

Prenatal exposure to low-level methylmercury alters the child's fine motor skills at the age of 18 months

Prpić, Igor; Milardović, Ana; Vlašić-Cicvarić, Inge; Špirić, Zdravko; Radić Nišević, Jelena; Vukelić, Petar; Snoj Tratnik, Janja; Mazej, Darja; Horvat, Milena

Source / Izvornik: **Environmental Research**, 2017, 152, 369 - 374

Journal article, Accepted version

Rad u časopisu, Završna verzija rukopisa prihvaćena za objavljivanje (postprint)

<https://doi.org/10.1016/j.envres.2016.10.011>

Permanent link / Trajna poveznica: <https://urn.nsk.hr/urn:nbn:hr:184:612394>

Rights / Prava: [In copyright](#) / [Zaštićeno autorskim pravom](#).

Download date / Datum preuzimanja: **2024-12-31**



Repository / Repozitorij:

[Repository of the University of Rijeka, Faculty of Medicine - FMRI Repository](#)



Table 1. General characteristics of the study populations of mother-child pairs.

	n	205
Boys, n (%)	102	(49.7%)
Girls, n (%)	103	(50.3%)
Gestational age (weeks) mean (min-max)	39.2	(34-41)
Birthweight (g) mean (min-max)	3591	(2400-4820)
Mother's age at delivery (years) mean (min-max)	30	(19-42)
BMI (kg/m²) before pregnancy mean (min-max)	22.8	(16.9-40.7)
Education		
Primary school, n (%)	5	(2 %)
Middle school, n (%)	122	(60 %)
High school, n (%)	20	(10 %)
University degree, n (%)	58	(28 %)
Residential environment		
Centre, n (%)	55	(27 %)
Periphery, n (%)	109	(53 %)
Rural, n (%)	41	(20 %)
Breastfeeding in the 6th weeks of life		
Exclusive or predominant, n (%)	142	(69 %)
Partial or formulae, n (%)	63	(31 %)
Cigarette smoke during pregnancy		
Yes	25	(12 %)
No	180	(88 %)
No. of amalgam fillings		
up to 3, n (%)	196	(96 %)
3-9, n (%)	9	(4 %)
10 or more, n (%)	0	(0 %)
Consumption of sea fish		
Less than once per month, n (%)	11	(5 %)
1-3 times per month, n (%)	67	(33 %)
At least once per week, n (%)	127	(62 %)

Table 2. Results of Bayley Scales of Infant and Toddler Development, Third Edition (BSID-III) in study subjects – children at age of 18 months (N=168)

No. study subject N=168	Arithmetic mean	Standard deviation	Median	Minimum	Maximum
Composite cognitive development	107,62	13,50	105,00	60,00	145,00
Composite language development	107,26	15,21	109,00	50,00	141,00
Sub-scale Receptive language skills	12,12	2,81	13,00	1,00	19,00
Sub-scale Expressive language skills	10,30	3,08	10,00	2,00	18,00
Composite motor development	107,97	10,54	107,00	58,00	139,00
Sub-scale Fine motor skills	11,90	2,26	12,00	4,00	19,00
Sub-scale Gross motor skills	10,66	2,16	10,00	2,00	18,00

