depression	6.0	6.7	1.126 (1.023,1.240)	0.016
PTSD	5.7	5.6	0.976 (0.882,1.079)	0.632
Adjustment disorder	10.6	9.9	0.923 (0.853,0.998)	0.044
Schizophrenia	0.0	0.1	1.346 (0.359,5.054)	0.659
Alcohol/SUD	3.4	3.2	0.922 (0.810,1.050)	0.220
Other Mood Disorder	16.3	15.4	0.937 (0.876,1.001)	0.053
Any Psych Dx	20.0	20.4	1.025 (0.960,1.093)	0.460
Any Condition				
Any Medical or Psych Dx	48.7	53.5	1.218 (1.004,1.478)	0.045

Adjusted for age, sex, service

CONCLUSIONS

- Among SMs with OSA, compared to private sector TRICARE, direct on-base care was associated with improved medical readiness & more healthy days.
- Future research should identify system and provider-level factors contributing to this advantage and explore opportunities, such as telehealth, to expand sleep care within the MHS.

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