

Updated Analysis of COPD risk for BTMed participants

COPD risk among older construction workers—Updated analyses 2020

John M. Dement, Marianne Cloeren, Knut Ringen, Patricia Quinn, Anna Chen, Kim Cranford, Scott Haas. American Journal of Industrial Medicine, 2021.

Overview

A 2010 study of former construction workers at U.S. Department of Energy nuclear facilities participating in the Building Trades Medical Screening Program (BTMed) found increased risk for chronic obstructive pulmonary disease (COPD). This new study involved a significantly larger cohort of 17,941 BTMed participants, which allowed for a more detailed analysis of COPD risk, including among those whose employment began after the mid-1990s, when additional occupational safety and health programs and controls were implemented. The researchers examined demographic information (age, race, sex, height, and smoking history), employment history (including trade), and respiratory history. The primary study objectives were to: (1) better define overall COPD risk and risk by severity according to trade while considering other factors which can cause COPD (including cigarette smoking); and (2) examine trends in risk by time of construction trade work and DOE site employment.

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Read the abstract:

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Key Findings

- 13.4% (around 1/8th) of the study population had chronic obstructive pulmonary disease (COPD); around 2/3rds of the workers with COPD had COPD classified as moderate to severe.
- Compared to non-construction workers in the study, construction trade workers were at significantly increased risk of all COPD (OR = 1.34, 95% CI = 1.18–1.54) and even more so for severe COPD (OR = 1.61, 95% CI = 1.32–1.96).
- The highest risk trades were cement masons/bricklayers (OR = 2.36; 95% CI = 1.71–3.26) and roofers (OR = 2.22; 95% CI = 1.48–3.32).
- Risk among workers first employed at a U.S. Department of Energy site after 1995 was elevated but not statistically significant. This suggests that workplace exposures after 1995 have contributed to the risk of developing COPD.
- The study results highlight the need for additional preventive measures to reduce occupational exposures to vapors, gases, dusts, and fumes. Also, workers who smoke would greatly benefit from smoking cessation advice and support.



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Funding information

U.S. Department of Energy,
Grant/Award Number: DE-FC01-06EH06004

Abstract

Background: A 2010 study of construction workers participating in medical screening programs at the Department of Energy (DOE) nuclear facilities demonstrated increased chronic obstructive pulmonary disease (COPD) risk. The current study of a larger worker cohort allowed for a more nuanced analysis of COPD risk, including for employment beginning after the mid-1990s.

Methods: Study participants included 17,941 workers with demographic and smoking data and spirometry with a minimum of three recorded expiratory efforts and reproducibility of forced vital capacity (FVC) and forced expiratory volume in 1 s (FEV₁) of 0.2 L or less. COPD was defined as a FEV₁/FVC ratio below the lower limit of normal using established prediction equations without use of bronchodilation. Stratified analyses explored COPD prevalence by demographic variables and trade. Logistic regression analyses assessed risks by trade and time periods of trade and DOE site work, controlling for age, gender, race/ethnicity, body mass index, and smoking.

Results: Overall COPD prevalence was 13.4% and 67.4% of cases were classified as moderate to severe. Compared to nonconstruction workers, construction trade workers were at significantly increased risk of all COPD (OR = 1.34, 95% CI = 1.29–1.79) and even more so for severe COPD (OR = 1.61, 95% CI = 1.32–1.96). The highest risk trades were cement masons/bricklayers (OR = 2.36; 95% CI = 1.71–3.26) and roofers (OR = 2.22; 95% CI = 1.48–3.32). Risk among workers employed after 1995 was elevated but not statistically significant.

Conclusions: Construction workers are at increased COPD risk. Results support the prevention of both smoking and occupational exposures to reduce these risks. While the number of participants employed after 1995 was small, patterns of risk were consistent with findings in the overall cohort.

KEYWORDS

construction trades, COPD, DOE, parenchymal, pleural, radiograph, spirometry, surveillance, VGDF