Respiratory Health Outcomes And Home Conditions Of Lower Manhattan Residents Enrolled In The World Trade Center Health Registry

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Introduction: The World Trade Center Health Registry (WTCHR) is a cohort study of over 71,000 survivors of the Sept. 11, 2001, World Trade Center attacks. Thousands of Lower Manhattan residents sustained some type of damage to their homes following the 9/11 collapse of the Twin Towers, and increased asthma was previously reported among Registry enrollees who experienced a heavy layer of dust in their homes. In this report we further evaluate the impact of home damage on respiratory symptoms and diseases.

Methods: Data was derived from both WTCHR Wave 1 (W1) (9/2003–11//2004) and Wave 2 (W2) (11/2006–12/2007) surveys. Outcomes of interest were respiratory symptoms (shortness of breath, wheezing, persistent chronic cough, upper respiratory symptoms) first occurring or worsening after 9/11 and present at W2 and respiratory diseases (asthma and chronic obstructive pulmonary disease [COPD]) first diagnosed after 9/11 and present at W2. We performed descriptive statistics and multivariate logistic regression analyses, controlling for sex, age on 9/11, education, smoking status, and exposure to the cloud of dust/debris that was generated by the collapse of the WTC towers.

Results: A total of 6,463 residents were included in this study. Mean age at 9/11 was 45.1 years (±15.1 years), 2,659 (41.7%) were male, 2,916 (45.4%) had ever smoked cigarettes, and 2,691 (41.6%) reported some or intense dust cloud exposure on 9/11. Prevalence of respiratory outcomes was as follows: shortness of breath (16.1 %), wheezing (10.7%), chronic cough (6.9%), upper respiratory symptoms (60.8%), asthma (8.0%), and COPD (5.4%). The table shows odds ratios and 95% confidence intervals for respiratory outcomes in relation to several characteristics of home damage (statistically significant results in **bold**).

Conclusions: This preliminary analysis demonstrates that Lower Manhattan residents who suffered home damage following the 9/11 attacks are more likely to report respiratory symptoms and diseases in the WTCHR. It also highlights the kinds of damage or other specific exposure events which are statistically related to such increased symptoms and diseases. These health outcomes persisted for at least 5-6 years after the event, which may have translated into elevated medical expenditures and lower quality of life.

Table 1: Odds ratios and 95% confidence intervals for respiratory outcomes in relation to several characteristics of home damage.

Symptom/Disease	Fine coating of dust	Heavy coating of dust	Broken windows	Damage to home furnishings
Shortness of breath	1.07 (0.91–1.25)	**1.74 (1.45–2.10)**	1.16 (0.85–1.58)	**1.70 (1.40–2.06)**
Wheezing	1.09 (0.91–1.30)	**1.68 (1.36–2.08)**	**1.47 (1.06–2.04)**	**1.56 (1.26–1.95)**
Chronic cough	0.93 (0.75–1.16)	**1.58 (1.23–2.01)**	1.06 (0.71–1.60)	1.21 (0.93–1.58)
Upper respiratory symptoms	**1.27 (1.13–1.42)**	**1.37 (1.17–1.60)**	**1.47 (1.14–1.88)**	**1.62 (1.37–1.92)**
Asthma	0.86 (0.70–1.07)	**1.30 (1.01–1.70)**	1.18 (0.79–1.77)	1.18 (0.89–1.56)
COPD	0.98 (0.76–1.26)	**1.37 (1.02–1.84)**	0.80 (0.47–1.38)	1.13 (0.82–1.55)

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