



INTISARI

Latar Belakang. Timbal telah terbukti neurotoksin. Kadar timbal yang tinggi dalam darah dihubungkan dengan inteligensi yang rendah pada anak, namun sampai saat ini belum ada laporan hubungan kadar timbal dalam darah dengan inteligensi anak di Indonesia khususnya Yogyakarta

Tujuan. Untuk mengetahui hubungan kadar timbal darah dengan tingkat inteligensi anak

Metode. Penelitian potong lintang terhadap anak kelas 1 dan kelas 2 di 7 Sekolah Dasar Inklusi di Yogyakarta pada bulan Januari 2013. Subyek penelitian diperoleh secara *purposive sampling*. Kriteria inklusi adalah anak dengan 5 peringkat tertinggi dan 5 peringkat terendah yang bersedia mengikuti penelitian. Kriteria eksklusi adalah anak dengan sindrom Down, hiperaktif, autisme, dan adanya gangguan pendengaran. Inteligensi ditentukan berdasarkan *Wechsler Intelligence Scale for Children* timbal dalam darah diperiksa dengan alat *atomic absorption spectrophotometry*. Data dianalisis dengan menggunakan uji *independent t-test*, uji *Chi-Square*, dan uji *Fisher*

Hasil. Sejumlah 80 anak (40 anak dengan inteligensi tinggi dan 40 anak dengan inteligensi rendah) diikutsertakan dalam penelitian ini. Rerata kadar timbal dalam darah anak dengan inteligensi tinggi 4,09 µg/dL (SB 0,50) lebih rendah dibandingkan dengan rerata kadar timbal dalam darah anak dengan inteligensi rendah 7,08 µg/dL (SB 0,61, IK 95% 1,429 - 4,555). Kadar timbal dalam darah ≥ 5 µg/dL lebih banyak dijumpai pada anak dengan inteligensi rendah dibandingkan dengan anak dengan inteligensi tinggi (75% vs 45%; $p=0,006$). Hasil analisis bivariat faktor luar didapatkan faktor lain yang mempengaruhi tingkat inteligensi anak adalah stimulasi, tingkat pendidikan ibu dan sosial ekonomi ($p<0,001$, $p=0,001$, dan $p=0,001$)

Kesimpulan. Anak dengan inteligensi rendah mempunyai kadar timbal darah yang lebih tinggi dibandingkan anak dengan inteligensi tinggi.

Kata kunci: *inteligensi, kadar timbal darah, anak*



ABSTRACT

Background Lead has been proven as neurotoxin. High blood lead level is associated with low intelligence in children, but until recently there is no report about the relationship between blood lead level and children's intelligence in Indonesia, especially in Yogyakarta.

Objective To determine the relationship between the level of intelligence and blood lead level of children.

Methods A cross-sectional study of first and second grades children at seven Inclusion Elementary Schools in Yogyakarta was conducted on January 2013. Subjects were obtained by purposive sampling. The inclusion criteria were children with the fifth highest ranking and the fifth lowest ranking who were willing to be involved in research. Exclusion criteria were children with normal intelligence, Down syndrome, hyperactivity, autism, and hearing loss. Intelligence levels were determined by the Wechsler Intelligence Scale for Children. The blood lead levels were checked with atomic absorption spectrophotometry. Data were analyzed using independent t-test, Chi-Square and logistic regression.

Results Eighty children (40 children with high intelligence and 40 children with low intelligence) were included in this study. The mean blood lead level of subjects with high intelligence was 4.09 $\mu\text{g/dL}$ (SB 0.50), lower than that of children with low intelligence (7.08 $\mu\text{g/dL}$ (SB 0.61, 95% CI 1.429 - 4.555)). Blood lead level of ≥ 5 $\mu\text{g/dL}$ was more common in children with low intelligence compared with those with high intelligence (75% vs 45% respectively; $p = 0.006$). The results of bivariate analysis of external factors revealed that other factors affecting children's intelligence level were stimulation, the level of maternal education, and socioeconomic status ($p < 0.001$, $p = 0.001$ and $p = 0.001$ respectively).

Conclusions Children with low intelligence level had higher blood lead level than children with high intelligence. Other factors influenced these were stimulation, maternal education level, and socioeconomic status.

Keywords: *intelligence, blood lead level, children*