Figure 1. Correlation between MeHg cord blood and THg cord blood concentration

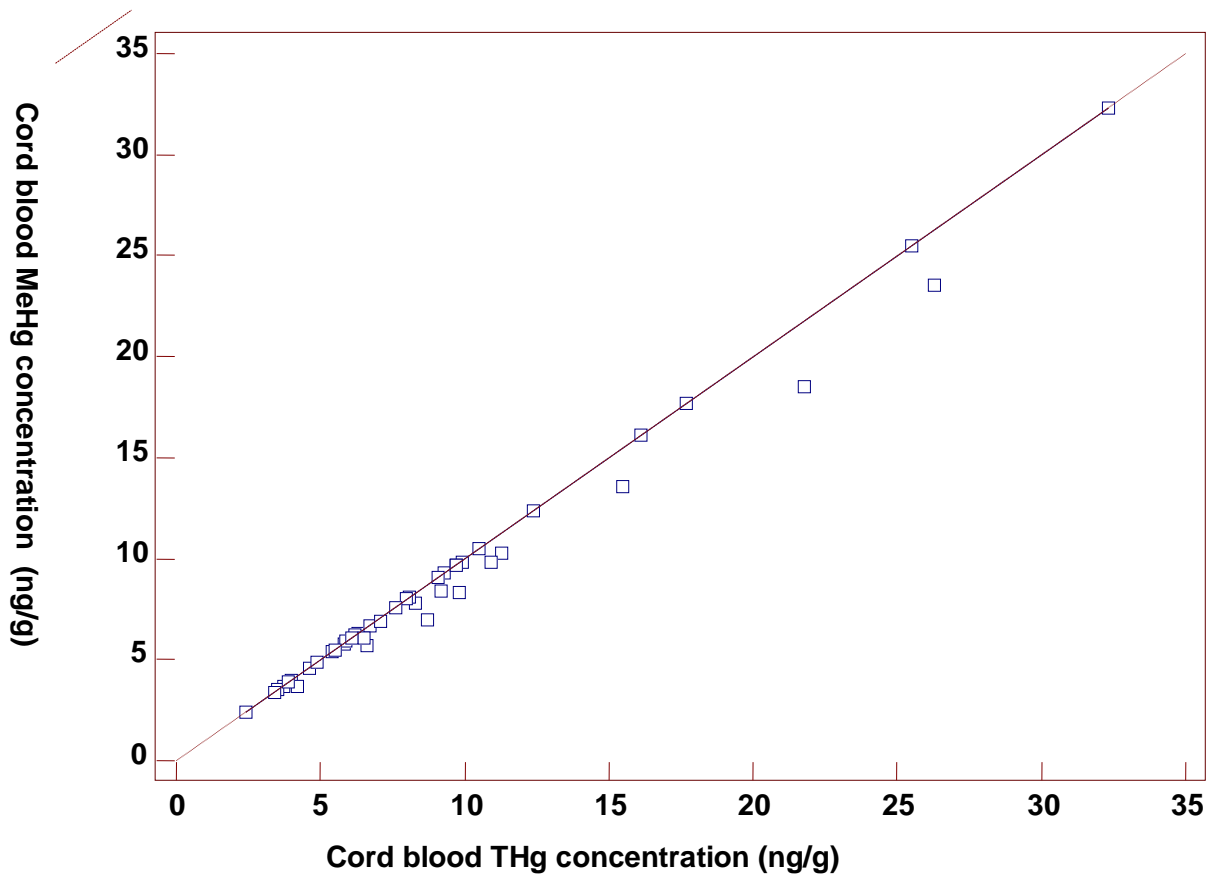


Table 3. Correlation between cord blood THg and scores of BSID-III

		Composite cognitive develop.	Composite language develop.	Sub-scale receptive language skills	Sub-scale expressive language skills	Composite motor develop.	Sub-scale fine motor skills	Sub-scale gross motor skills
Cord blood THg level (ng/g)	rho	-0.13	0.02	-0.04	0.08	-0.11	-0.22	0.09
	p	0.12	0.81	0.64	0.35	0.18	0.01	0.30
	N	135	135	135	135	135	135	135

rho:Spearman coefficient of correlation, p:statistical significance, N:number of children

Table 4. Comparison of cord blood THg level by inter-quartile range and fine motor skills BSID-III sub scale

Cord blood THg quartile level (ng/g) (centile)	No.	Fine motor skills-BSID-III Median	Inter-quartile range
1. ($\leq 25.$)	29	13	12-14
2. (26.-50.)	36	11	10,5-13
3. (51.-75.)	31	11	11-13
4. ($> 75.$)	39	11	10-13

p=0.04

Table 5 Post-hoc analyses of cord blood THg level of 1st quartile versus 2nd, 3rd, and 4th quartile regarding fine motor skills BSID-III sub scale

Cord blood THg quartile level (ng/g) Centile	β coefficient	p
2. (26.-50.)	-1.24	0.03
3. (51.-75.)	-1.28	0.03
4. ($> 75.$)	-1.45	0.01

Table 6. Post-hoc analyses of cord blood THg level of 1st quartile versus 2nd, 2nd versus 3rd, and 3rd versus 4th quartile regarding fine motor skills BSID-III sub scale

Cord blood THg quartile level (ng/g) Centile	β coefficient	p
2. (26.-50.)	-1.24	0.03
3. (51.-75.)	-0,04	0.93
4. (> 75.)	-0,16	0.76

Table 7. Multivariate linear regression analyses adjusted for selected potentially confounding factors.

Variables	b coefficient	p
Cord blood THg level	0,06	0,28
Cerebellum lengths	0,12	0,06
FISH: boiled, grilled, fried	-0,06	0,85
CRABS: boiled, grilled, fried	1,08	0,40
MOLLUSCS: boiled, grilled, fried	0,14	0,85
FISH fried	0,20	0,65
CRABS fried	-2,98	0,06
MOLLUSCS fried	-0,07	0,95
TUNA, MACKEREL, SARDINES in oil	-0,71	0,05
Breastfeeding in 1 st week	-0,60	0,50
Breastfeeding in 2 nd week	1,77	0,08
Breastfeeding in 3 rd week	-1,05	0,37
Breastfeeding in 4 th week	1,37	0,22
Breastfeeding in 5 th week	-1,76	0,10
Breastfeeding in 5 th week	0,20	0,81
Mother age	0,06	0,40
Mother education	-0,10	0,75
Father education	-0,21	0,51
Smoking in pregnancy	-0,96	0,25
Alcohol intake/week in pregnancy	-0,08	0,47
Mother employment	-3,04	0,02
Father employment	-0,06	0,94
Rural environmental residence	0,69	0,35
Parity	-0,10	0,85

$R^2 = 0,27$ Corrected $R^2 = 0,01$ $p = 0,43$