

# THE ASSOCIATION OF MERCURY, FISH CONSUMPTION AND CHILD DEVELOPMENT IN AN EASTERN MEDITERRANEAN COHORT

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**Background and Aims:** The effects of prenatal, low-level mercury exposure through fish consumption on neurodevelopment have been studied in several populations leading to inconsistent findings. To evaluate this association among residents in Italy, Slovenia, Croatia and Greece, we conducted a prospective cohort study within PHIME, EU Sixth FP.

**Methods:** Main exposure was total mercury (THg) concentration in mother's hair in pregnancy and in cord blood, and mother's fish intake in pregnancy. Child's neurodevelopmental outcomes were Bayley III composite cognitive, language, and motor scores at 18 months. A number of covariates were included in multivariate linear regression models.

**Results:** 2189 mothers were enrolled in the study during pregnancy. 1729 mother-child pairs provided information at child's birth. Follow-up at 18 months was 85%. The median mother's hair THg (ng/g) was 729. Mean ratio MeHg/THg was 0.90. Median cord blood THg was 3.75. Correlation between THg in hair and cord blood was:  $r=0.81$ . Median weekly servings of fish was 1.38. While unadjusted models showed a negative association of Bayley cognitive score with THg (in both hair and cord blood), after adjustment for country and relevant covariates, Bayley cognitive score was not associated with hair THg ( $\beta=0.00026$ ;  $p=0.5157$ ) nor with cord blood THg ( $0.048$ ;  $p=0.6318$ ) but positively associated with fish ( $\beta=0.8345$ ,  $p=0.0162$ ). Bayley language score was not associated with cord blood THg ( $\beta=0.0412$ ,  $p=0.7037$ ), borderline positively associated with hair THg ( $\beta=0.0008$ ,  $p=0.0552$ ) and positively associated with fish consumption in both unadjusted and adjusted models ( $\beta=0.8564$ ,  $p=0.0083$ ). Bayley motor score was negatively associated with hair THg in unadjusted models ( $\beta= - 0.00073$ ,  $p=0.0022$ ), but not in adjusted models (hair Thg:  $\beta= - 0.00017$ ,  $p=0.553$ ; cord blood:  $\beta=0.0038$ ,  $p=0.9583$ ).

**Conclusions:** In adjusted models, THg in hair and cord blood did not predict Bayley scores but a moderate beneficial effect of fish consumption in pregnancy was observed.