

Perbandingan kepekatan plumbum darah dan hubungannya dengan skor neurotingkah laku antara pekerja kilang bateri dengan pekerja pentadbiran di Selangor D.E., Malaysia

ABSTRACT

This study compares the mean blood lead concentration and its association with the mean neurobehavioral scores between 2 groups of workers. The exposed group was made up of 50 male workers from 2 battery manufacturing factories and the comparative group was made up of 40 male administrative workers from a local university. The neurobehavioral test was carried out by using a modified World Health Organization Neurobehavioral Core Test Battery (NCTS). The NCTS consists of 7 tests, which are made up of the Benton Visual Retention Test, Digit Symbol, Digit Span, Pursuit Aiming Test, Reaction Time, Santa Ana Manual Dexterity Test and Trail Making Test. Blood samples were collected by venous puncture method. Blood lead concentrations were determined by the Graphite Furnace Atomic Absorption Spectrophotometer (GFAAS). The mean blood lead concentration of the exposed group (38.5 g/dL) is higher than the comparative group (5.6 g/dL). Results show significant difference in the mean blood lead concentration between the 2 groups ($p < 0.001$). There are also significant differences in the mean scores of each NCTS test such as Benton Visual Retention Test ($p = 0.001$), Digit Span Test ($p < 0.001$), Digit Symbol Test ($p < 0.001$), Pursuit Aiming Test ($p < 0.001$), Reaction Time Test ($p < 0.001$), Santa Ana Manual Dexterity Test ($p < 0.001$), Trail Making Test ($p < 0.001$) ($p < 0.001$) and the overall NCTS test ($p < 0.001$) between the 2 groups. There are significant inverse correlation between blood lead concentrations with each and overall NCTS scores when the two groups are combined. There are significant inverse correlations between blood lead concentrations with educational years and income for all respondents. Statistical tests show that blood lead, age, years of formal education, total income, years of work, and ethnicity contributes to the overall NCTS scores. The GLM model shows that 56.9% of the mean NCTS scores are influenced by the variability in the contributing factors mentioned before.

Keyword: Blood lead concentration; Neurobehavioral scores