

Pengaruh plumbum darah terhadap tahap perkembangan cerdas pandai (IQ) kanak-kanak di Malaysia

Abstract

The objective of this study is to identify the relationship between blood lead concentration and the intelligent quotient (IQ) of primary school children in Kuala Lumpur and Terengganu, Malaysia. The study respondents were 212 Malay children aged between 6 1/2 to 8 1/2 years old. Blood samples were taken from 162 children using a finger-pricked method and IQ score was measured with the 'McCarthy Scales of Children's Abilities Test' (MSCA). Blood lead concentration was analysed with a graphite furnace atomic absorption spectrophotometer. Results showed that the arithmetic mean of blood lead is 4.3ug/dL while the geometric mean is 3.15ug/dL. There is a significant inverse correlation between blood lead concentration with all of the MSCA IQ scales such as the verbal scale ($p < 0.01$), perception-performance scale ($p < 0.01$), quantitative scale ($p < 0.01$), memory scale ($p < 0.01$), motor scale ($p < 0.01$) and general cognitive scale ($p < 0.01$). Results from a multiple regression analysis showed a significant inverse relationship ($b = -35.8$, $p < 0.001$) between blood lead concentration and IQ score after controlling for confounding factors. The variables with the greatest influence on IQ score are blood lead concentration ($b = -36.6$; $p < 0.001$) and mother's education ($b = 0.75$; $p = 0.006$). In conclusion, IQ score is influenced by blood lead concentration even at very low levels, after controlling for confounding factors.