Blood cholinesterase level and cognitive functioning among primary school children near paddy field in Tanjung Karang, Selangor

ABSTRACT

Paddy is the third most widely planted crop in Malaysia after oil palm and rubber. The use of pesticides lead to increase in yields by protecting the plantation from any pest and unwanted plants. The extensive use of insecticide, may affect the human health especially from occupational and environmental exposures. Children are a vulnerable group to exposures of insecticides because of less-developed metabolism and the ongoing maturation of their organ systems. Blood cholinesterase activity is the most effective biomarkers to measure the level of exposure for various pesticides. Objective: The purpose of this study is to determine the relationship between blood cholinesterase levels with cognitive function of selected primary schoolchildren. Results: Highest percentage of schoolchildren had normal (52.7%) exposure. About 92.9% reported watery eyes as signs and symptoms of pesticide exposure. Most of the school children school children were in the average scores (44.6%) of cognitive function test. All scales in the McCarthy Scale Cognitive Abilities (MSCA) showed significant correlation with blood cholinesterase levels ($p<0.05$). Conclusion: There were significant relationship between blood cholinesterase levels with cognitive function in all the MSCA scales. No school children was reported with mentally retarded cognitive function. Finally, gender, mother's education and blood cholinesterase showed significant relationship with memory and motor scales in the MSCA.

Keyword: Pesticides; Human health; Environmental exposure; Biomarker