Thesis Title A Study of Psychological Test Among Lead Exposure Groups.

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ABSTRACT

The purpose of this research was to apply the psychological test to study brain dysfunction in a lead exposure group, to analyze the relationship between blood lead levels and psychological scores. To study the effects of demographic factors such as sex,age,education, job responsibilities, time of exposure, smoking habits, drinking habits and the use of personal protective device on blood concentration and on a psychological test. The 163 subjects were from lead smelting and battery manufacturing companies. All of the subjects worked 8-hour shifts. The workers exposed to lead were given the psychological test and the blood lead concentrations were also measured. The psychological tests were the Progressive Matrices Test (Intelligence Quotient), Digit Span Subtest, Block Design Subtest and Digit Symbol Subtest of the Wechsler Adult Intelligence Scale (WAIS) and Finger Tapping Test.

The results showed that workers exposed to lead had mean blood lead levels of 43.70 ug/100 ml (15.02 ug/100 ml). The most important finding was a significant relationship between impairment of memory, attention, concentration and impairment of visual motor function or visual motor coordination or impairment of eye-hand coordination but there was no impairment of intelligence level or Intelligence Quotient (p-value<0.05). The impairment of brain function was related to frontal lobe, temporal lobe, parietal lobe and occipital lobe. The factors with significant effect on blood lead concentrations were sex, education, job responsibilities, smoking habits and drinking habits (p-value<0.05). Age, education, job responsibilities, and time of exposure had significant effect on the Progressive Matrices Test and Block Design subtest (p-value<0.05). Education had a significant effect on the Digit Span Subtest. Age, education and job responsibilities had significant effect on the Digit Symbol Subtest. Sex, education, job responsibilities and smoking habits affected the Finger Tapping Test (Dominant), but sex, smoking and drinking habits affected the Finger Tapping Test (Nondominant) (p-value<0.05).