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Change in body mass index and expiratory flow in World Trade Center workers

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Abstract

Introduction: Although overweight or obesity have been linked to reduced lung function, no study has estimated the effects of lung function on weight in adults.

Aim: We investigated the relation between expiratory flow and body size, and vice versa, in a cohort of adults.

Methods: Prospective study in 1,329 former World Trade Center (WTC) workers who were included in the WTC Chest Imaging Archive and had a minimum of 2 spirometries between 2002 and 2018 (mean [SD] follow up=7.2 [3.9] years). We used mixed linear models to test for association between change in first-second forced expiratory volume (ΔFEV1) or forced vital capacity (ΔFVC) and change in body mass index (ΔBMI) between sequential visits, and vice versa. All models included sex, race, educational level, age at each visit, smoking status, arrival at the WTC site within 48 hours, baseline value for the predictor of interest (lung function measure or change in body mass index), and intervals between test dates (accounting for unequal intervals).

Results: In multivariable analyses, a 200 ml loss in FEV1 or FVC was associated with 0.29 kg/m2 (95% CI=0.26, 0.33) and 0.22 kg/m2 (95% CI=0.20, 0.22) increment in BMI, respectively. On the other hand, a 0.2 kg/m2 gain in BMI between visits was associated with losses of 7 ml (95% CI= -6 to -8 ml) and 9 ml (95% CI= -8 to -1) ml in FEV1 and FVC, respectively.

Conclusion: Change in BMI and change in FEV1 or FVC were inversely associated with each other, and this association was bidirectional. Further work is needed to identify the mechanisms underlying these associations.

Adults Occupation

Footnotes

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