Prevalence of the Metabolic Syndrome among US Workers

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OBJECTIVE

Differences in the prevalence of cardiovascular disease and its risk factors among occupational groups have been found in several studies. Certain types of workers (such as shift workers) may have a greater risk for metabolic syndrome, a precursor of CVD. The objective of this study was to assess the differences in prevalence and odds of metabolic syndrome among occupational groups using nationally representative data of US workers.

RESULTS

Twenty percent of workers met criteria for the metabolic syndrome, with “food preparation and food service workers,” and “farm managers, operators and supervisors” having the greatest age-adjusted prevalence (29.6-31.1%), and “writers, artists, entertainers, athletes,” and “engineers, architects, and scientists” the lowest (8.5-9.2%). In logistic regression analyses, “transportation, material moving workers” had significantly greater odds of meeting the criteria for metabolic syndrome relative to executive, administrative, managerial professionals (odds ratio=1.70 [95% Confidence Interval=1.49-2.52]).

Table 1. Sample Characteristics of US Workers by Presence of the Metabolic Syndrome, National Health and Nutrition Examination Survey, 1999-2004 (n=8,498)

Demographics	Sample N (%)‡	Total estimated US Workers	Metabolic Syndrome Prevalence and 95% confidence Interval
Gender			
Male	4,523 (53.5)	71,430,841	20.2 (18.1-22.3)
Female	3,934 (46.5)	60,275,573	21.4 (19.5-23.5)
Age Group			
20-44	5,485 (64.9)	82,268,270	14.0 (12.7-15.5)
45-64	2,507 (29.6)	44,652,675	25.5 (23.3-27.8)
65+	465 (5.5)	4,536,988	32.1 (26.2-38.6)
Race-Ethnicity			
Non- Hispanic White	3,990 (47.2)	94,142,211	21.0 (19.0-23.1)
Non-Hispanic Black	1,728 (20.5)	13,875,980	17.7 (15.0-20.7)
Hispanic	2,476 (29.2)	18,066,872	21.9 (17.9-26.6)
Other	263 (3.1)	5,373,350	12.9 (9.3-17.7)
Education			
< High School	2,179 (25.8)	20,451,484	23.0 (19.8-26.5)
High School	2,123 (25.1)	33,287,060	23.8 (20.7-27.1)
> High School	4,150 (49.1)	77,659,837	18.4 (16.4-20.6)
Health Insurance			
None	2,004 (25.3)	23,937,496	17.8 (15.3-20.5)
Insured	6,322 (74.7)	105,707,056	20.2 (18.4-22.2)
Alcohol Consumer			
Abstainer	1,818 (26.1)	27,122,688	24.1 (21.7-26.7)
Drinker	5,137 (73.9)	91,101,707	19.4 (17.5-21.5)
Smoking Status			
Non-smoker	2,191 (27.3)	38,109,927	20.6 (17.7-23.8)
Former	4,163 (51.8)	62,277,607	20.9 (18.9-23.0)
Current	1,686 (20.9)	25,929,516	18.2 (15.8-20.9)
Physical Activity Level			
None	3,087 (36.5)	40,822,293	24.4 (22.0-27.1)
Moderate	2,156 (25.5)	36,429,138	23.3 (21.0-25.8)
Vigorous	3,214 (38.0)	54,166,982	13.8 (11.7-16.4)
Body Mass Index Category			
Underweight	157 (1.9)	2,379,708	2.2 (0.3-13.5)
Normal	2,717 (33.0)	42,612,147	4.6 (3.3-6.5)
Overweight	2,884 (35.0)	45,068,224	15.8 (13.8-18.0)
Obese	2,481 (30.1)	38,248,387	42.5 (39.5-45.6)

‡Sample varies due to item non-response.

Table 2. Multiple Logistic Regression to assess the relationship between occupation and criteria for the metabolic syndrome among adults ≥20 yrs: NHANES 1999-2004

	OR	95% CI*
Age (years)	**1.03**	**1.03-1.04**
Gender		
Female	1.00	
Male	1.10	0.88-1.37
Race-Ethnicity		
Non-Hispanic white	1.00	
Non-Hispanic black	**0.49**	**0.37-0.65**
Hispanic	0.95	0.71-1.25
Other	0.94	0.57-1.55
Education		
< High school	1.00	
High school	0.99	0.68-1.44
> High school	0.93	0.68-1.28
Health Insurance		
None	1.00	
Insured	0.78	0.63-1.02
Alcohol Consumer		
Abstainer	1.00	
Drinker	**0.79**	**0.63-0.97**
Body Mass Index Category	1.07	1.05-1.09
Underweight/normal	1.00	
Overweight	**5.63**	**3.80-8.35**
Obese	**25.94**	**18.08-37.23**
Smoking Status		
Non-smoker	1.00	
Former	**0.81**	**0.67-0.97**
Current	0.78	0.58-1.04
Physical Activity Level		
None	1.00	
Moderate	0.93	0.77-1.13
Vigorous	**0.63**	**0.53-0.75**
Occupational Group (13 groups)		
Executive, administrative managerial	1.00	
Professional specialty	0.89	0.66-1.23
Technicians/relative support	0.96	0.52-1.79
Sales	1.08	0.69-1.67
Administrative support, including clerical	1.26	0.90-1.78
Private household	0.63	0.27-1.44
Protective service	1.23	0.67-2.28
Service except protective and household	1.08	0.71-1.65
Farming, forestry, fishing	0.95	0.63-1.44
Precision, production, craft, repair	0.97	0.66-1.41
Machine operators, assemblers	1.15	0.73-1.81
Transportation/material moving	**1.70**	**1.15-2.52**
Handlers, equipment, cleaners, helpers, laborers	1.07	0.63-1.83

*Statistically significant estimates at the 0.05 alpha level appear in bold.

METHODS

Data from 8,457 employed participants (representing 131 million US adults) of the 1999-2004 National Health and Nutrition Examination Survey (NHANES) were used. Un-adjusted and age-adjusted prevalence, and simple and multiple logistic regression analyses were conducted, adjusting for several potential confounders (body mass index, alcohol drinking, smoking, physical activity, and sociodemographics), and survey design.

CONCLUSION

There is variability in the prevalence of metabolic syndrome by occupational group, with “transportation and material moving workers” at greatest risk for metabolic syndrome. Workplace health promotion programs addressing risk factors for metabolic syndrome that target workers in occupations with the greatest odds may be an efficient way to reach at-risk populations.