

BLOOD LEAD OF CHILDREN IN WAMIAO-XINHUAI INTELLIGENCE STUDY

As an additional part of our investigation of an association between fluoride in drinking water and children's intelligence in two villages of Sihong County, Jiangsu Province, China,¹ we have now determined blood lead levels of children in that study.

Blood samples (80 µL) were collected on June 18 and 19, 2003 from the index finger of 71 randomly selected 8 to 13 year-old children in the high fluoride village of Wamiao and 67 children of the same ages in the low fluoride village of Xinhuai. The samples were preserved in clean plastic centrifuge tubes containing 0.64 mL of Triton X-100. Blood lead was measured within one week by atomic absorption spectrophotometry.²

The results, as summarized in the table below, show there is essentially no difference between the two villages in blood lead concentrations of the children.

Table. Blood lead levels of children in Wamiao and Xinhuai

Village	No. Samples	Blood lead (µg/L)		t	p
		Mean ± SD	Range		
Wamiao	71	21.95 ± 13.65	1.36 - 54.96	0.698	>0.48
Xinhuai	67	23.61 ± 14.17	1.36 - 61.12		

As shown in the Figure, when the data from all 138 samples from the two villages are considered as a whole, no significant trend can be discerned between blood lead level and children's IQ (Pearson correlation coefficient = -0.099, $p > 0.25$).

Prenatal and early childhood exposure to lead is now well recognized to be an important cause of mental impairment, and this effect has recently been correlated with blood lead levels in children that are lower than previously thought to be safe.³⁻⁵ However, we found no difference in the low blood lead concentrations of the children in high-fluoride, lower IQ Wamiao and low-fluoride, higher IQ Xinhuai. These results thus make it very unlikely that the differences in IQ of the children living in Wamiao and Xinhuai are the result of differences in exposure to lead rather than to fluoride.

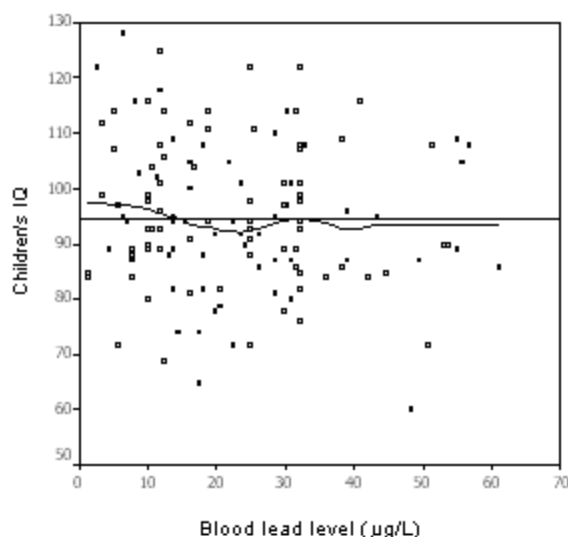


Figure. Correlation between children's IQ and blood lead level of all samples.

Dr Quanyong Xiang and Prof. Youxin Liang
School of Public Health, Fudan University
138 Yi Xue Yuan Road, Shanghai 200032, P.R.China
E-mail: quanyongxiang@yahoo.com.cn

Mingsheng Zhou and Hongbiao Zang
Center for Disease Control and Prevention
Sihong County 223900, Jiangsu Province, P.R.China

REFERENCES

- 1 Xiang Q, Liang Y, Chen L, Wang C, Chen B, Chen X, Zhou M. Effect of fluoride in drinking water on children's intelligence. *Fluoride* 2003;36(2):84-94.
- 2 National Department Standard of P.R. China. Blood lead determination by lead-graphite furnace atomic absorption spectrometric method (WS/T 20-1996).
- 3 Canfield RL, Henderson CR, Cory-Slechta DA, Cox C, Jusko TA, Lanphear BP. Intellectual impairment in children with blood lead concentrations below 10 µg per deciliter. *NEJM* 17 April 2003;348(16):1517-26.
- 4 Rogan WJ, Ware JH. Editorial: Exposure to lead in children – How low is low enough? *NEJM* 17 April 2003;348(16):1515-6.
- 5 Burgstahler AW. Editorial: Influence of fluoride and lead on children's IQ: U.S. tolerance standards in question. *Fluoride* 2003;36(2):79-81.

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