

Air Pollution Exposure and Long-Term Outcomes after MI in Central Israel. A Follow-Up Study

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Objective: In a community-based cohort of myocardial infarction (MI) survivors, we examined whether cumulative residential exposure to air pollutants constitutes a risk factor for adverse outcomes.

Methods: Patients aged ≤ 65 years ($n=1,428$), admitted with first MI in 1992-1993 to the 8 hospitals serving the population of central Israel, were followed up through 2005. Extensive data were collected on socio-demographic, clinical, and environmental factors. Daily measures of nitrogen dioxide (NO₂), nitric oxide (NO) and fine particles (PM_{2.5}) recorded at air quality monitoring stations were summarized and cumulative exposure was estimated for each patient based on geo-coded residential location at study entry. Cox models were used to assess the hazard ratios (HRs) for all-cause death, cardiac death, recurrent MI, heart failure and stroke associated with a 10 $\mu\text{g}/\text{m}^3$ increase in pollutant exposure.

Results: Patients residing in more polluted areas had better socioeconomic status at both the individual and neighborhood levels. Exposure to pollutants was inversely associated with outcomes. However, these associations were either removed or reversed upon multivariable adjustment for socioeconomic and clinical variables (HRs [95% CIs] of PM_{2.5} are reported in the Table).

Conclusions: In this unique setting and in contrast to other reports, better socioeconomic status was associated with higher exposure to pollution. In multivariable-models accounting for socioeconomic and clinical variables, we observed a weak positive association between PM_{2.5} exposure and post-MI outcomes, consistent with findings in the general population. Considering exposure misclassification, the true association is likely stronger.