

# ASSOCIATIONS BETWEEN CADMIUM AND COGNITIVE FUNCTION IN THE ELDERLY

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**Background and Aims:** We conducted this study to investigate on the relationship between blood concentration of cadmium and cognitive function in elderly Koreans.

**Methods:** This study is a part of the Korean Elderly Environmental Panel study (KEEPS). We enrolled the subjects from August 2008 through August 2010 and total 403 subjects were analyzed. Information such as demographic factors, medical history, dietary habits, smoking and alcohol consumption was obtained by a questionnaire. We measured blood concentration of cadmium and conducted Mini-Mental State Examination(MMSE) with Functional Activities Questionnaire(FAQ) for each subject. For statistical analysis, linear multiple regression models were used to estimate the effects of cadmium on the cognitive function parameters (MMSE) and functional scale(FAQ), controlling for age, gender, level of education, smoking and drinking habits. Because the distributions of biomarker concentrations were right skewed, we used log-transformed data for blood concentration of cadmium in the models.

**Results:** The mean age of subjects was about 70.67 (SD 5.18, n=403). 72% of them were female. Mean blood cadmium level was 1.22  $\mu$ g/dl (SD 0.56), mean MMSE score 25.12 out of 30 and mean FAQ score 2.03 out of 30. At first we conducted linear regression analysis between blood cadmium concentration and MMSE or FAQ. We observed significant relationship between log transformed values of blood cadmium levels with MMSE scores ( $p < 0.002$ ) and FAQ score ( $p = 0.005$ ). After adjusting age, sex, level of education, drinking and smoking habits, the relationship of blood cadmium concentration with MMSE scores and FAQ score are still statistically significant. ( $p = 0.033$  and  $0.029$  respectively)

**Conclusions:** These results suggest that blood concentration of cadmium is strongly associated with cognitive function and the functional activity of the elderly.