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Association between occupational exposure to formaldehyde and cognitive impairment: the French CONSTANCES study

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ABSTRACT

BACKGROUND - To our knowledge, no studies have investigated the effect of exogenous formaldehyde exposure on cognition in general population. Our objective was to examine the association between occupational exposure to formaldehyde and cognitive impairment in middle-aged and early-aging population (≥ 45 years). **METHODS** - Among the French CONSTANCES cohort, cognitive function was assessed by a standardized battery of cognitive tests evaluating global cognitive function, episodic verbal memory, language abilities and executive functions (e.g. Digit Symbol Substitution Test DSST). Lifetime exposure to formaldehyde was assessed by a French job-exposure matrix of the Matg n  program. We performed separate modified Poisson regression models to evaluate the association between cognitive impairment (<25th percentile) and formaldehyde exposure (yes/no), exposure duration, cumulative exposure index (CEI), and combination of CEI and timing of last exposure. **RESULTS** - Among 54,700 participants (median age: 57.5, female: 52%), 6.2% were exposed to formaldehyde. Those participants were at higher risk of cognitive impairment (for DSST: relative risk RR 1.29, 95% confidence interval CI: 1.20-1.38), after adjusting for confounders. High exposure duration and high CEI were associated with cognitive impairment, with a dose-effect relationship in executive function domain. Recent exposure exhibited cognitive impairment in all cognitive domains. Time may not fully attenuate formaldehyde-associated cognitive deficits in highly exposed (for DSST, high-distal exposure: RR 1.24, 95%CI: 1.07-1.44). **CONCLUSION** - These findings evidenced detrimental effect of formaldehyde exposure on cognitive health in relatively young population.

KEYWORDS: -

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