



Air Transportation and Flight Attendant Health

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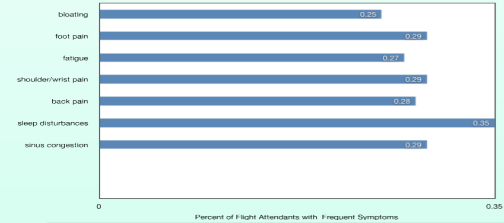
INTRODUCTION

- A flight attendant's job requires working at 35,000 ft altitude, ergonomic challenges while moving passengers, baggage and carts in confined spaces, circadian rhythm disruption, exposure to infectious diseases, ozone, cosmic radiation, low cabin pressures, jet fuel by-products, pesticides, and flame retardants.
- Current U.S. flight attendants have been in their jobs longer than previous generations, given rule changes since the 1970's.
- Few studies have evaluated the health effects of these continuous exposures aboard the aircraft.



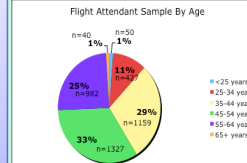
RESULTS

EXPERIENCE OF FREQUENT SYMPTOMS BY AT LEAST ONE-QUARTER OF FLIGHT ATTENDANTS



RESEARCH QUESTIONS

- What are the most prevalent health conditions in U.S. flight attendants?
- What is the relationship between health status and time on the job using tenure and work hours and adjusting for covariates?
- How does flight attendant health compare to the general population using a national sample?



RESULTS

- Flight attendant sample (n=4011); 80% female, mean age 47, 41% had ≥20 year job experience.
- 47% of flight attendants had work-related injury this year.
- Most frequent health symptoms (experienced 6-7 days of past week); sleep problems [35%], all types of musculoskeletal pain [23-28%], sinus [28%], fatigue [26%], anxiety/stress [20%], bloating [20%].
- Respiratory symptoms were the most common reason for medical visits in the past year followed by fatigue.

CONCLUSIONS

- The most prevalent conditions in flight attendants include respiratory and musculoskeletal conditions, sleep disruption, fatigue, and anxiety/depression.
- Prevalence of conditions are associated with greater exposures: more work hours; recent work hours and tenure, after adjustment for other factors.
- The prevalence of several health conditions were greater in flight attendants compared to the general U.S. population (based on NHANES).
- This result is striking because the flight attendant sample is likely to be biased by "healthy worker effects" (i.e. sick workers leave the sample).

METHODS

- Mailed survey targeting union flight attendants at 2 major airlines in 5 large U.S. city airports supplemented by convenience sample on location.
- Described survey data; employee and job characteristics, frequent symptoms, medical care-seeking, medical diagnosis, work injury.
- Tested associations between job and personal factors and health status using a learning deletion substitution algorithm (LDSA) procedure in R statistical package to select factors to evaluate in multivariate models.
- Compared flight attendants' health to general U.S. population using National Health & Nutrition Survey [NHANES) (2005-2008).

TABLE 1: Prevalence of Flight Attendant (2007) and NHANES (2005-2008) Survey Sample with Health Conditions (including NHANES age-adjusted prevalence based on flight attendant sample)

Reported as diagnosed by medical provider	Flight Attendant Survey (n=4011)				NHANES (n=5713)				NHANES		
	Gender	With Condition %	Confidence Interval (95%)	Standard Error (SE)	Gender	% With Condition	Confidence Interval (95%)	Standard Error (SE)	%	CI	SE
Asthma	Female	14%	(12-15)	.006	Female	15%	(14-17)	.007	15%	(13-17)	.006
	Male	13%	(10-14)	.012	Male	12%	(11-14)	.007	12%	(11-14)	.006
Chronic Bronchitis	Female	14%	(12-17)	.005	Female	7%	(6-9)	.007	7%	(6-9)	.005
	Male	14%	(13-16)	.012	Male	6%	(5-8)	.004	6%	(5-8)	.005
Sleep Disorder	Female	34%	(32-35)	.008	Female	7%	(6-8)	.007	7%	(6-8)	.006
	Male	31%	(28-35)	.016	Male	5%	(4-5)	.005	5%	(4-5)	.006
Hypertension	Female	18.9%	(18-19)	.006	Female	27%	(25-29)	.010	28%	(26-30)	.014
	Male	25%	(22-28)	.006	Male	29%	(26-30)	.002	28%	(24-30)	.013
Coronary Heart Disease	Female	2%	(2-3)	.002	Female	5%	(4-6)	.002	5%	(4-6)	.002
	Male	3%	(2-4)	.004	Male	2%	(1-2)	.003	2%	(1-2)	.003
Overweight	Female	12%	(11-13)	.002	Female	30%	(28-32)	.013	28%	(27-30)	.014
	Male	12%	(10-15)	.013	Male	30%	(27-33)	.013	29%	(27-32)	.014
Reproductive Cancer (cervix, breast, uterus)	Female	5%	(4-6)	.003	Female	5%	(4-6)	.003	6%	(5-7)	.003
Respiratory Symptoms (cough, shortness of breath)	Female	31%	(29-33)	.002	Female	21%	(19-23)	.003	21%	(19-23)	.003
	Male	14%	(12-16)	.010	Male	5%	(4-6)	.003	5%	(4-6)	.002
Fatigue	Female	27%	(25-29)	.007	Female	6%	(5-7)	.005	6%	(5-7)	.004
	Male	23%	(19-24)	.014	Male	6%	(5-8)	.005	6%	(5-8)	.006

ACKNOWLEDGEMENTS

This study was funded by the Federal Aviation Administration (FAA). The findings and conclusions are those of the authors and do not reflect the agreement or endorsement FAA. The conduct of the study was possible only through the support of the flight attendant union, the Association of Flight Attendants (AFA-CWA, AFL-CIO), and the interest and participation of the flight attendants. Corresponding author: Eileen McNeely emcneely@hsph.harvard.edu