

A Prospective Longitudinal Assessment of Nutrition in the FDNY World Trade Center-Exposed Cohort: An Update

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RATIONALE Metabolic syndrome phenotypic characteristics and nutritional intake are modifiable biomarkers of particulate matter (PM) associated aerodigestive and cardiovascular disease. Nutritional questionnaires, such as the Rapid Eating Assessment for Participants (REAP-S), can assess the dietary phenotype of our FDNY World Trade Center-Health Program (WTC-HP) cohort. **METHODS** Cardiovascular disease (CVD) included myocardial infarction, stroke, unstable angina, coronary artery surgery/angioplasty, or CVD related death. Gastroesophageal reflux disease (GERD) cases were WTC-certified cases. WTC-Lung Injury (WTC-LI) was defined as $FEV_1 < LLN$ at any time point after 9/11. REAP-S was deployed in the WTC-HP annual monitoring assessment. Clinical and REAP-S data accrued from March, 2018 to October, 2021. Scores (ranging 15-39) were categorized into low-dietary [15-19], moderate-dietary [20-29], and high-dietary [30-39] quality. REAP-S questions were assessed as distinct food categories. Mean \pm standard deviation (SD) expressed as continuous variables. Student t-tests compared clinical data of those with and without disease. One-way ANOVA was used in a subgroup analysis. Arrival time data, used as a proxy for WTC-particulate matter (WTC-PM) exposure, was a dichotomous variable. **RESULTS** Subjects (N=3,508) completed REAP-S after the database lock date (July 17, 2019) for our prior publication. Mean REAP-S score for the overall cohort (N= 4,073) was 26.48 ± 4.61 . CVD patients, had a mean REAP-S score of 26.51 ± 4.43 , age (years) at 9/11 was 44.62 ± 7.02 , and BMI (kg/m^2) was 30.25 ± 4.41 . GERD patients, had a mean REAP-S score of 26.50 ± 4.61 , age at 9/11 was 41.03 ± 6.95 , and BMI was 29.91 ± 4.32 . WTC-LI subjects had a mean REAP-S of 26.40 ± 4.39 , age of 40.52 ± 7.13 , and BMI was 30.31 ± 4.92 . When WTC-LI subjects were categorized into dietary quality groups, it was found that their BMI significantly differed from each other, $p=0.034$. Subjects that complete their questionnaire after July 17, 2019-prior data lock date, had significantly lower mean REAP-S when compared to those with pre-July 17, 2019 data; 26.01 ± 4.46 vs 29.43 ± 4.39 respectively, $p<0.001$. When comparing those with or without CVD or GERD, there was no significance between their average REAP-S score. **CONCLUSIONS** The implementation of REAP-S into the FDNY WTC-HP annual questionnaire remains successful. Continued accrual of data of these unique dietary phenotypes within our cohort will further enrich our longitudinal data set. While it is unclear why more recent REAP-S data is significantly different, possible contributors include societal and clinical stressors such as aging, COVID-19, and confounding comorbidities. Future studies could focus on further defining and intervening on these risk factors to more positively impact on WTC-aerodigestive and cardiovascular disease.

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